Swarthmore College

CATALOGUE

1893-'94.

SWARTHMORE COLLEGE.
(MAIN BUILDING.)

Twenty-Fifth

Annual Catalogue

OF

Swarthmore College

Swarthmore, Pa.

1893-94.

PHILADELPHIA:
FRANKLIN PRINTING COMPANY,
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1894.

Contents.

Calendar.

1893–94.

1893.	Ninth Month, 19th,	Third-day,	Meeting of the Board of Managers.
"	Ninth Month, 19th,	Third-day,	New Students arrive.
"	Ninth Month, 20th,	Fourth-day,	Examinations for Admission.
"	Ninth Month, 21st,	Fifth-day,	Old Students return.
"	Ninth Month, 22d,	Sixth-day,	Regular Exercises begin.
"	Eleventh Month, 29th,	Fourth-day,	Thanksgiving Recess begins.
"	Twelfth Month, 4th,	Second-day,	Students return.
"	Twelfth Month, 4th,	Second-day,	Meeting of the Board of Managers.
"	Twelfth Month, 5th,	Third-day,	*Annual Meeting of the Stockholders.*
"	Twelfth Month, 5th,	Third-day,	Meeting of the Board of Managers.
"	Twelfth Month, 22d,	Sixth-day,	Winter Recess begins.
1894.	First Month, 2d,	Third-day,	Students return.
"	First Month, 3d,	Fourth-day,	Regular Exercises begin.
"	Second Month, 3d,	Seventh-day,	First Semester ends.
"	Second Month, 4th,	Second-day,	Second Semester begins.
"	Third Month, 13th,	Third-day,	Meeting of the Board of Managers.
"	Third Month, 24th,	Seventh-day,	Spring Recess begins.
"	Fourth Month, 2d,	Second-day,	Students return.
"	Fourth Month, 27th,	Sixth-day.	Graduating Essays due from Senior Class.
"	Fifth Month, 14th,	Second-day,	Engineering Field-work begins. Continues four weeks.
"	Fifth Month, 21st,	Second-day,	Senior Examinations begin.
"	Fifth Month, 28th,	Second-day,	Senior Examinations completed, and the results announced.
"	Sixth Month, 4th,	Second-day,	Final Examinations begin.
"	Sixth Month, 8th,	Sixth-day,	Examinations for Admission.
"	Sixth Month, 9th,	Seventh-day,	
"	Sixth Month, 11th,	Second-day,	Meeting of the Board of Managers.
"	Sixth Month, 11th,	Second-day,	Class-Day Exercises.
"	Sixth Month, 12th,	Third-day,	COMMENCEMENT.
"	Ninth Month, 18th,	Third-day,	Meeting of the Board of Managers.
"	Ninth Month, 18th,	Third-day,	New Students arrive.
"	Ninth Month, 19th,	Fourth-day,	Examinations for Admission begin.
"	Ninth Month, 20th,	Fifth-Day,	Examinations for Admission completed, and Old Students return.
"	Ninth Month, 21st,	Sixth-day,	Regular Exercises begin.
"	Eleventh Month, 28th,	Fourth-day,	Thanksgiving Recess begins at noon.
"	Twelfth Month, 3d,	Second-day,	Regular Exercises begin 8.30 A. M.
"	Twelfth Month, 3d,	Second-day,	Meeting of the Board of Managers.
"	Twelfth Month, 4th,	Third-day,	*Annual Meeting of the Stockholders.*
"	Twelfth Month, 4th,	Third-day,	Meeting of the Board of Managers.
"	Twelfth Month, 21st,	Sixth-day,	Winter Recess begins.
1895.	First Month, 2d,	Fourth-day,	Students return.
"	First Month, 3d,	Fifth-day,	Regular Exercises begin.

Corporation.

OFFICERS.

Clerks.

GEORGE W. HANCOCK,
737 Walnut Street, Philadelphia.
FANNIE WILLETS LOWTHORP,
Trenton, N. J.

Treasurer.

ROBERT BIDDLE,
507 Commerce Street, Philadelphia.

Board of Managers.

Term expires Twelfth Month, 1894.

ISAAC H. CLOTHIER,
8th and Market Sts., Philadelphia.
JAMES V. WATSON,
718 Franklin Street, Philadelphia.
HERMAN HOOPES,
436 Drexel Building, Philadelphia.
ANNIE SHOEMAKER,
112 Carpenter St., Germantown.
SOPHIA U. WILLETS,
Manhasset, L. I.
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1156 S. Broad Street, Philadelphia.
EMMA McILVAIN COOPER,
Riverton, N. J.
REBECCA C. LONGSTRETH,
Sharon Hill, Delaware Co., Pa.

Terms expires Twefth Month, 1895.

JOSEPH WHARTON,
P. O. Box 1332, Philadelphia.
MARY WILLETS,
Manasquan P. O., N. J.
LYDIA H. HALL,
Swarthmore, Pa.
WILSON M. POWELL,
324 W. 58th Street, New York.
MARY C. CLOTHIER,
Wynnewood, Pa.
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335 West 18th Street, New York.
RACHEL W. HILLBORN,
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EDWARD MARTIN, M. D.,
415 S. 15th Street, Philadelphia.

Term expires Twelfth Month, 1896.

EDWARD H. OGDEN,
314 Vine Street, Philadelphia.
ELI M. LAMB,
1432 McCulloh St., Baltimore, Md.
ANNA M. HUNT,
Lansdowne, Pa.
SUSAN W. LIPPINCOTT,
Cinnaminson, N. J.
CATHARINE UNDERHILL,
Jericho, L. I.
CLEMENT M. BIDDLE,
631 Market St., Philadelphia.
EDWARD STABLER, JR.,
3 South Street, Baltimore, Md.
HANNAH H. WOODNUTT,
1816 Arch Street, Philadelphia.

Term expires Twelfth Month, 1897.

JOHN T. WILLETS,
303 Pearl Street, New York.
CHARLES M. BIDDLE,
507 Commerce Street, Philadelphia.
DANIEL UNDERHILL,
Jericho, L. I.
EMMOR ROBERTS,
Fellowship, N. J.
JANE P. DOWNING,
1613 Race Street, Philadelphia.
SARAH H. POWELL,
324 West 58th Street, New York.
ABIGAIL W. MILLER,
1203 Del. Ave., Wilmington, Del.
ELIZABETH B. PASSMORE,
Oxford, Chester Co., Pa.

Officers and Committees of the Board.

President.

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EDMUND WEBSTER,
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EDWARD MARTIN,
MARY WILLETS,
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ANNA M. HUNT,
SUSAN W. LIPPINCOTT,
EMMA MCILVAIN COOPER,
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EDWARD H. OGDEN.

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EMMOR ROBERTS,
HERMAN HOOPES,
MARY WILLETS,
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LYDIA H. HALL,
ANNA M. HUNT,
FANNY W. LOWTHORP,
RACHEL W. HILLBORN,
EDWARD MARTIN.

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EMMOR ROBERTS,
DANIEL UNDERHILL,
JANE P. DOWNING,
GEORGE W. HANCOCK,
EDMUND WEBSTER,
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MARY C. CLOTHIER,
WILLIAM M. JACKSON,
MARY WILLETS,
EDWARD MARTIN.

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EDWARD STABLER, JR.,
ISAAC H. CLOTHIER,
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EDMUND WEBSTER,
EMMOR ROBERTS,
CLEMENT M. BIDDLE, *Treasurer.*
REBECCA C. LONGSTRETH, *Secretary.*

Trustees of Endowed Professorships.

ISAAC H. CLOTHIER,
EDWARD H. OGDEN,
EMMOR ROBERTS.

Faculty.*

1893–94.

CHARLES De GARMO,
President.

ELIZABETH POWELL BOND,
Dean.

Prof. EDWARD H. MAGILL.

Prof. ARTHUR BEARDSLEY.

Prof. WILLIAM HYDE APPLETON.

Prof. SUSAN J. CUNNINGHAM.

Supt. WILLIAM J. HALL.

Prof. WILLIAM PENN HOLCOMB.

Prof. WILLIAM C. DAY.

Prof. FERRIS W. PRICE.

Prof. GEORGE A. HOADLEY.

Prof. SPENCER TROTTER.

ESTHER T. MOORE.

Prof. MARIE A. KEMP.

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*By-Laws.—"The President, Dean, and such of the resident Professors and others as may be elected by the Board, shall constitute the Faculty. They shall hold regular meetings, arrange the course of study, determine the qualifications for admission and for graduation, decide upon rules of order, and determine all questions pertaining to the discipline or instruction, subject to the approval of the Executive Committee, to whom they shall report monthly."

Officers of Instruction.*

CHARLES De GARMO, Ph. D.,

President, and Professor of Philosophy.

ELIZABETH POWELL BOND,

Dean.

EDWARD H. MAGILL, LL. D.,

Professor of the French Language and Literature.

ARTHUR BEARDSLEY, C. E., Ph. D.,

I. V. Williamson Professor of Engineering, and Director of the Workshops.

WILLIAM HYDE APPLETON, A. M., Ph. D.,

Professor of Greek and of English Literature.

SUSAN J. CUNNINGHAM, Sc. D.,

Edward H. Magill Professor of Mathematics and Astronomy.

WILLIAM PENN HOLCOMB, Ph. D.,

Joseph Wharton Professor of History and Political Science.

WILLIAM CATHCART DAY, Ph. D.,

Professor of Chemistry.

SPENCER TROTTER, M. D.,

Professor of Biology and Geology.

GEORGE A. HOADLEY, C. E., A. M.,

Professor of Physics.

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*Arranged, with the exception of the President and Dean, in the order of appointment, as : Professors, Assistant Professors, and other Instructors.

FERRIS W. PRICE, A. M.,

Isaac H. Clothier Professor of the Latin Language and Literature.

MARIE ANTOINETTE KEMP, A. M.

Professor of the German Language and Literature.

*RICHARD JONES, A. M., Ph. D.,

Professor of English.

WILLIAM I. HULL, Ph. D.,

Associate Professor of Political Economy and Social Science.

MYRTIE E. FURMAN, M. O.,

Assistant Professor in charge of Elocution.

JOHN C. GIFFORD, B. S.,

Instructor in Botany.

†BEATRICE MAGILL,

Instructor in Drawing and Painting.

J. K. SHELL, M. D.,

Director of Physical Culture for the Young Men.

EMILY G. HUNT, M. D.,

Lecturer on Physiology and Hygiene to the Young Women.

JOSEPH BAYLEY, JR.,

Assistant in Engineering, Shop Practice.

J. RUSSELL HAYES, A. B., LL. B.,

Assistant in English.

HENRY V. GUMMERE, A. M.,

Assistant in Mathematics.

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* After First Mo. 1st, 1894.

† In Europe on leave of absence for the year. In her absence the department is in the charge of Carol H. Beck.

THE WEST HOUSE.

BIRTHPLACE OF BENJAMIN WEST. ERECTED 1724.

ARTHUR PEYTON BRYANT, B. S.,

Assistant in Chemistry.

ABBY M. HALL, A. B.,

Assistant in Greek.

MARY STEVENSON WISTAR,

Director of Physical Culture for the Young Women.

ESTHER T. MOORE, A. B.,

Secretary to the President, and Registrar.

SARAH M. NOWELL,

Librarian.

ARTHUR BEARDSLEY,

Curator and Librarian of Friends' Historical Library.

Students.

SENIOR CLASS.

Name.	Course.	Residence.
Mabel Alexander	*Letters*	Philadelphia, Pa.
Lydia Biddle	*Letters*	Lansdowne, Pa.
Edwin P. Bond	*Arts*	Swarthmore, Pa.
Lilian Branson	*Letters*	Clear Brook, Va.
Bertha L. Broomell	*Science*	Baltimore, Md.
Emma S. Chambers	*Arts*	Unionville, Pa.
Elizabeth Conrow	*Arts*	Moorestown, N. J.
Herman Conrow	*Engineering*	Cinnaminson, N. J.
Altha T. Coons	*Science*	Deckertown, N. J.
Hetty L. Cox	*Letters*	Baltimore, Md.
Joseph C. Emley	*Engineering*	Philadelphia, Pa.
Frederic H. Gawthrop	*Engineering*	Wilmington, Del.
John W. Gregg	*Letters*	Lincoln, Va.
George G. Griest	*Engineering*	Guernsey, Pa.
Mary A. Hayes	*Arts*	West Chester, Pa.
Helen R. Hillborn	*Arts*	Swarthmore, Pa.
Helen S. Hutchinson	*Science*	Maybeury, W. Va.
Helen P. Lamb	*Letters*	Baltimore, Md.
M. Elizabeth Lamb	*Letters*	Baltimore, Md.
Owen Moon, Jr.	*Science*	Penn Valley, Pa.
Marion D. Perkins	*Arts*	Moorestown, N. J.
Margaret D. Pfahler	*Science*	Philadelphia, Pa.
David B. Rushmore,	*Engineering*	Plainfield, N. J.
Caroline P. Sargent	*Arts*	St. Paul, Minn.
Philip Sellers	*Engineering*	Swarthmore, Pa.
Cornelia J. Shoemaker	*Letters*	Philomont, Va.
Edward A. Staab	*Arts*	Santa Fé, N. M.
Mary W. Titus	*Letters*	Old Westbury, N. Y.
Daniel Underhill, Jr.	*Science*	Jericho, N. Y.
Mary Underhill	*Science*	Glen Head, N. Y.

Name.	Course.	Residence.
Allen K. White	*Engineering*	Atlantic City, N. J.
Stuart Wilder	*Engineering*	Johnson City, Tenn.
Harry P. Young	*Engineering*	Morton, Pa.

JUNIOR CLASS.

Name.	Course.	Residence.
Frank C. Andrews	*Engineering*	Woodstown, N. J.
Anna S. Atkinson	*Arts*	Holicong, Pa.
Elizabeth M. Baily	*Science*	Norristown, Pa.
Harry E. Bean	*Engineering*	Philadelphia, Pa.
Frances W. Cheairs	*Letters*	Delaware City, Del.
Walter Clothier	*Letters*	Wynnewood, Pa.
May Gifford	*Irregular*	May's Landing, N. J.
Anna R. H. Harrison	*Letters*	Xenia, Ohio.
Mary B. Hollingshead	*Arts*	Pemberton, N. J.
Mary B. Janvier	*Letters*	Wilmington, Del.
Harriet M. Kent	*Arts*	Swarthmore, Pa.
Roland G. Kent	*Arts*	Wilmington, Del.
John A. Lafore	*Engineering*	Philadelphia, Pa.
Egbert P. Lincoln	*Engineering*	Naples, N. Y.
Bertha Lippincott	*Letters*	Riverton, N. J.
Edgar Lippincott	*Science*	Cinnaminson, N. J.
Joseph Lippincott	*Arts*	Moorestown, N. J.
Elizabeth B. Miller	*Arts*	Media, Pa.
Samuel C. Palmer	*Arts*	Concordville, Pa.
Alfred E. Pfahler	*Engineering*	Philadelphia, Pa.
M. Elizabeth Pownall	*Letters*	Christiana, Pa.
Arthur H. Scott	*Science*	Swarthmore, Pa.
Jane C. Shaw	*Irregular*	Williamsport, Pa.
Helen B. Smith	*Arts*	Media, Pa.
G. Edmund Strattan	*Engineering*	Altoona, Pa.
M. Helen Train	*Science*	Zanesville, Ohio.
William H. Wanzer	*Arts*	Hurtsville, N. Y.
Howard White, Jr.	*Engineering*	Lansdowne, Pa.
John M. Willis	*Science*	Fowling Creek, Md.
Alice P. Willits	*Arts*	Syosset, N. Y.
Albert T. Yarnall	*Letters*	Yeadon, Pa.

Name.	Course.	Residence.
Mary E. Yeo	*Science*	Easton, Md.
Susanna S. Yeo	*Letters*	Easton, Md.

SOPHOMORE CLASS.

Name.	Course.	Residence.
William S. Barker	*Engineering*	Lansdowne, Pa.
Mary S. Bartram	*Arts*	London Grove, Pa.
Charles P. Beistle	*Science*	Germantown, Pa.
Clement M. Biddle, Jr.	*Engineering*	Lansdowne, Pa.
Emily T. Brooke	*Irregular*	Media, Pa.
Hildegard Brooks	*Irregular*	Newburgh, N. Y.
Albert L. Buffington	*Arts*	Rising Sun, Md.
Carolien H. Chambers	*Arts*	Unionville, Pa.
Charles Chandler	*Engineering*	Bushnell, Ill.
Bouic L. Clark	*Irregular*	Sligo, Md.
Isaac H. Clothier, Jr.	*Arts*	Wynnewood, Pa.
Frances Darlington	*Arts*	Glen Mills, Pa.
George S. Essig	*Engineering*	Wallingford, Pa.
Aida T. Evans	*Arts*	Paoli, Pa.
George B. Ferrier, Jr.	*Engineering*	Moorestown, N. J.
E. Harper Firth	*Engineering*	Rockville Centre, N. Y.
Harrie H. Fouse	*Engineering*	Philadelphia, Pa.
George C. Freeman	*Science*	Germantown, Pa.
Susanna M. Garrett	*Arts*	Swarthmore, Pa.
Sylvester S. Garrett	*Science*	Swarthmore, Pa.
T. Russel Gleim	*Engineering*	Cornwall, Pa.
Sarah P. Godfrey	*Letters*	Jersey City, N. J.
Maude L. Gridley	*Irregular*	Vineland, N. J.
Jane D. Groot	*Irregular*	Springfield, S. Dak.
Ellen Gunton	*Arts*	New York, N. Y.
Hallie H. Haines	*Letters*	Rising Sun, Md.
Violette T. Haines	*Arts*	Rising Sun, Md.
Charles G. Hodge	*Irregular*	Washington, D. C.
Iolene M. Hollenshead	*Arts*	Belvidere, Ill.
Mary Holmes	*Arts*	Moorestown, N. J.
Samuel John	*Irregular*	Shamokin, Pa.
Howard C. Johnson	*Arts*	Philadelphia, Pa.
Charles Kaighn	*Engineering*	Eldridge, Fla.

Name.	Course.	Residence.
Philip S. Knauer	*Arts*	Warwick, Pa.
C. Irvine Leiper	*Engineering*	Swarthmore, Pa.
Harry W. Lewis	*Engineering*	Swarthmore, Pa.
Marian W. Little	*Irregular*	Media, Pa.
Mary S. McDowell	*Arts*	New York, N. Y.
Arabella E. Moore,	*Letters*	Philadelphia, Pa.
Percival Parrish	*Engineering*	Newport, R. I.
Lydia M. Parry	*Arts*	Hainesport, N. J.
N. Wilmer Plummer	*Engineering*	Frederick, Md.
Frank L. Price	*Arts*	Wilna, Md.
Lucy B. Price	*Arts*	Media, Pa.
Charles A. Schooley	*Engineering*	Sparta, Ontario, Can.
M. Gertrude Scott	*Irregular*	Wayne, Pa.
J. Chauncey Shortlidge	*Arts*	Concordville, Pa.
Lauretta T. Smedley	*Arts*	Willistown Inn, Pa.
A. Ella Spicer	*Arts*	Baltimore, Md.
Albert H. Taylor	*Engineering*	Philadelphia, Pa.
James L. Vail	*Irregular*	Quakertown, N. J.
Franklin D. Walton	*Arts*	London Grove, Pa.
Emma A. Wasley	*Letters*	Shenandoah, Pa.
Marion G. Way	*Irregular*	New London, Pa.
Henry P. Webb, Jr.	*Engineering*	City of Mexico, Mex.
Hanson Z. Wilson	*Engineering*	Sylmar, Md.
Luessa Wright	*Arts*	Port Chester, N. Y.

FRESHMEN CLASS.

Name.	Course.	Residence.
Mary S. Ash	*Letters*	Philadelphia, Pa.
Mary E. Bartleson	*Letters*	Thurlow, Pa.
Walter S. Belsinger	*Engineering*	Savannah, Ga.
Leopold W. Bierwirth	*Engineering*	Dover, N. J.
William H. Brady	*Letters*	Middletown, Del.
Winifred M. Bristol	*Letters*	Picton, Ontario, Can.
William S. Brooke	*Engineering*	Sandy Spring, Md.
Grace A. Brosius	*Letters*	Lancaster, Pa.
Martha J. Brown	*Letters*	Lincoln, Va.
Thomas Cahall	*Letters*	Frederica, Del.

Name.	Course.	Residence.
William B. Chapin	*Engineering*	Washington, D. C.
Richard C. Chase	*Letters*	Hayesville, O.
Mary T. Clark	*Letters*	Ellicott City, Md.
Alice V. Corson	*Letters*	Norristown, Pa.
Daisy R. Corson	*Letters*	Norristown, Pa.
J. Roberts Cox	*Engineering*	Baltimore, Md.
M. Louise Curtiss	*Letters*	Woodside, Md.
Jared W. Darlington	*Engineering*	Darling, Pa.
Walter C. De Garmo	*Engineering*	Swarthmore, Pa.
Jessie D. Ellis	*Letters*	Philadelphia, Pa.
Elmer O. Fisher	*Engineering*	Rutledge, Pa.
Charles E. Fooks	*Letters*	Laurel, Del.
Louis Gareché	*Irregular*	San José, Cal.
George Gleim, Jr.	*Engineering*	Cornwall, Pa.
Samuel P. Green	*Irregular*	Kennett Square, Pa.
K. Maude Greene	*Irregular*	Tallula, Ill.
Annetta Hall	*Irregular*	Philadelphia, Pa.
Mabel A. Harris	*Letters*	Etna, N. H.
Mary E. Hawley	*Letters*	New Bloomfield, Pa.
Anita K. Hichman	*Irregular*	West Chester, Pa.
Marietta Hicks	*Letters*	Westbury Station, N.Y.
Clarence B. Hoadley	*Science*	Swarthmore, Pa.
Emma S. Hutchinson	*Letters*	New York, N. Y.
Jesse W. Jefferis	*Arts*	Chester, Pa.
Edith H. Johns	*Irregular*	Media, Pa.
Edith F. Kenderdine	*Arts*	Germantown, Pa.
Mary M. Lewis,	*Irregular*	Media, Pa.
Clarence Lippincott	*Letters*	Riverton, N. J.
Robert E. Manley	*Engineering*	Philadelphia, Pa.
Richard B. Marshall	*Arts*	Swarthmore, Pa.
Walker Matteson	*Arts*	Roslyn, N. Y.
Laura C. Miller	*Arts*	New York, N. Y.
Innocente Moreira	*Irregular*	Philadelphia, Pa.
W. John Morrison	*Irregular*	El Paso, Ill.
Ida Mae Pecht	*Irregular*	Huntingdon, Pa.
Clara E. Piggott	*Irregular*	Silcott Springs, Va.
Robert Pyle	*Arts*	London Grove, Pa.

Name.	Course.	Residence.
Samuel Riddle	*Engineering*	Media, Pa.
Edward R. Rockwell	*Engineering*	Columbus, Ohio.
Miriam Sener	*Letters*	Lancaster, Pa.
Mary T. Shoemaker	*Letters*	Philomont, Va.
Bertha J. Smith	*Letters*	Lincoln, Va.
Martha W. Sommer	*Letters*	Quakertown, Pa.
Marshall P. Sullivan	*Science*	Moorestown, N. J.
Lillie C. Swayne	*Irregular*	St. Augustine, Fla.
John W. Tindall	*Irregular*	Philadelphia, Pa.
Arthur H. Walker	*Engineering*	S. Charleston, Ohio.
Channing Way	*Arts*	West Chester, Pa.
Edith Wilder	*Letters*	Johnson City, Tenn.

SUB-COLLEGIATE CLASS.

Name.	Residence.
M. Helen Catlin	Lexington, Mass.
Sabina K. Green	Wynnewood, Pa.
Emily Hicks	Westbury Station, N.Y.
Alfred Kappeler	Washington, D. C.
Effingham Lawrence, Jr.	Bay Side, N. Y.
Annie B. Parrish	Woodbury, N. J.
Eva T. Rengier	Lancaster, Pa.
Sarah A. Shreve	Philadelphia, Pa.
W. Frederick Sims	Washington, D. C.
Elizabeth L. Stroh	Kingston, Pa.
Joseph E. Way	Kennett Square, Pa.
Mary J. Young	Morton, Pa.

Summary.

Seniors	30
Juniors	34
Sophomores	59
Freshmen	59
Sub-Collegiates	12
Total	194

Summary by States.

Pennsylvania	93
New Jersey	22
Maryland	19
New York	18
Delaware	7
Virginia	7
Ohio	5
Illinois	3
Florida	2
Tennessee	2
California	1
Georgia	1
Massachusetts	1
Minnesota	1
New Hampshire	1
New Mexico	1
Rhode Island	1
South Dakota	1
West Virginia	1
District of Columbia	4
Canada	2
Mexico	1
Total	194

SWARTHMORE COLLEGE.
(MAIN BUILDING LOOKING WEST.)

General Information.

Buildings and Grounds.

Swarthmore College was founded in 1864 by members of the religious Society of Friends, to provide the children of the Society and others with opportunities for higher education under guarded care. With this object in view, a property of two hundred and forty acres was secured, ten miles from Philadelphia, on the Central Division of the Philadelphia, Wilmington, and Baltimore Railroad. It is accessible by trains from the Broad Street Station, twenty-four times daily. About half the land is used for farming purposes, providing milk and vegetables for the College; the remainder is devoted to lawn and pleasure grounds. Crum Creek, which forms the western boundary of the property, affords facilities for boating, bathing, and skating. The portion of the grounds bordering the stream is of great picturesque beauty. The building site is high, securing perfect drainage and pure air and commanding a fine view of the surrounding country for many miles.

The Principal College Building is a massive stone structure 348 feet long. It consists of a central building, five stories high, containing public rooms, such as lecture-rooms, museum, library, reading-rooms, parlors, dining-hall, etc. Fire-proof compartments separate this building from the two wings. The latter are each four stories high. The ground-floors are devoted to lecture and recitation rooms; the remaining floors in the east wing contain the dormitories of the young women, and in the west wing those of the young men. A number of the instructors reside in the same building with the students, and the relations between them are such that there is comparative freedom from the dangers and temptations ordinarily incident to college life. The buildings are heated throughout by steam, lighted by gas, and thoroughly ventilated.

The Science Hall is constructed of stone, in the most durable manner, and was planned with special reference to the work of students in Engineering, Physics, and Chemistry. It has a frontage of 130 feet, and a depth of 64 feet. The basement contains the testing laboratory, the wood-working shop, the blacksmith shop, and the foundry of the engineering department, and store-rooms. On the first floor are the machine shop and engineering lecture-room, and the chemical and physical laboratories, and on the second floor are the draughting-rooms and the chemical lecture-room.

The Astronomical Observatory is especially arranged for purposes of instruction. The plan embraces a central building supporting the dome, and two wings. There are four rooms: a transit-room, in which is placed an instrument of three-inch aperture, also the mean-time clock; a pier-room, at present utilized as a sidereal-clock room; a work-room in which is placed a small library of reference books, the chronograph and chronometer; and the dome, containing the equatorial of six-inch aperture. In connection with this latter instrument, there is a micrometer and a spectroscope. The transit and equatorial were constructed by Warner & Swasey, of Cleveland, O., and the spectroscope by Brashear, of Allegheny, Pa. The equipment is ample for class-work. Connected with the observatory is the Signal Service Station of the State Weather Bureau, fully provided with the necessary meteorological and other apparatus.

Other Buildings are a meeting-house, the President's house, the West house (birthplace of Benjamin West, now used as a professor's house), the house of the Professor of Astronomy, the Farmer's house and commodious farm-buildings, the laundry and bakery, the boiler-house, containing the sectional boilers for heating and cooking purposes, and the gymnasium for young women, in course of construction. All these buildings are constructed of stone.

Libraries and Reading-Room.

The Libraries of the College collectively contain 15,829 bound volumes, as follows:

The General Library	10,524
Literary Societies' Libraries	3,414
Friends' Historical Library	1,891

Members of the Senior Class are permitted, under proper regulations, to consult the Philadelphia Library, containing 145,000 volumes, and the Mercantile Library, containing 150,000 volumes, as well as the valuable special and technical Libraries in the city of Philadelphia. The General Library is at all times accessible to students. The Librarian will aid students in consulting the Library and in arranging courses of reading.

Friends' Historical Library, founded by the late Anson Lapham, of Skaneateles, N. Y., consists of a valuable collection of Friends' books, photographs of representative Friends, and manuscripts relating to the Society and its history, and is, upon application to the Custodian, accessible to all persons interested in the doctrines and history of Friends. This Collection is stored in a fire-proof apartment, and it is hoped that Friends and others will deem it a secure place in which to deposit books and other material in their possession which may be of interest in connection with the history of the Society. Such contributions as well as additional funds for its growth and maintenance are solicited, and should be addressed to "Friends' Historical Library," or to "ARTHUR BEARDSLEY, *Curator*, Swarthmore, Pa."

The Reading-Room is supplied with the leading literary and scientific journals and the prominent newspapers of the principal cities.

Literary Societies are maintained by the students. There are two for young men and one for young women. These hold regular meetings for the reading of essays, etc., and for practice in debate. Their Libraries, under their own management, contain over three thousand volumes and are accessible to all students.

The Gymnasium.

The *Gymnasium* is supplied with a full set of apparatus for exercising according to the system of Dr. Sargent. The exercises are conducted in separate classes for the young men and young women, and are required of all.

Students are requested to bring from home a physician's certificate, if there is any cause that would make it dangerous for them to take part in the exercises required.

A large room in the main building also is set apart for the exer-

cises of the young women, pending the completion of the new Gymnasium now under construction for their especial use.

The extensive and beautiful grounds connected with the College invite to out-door exercise, which is encouraged by the authorities. On the highest and driest part of the campus a space has been prepared for athletic games, with a quarter-mile cinder running track, and a well-graded field for foot-ball and base-ball, whilst the surrounding country offers facilities for cross-country running.

General Regulations.

Religious Exercises.—While care is taken to inculcate the doctrine that religion is a matter of practical daily life, and is not confined to the observance of set forms or the promulgation of religious tenets, the regular assembling for religious purposes is carefully observed. On First-day morning a religious meeting is held, attended by students, teachers, members of the household, and Friends of the neighborhood. The meeting is preceded by First-day school exercises, consisting of the recitation of passages of Scripture prepared by members of the different classes, and the reading of a portion of Scripture. The daily exercises are opened by a general meeting for reading selected portions of Scripture or other suitable books, and for imparting such moral lessons as circumstances seem to require, followed by a period of silence before entering upon the duties of the day.

Permission to leave the College grounds will be granted or refused according to the written request of the parents. In the absence of such request the Faculty will exercise its own discretion in the matter.

Students may be visited on week-days, by parents or guardians or near relatives, or by others approved by parents or guardians; but general visiting is discouraged. *Students must not be interrupted in their studies or recitations at any time, nor must they be visited on First-day.*

All persons who are interested in education, and who are desirous of examining the methods of instruction and discipline at Swarthmore, will be welcomed at any time, and should, when convenient, communicate with the President upon the subject in advance.

The use of Tobacco being strictly prohibited, those addicted to its use, unless prepared to renounce it entirely, should not apply for admission.

Commencement and Vacations.—The College year begins on the third Third-day of Ninth month, and closes with Commencement-day, which occurs on the second Third-day of Sixth month.

Students are not admitted for a period less than the current College year; but, when vacancies exist, they may enter at any time during the year.

Besides the summer vacation there will be a recess of about ten days at the close of the Twelfth month, one week in the Third month, and three days at Thanksgiving. (See Calendar.)

Students are permitted to remain at the College, under care, during the recesses, but not during the summer vacation.

The Household.

In the organization of this College unusual care has been extended to the personal comfort and the social interests of the students. This department is in charge of the Dean, with able assistants. She has also special oversight of the conduct and health of the young women, and parents are desired to communicate freely with her in regard to the welfare of their daughters.

The several departments of the household are under the immediate care of the following:

Sarah D. Coale, Matron of West Wing.
Rachel S. Eves, Matron of East Wing.
Rachel B. Townsend, Housekeeper.
Mary P. Eves, Matron of Central Building.
Anna Eliza Worrall, Director of Laundry.

Expenses.

The cost of Board and Tuition is $450 per year, of which $250 is payable in advance, and $200 on the first of First month.

For Day Students, the price is $200 per year, of which $100 is payable in advance, and the remainder on the first of First month. The day students take lunch with the resident students.

Students purchase their own books, which the College will furnish at the lowest obtainable rates. They also buy their own stationery, drawing implements, and certain tools and materials used in the workshops, and pay at a reasonable rate for laundry work done at the College. Students taking laboratory courses will make a deposit of $10 at the beginning of the course to cover the expense of the material used. The unexpended balance will be returned at the end of the course.

In case of illness, no extra charge is made unless a physician be employed.

The above figures may be depended upon as covering all necessary expenses.

Payments.

Payments are to be made by check or draft to the order of

ROBERT BIDDLE, Treasurer,

No. 507 COMMERCE STREET, PHILADELPHIA, PA.

Fellowships and Pecuniary Aid.

The JOSHUA LIPPINCOTT FELLOWSHIP, founded by Howard W. Lippincott, A. B., of the Class of 1875, in memory of his father, consists of a fund of $10,000, the income of which is granted annually by the Faculty, with the concurrence of the Instruction Committee, to a graduate of this College engaged in advanced study under the direction or with the approval of the Faculty.

The Committee on Trusts, Endowments, and Scholarships holds in trust certain funds, the income of which is used to aid deserving and needy students who are pursuing their studies at this College. Full information as to the conditions and amount of such pecuniary aid may be had on application to

REBECCA C. LONGSTRETH, *Secretary*,
Sharon Hill, Pa.

Introductory.

The studies required for a Degree extend over four years. The requirements for admission are intended to be such as Friends' schools generally can meet. Owing to the enforcement of regular hours for study, and the absence of all opportunity for dissipation, the amount accomplished in four years is large, and is believed to afford a sufficient preparation in classics, science, and general culture for the ordinary avocations of life, for the study of any of the learned professions, or for the pursuit of special courses in the higher universities.

Time and Conditions of Admission.

To secure places, application for admission should be made as early as possible by letter to the President.

All applicants must submit satisfactory testimonials of good character from their last teachers, and students coming from another college must present certificates of honorable dismissal.

The examinations for admission may be taken either in the summer at the close of the college year, or in the fall. The times are as follows for the year 1894.

Summer Examinations, 1894.

Sixth-day,	Sixth	month	8th,	at 8.15 A.M.	Mathematics.
"	"	"	"	10.30 A.M.	English.
"	"	"	"	2.00 P.M.	History.
"	"	"	"	3.00 P.M.	Latin.
"	"	"	"	4.00 P.M.	Greek.
Seventh-day,	"		9th,	at 8.15 A.M.	Geography.
"	"	"	"	9.15 A.M.	German.
"	"	"	"	10.15 A.M.	French.

Fall Examinations, 1894.

Candidates should present themselves at the College on the afternoon of Third-day, Ninth month 18th, 1894.

The Examinations will occur as follows:

Fourth-day,	Ninth	month	19th,	8.15 A. M.	Mathematics.
"	"	"	"	10.30 A. M.	English.
"	"	"	"	2 P. M.	History.
"	"	"	"	3 P. M.	Latin.
"	"	"	"	4 P. M.	Greek.
Fifth-day,	Ninth	month	20th,	8.15 A. M.	Geography.
"	"	"	"	9.15 A. M.	German.
"	"	"	"	10.15 A. M.	French.

Students are also admitted at any time during the year, and are charged for the unexpired time until the close of the year.

Requirements for Admission.

All candidates for admission to the Freshman Class will be examined in the following subjects:

1. MATHEMATICS.—*Arithmetic.*—Entire.

Algebra.—Through Equations of the second degree.

Geometry.—The whole of Plane Geometry.

2. ENGLISH.—The candidate will be asked to write a few pages upon some assigned subject, or from dictation. This exercise will be examined with reference to Grammar, Spelling, Paragraphing, Punctuation, and the use of Capitals. An examination will also be given in the principles of the grammar.

3. HISTORY.—A thorough preparation in the outlines of the history of the United States, and a thorough outline course in *either* the history of England *or* in general history. The amount required in each subject is equivalent to what is contained in the following text-books: Eggleston's School History of the United States, Gardiner's School History of England, Barnes's General History.

4. GEOGRAPHY.—The general facts of Physical, Descriptive, and Political Geography, especially of the United States and Europe.

5. In addition to the above, candidates will be examined as follows:

(1) *For the Classical Course* in

* LATIN.—Cæsar, Gallic War, four books; Virgil's Æneid, six books; Cicero, seven orations (including those against Cataline); Collar's Latin Composition.

GREEK.—Greek Grammar (Goodwin's recommended); elementary Greek Composition; Xenophon—Four books of the Anabasis; Homer—Three books of the Iliad; General History of Greece to the death of Alexander.

For candidates who pass a satisfactory examination in the above, Greek will be *elective* after the Sophomore year.

Candidates for the Classical Course who present no Greek will be required to pursue the study during the *entire four years* of college—a class for beginners being formed in the Freshman Year.

(2) *For the Literary Course*, in English Literature and in French or German,† as follows:

ENGLISH LITERATURE.—Candidates are expected to be familiar with Longfellow's Tales of a Wayside Inn, Lowell's Vision of Sir Launfal, Irving's Sketch Book, Whittier's Tent on the Beach, Hawthorne's House of the Seven Gables, and to write a short composition upon a subject taken from one of these works.

FRENCH.—*French Grammar.*—Inflections of regular verbs and auxiliaries; forms of articles, nouns, adjectives, and pronouns; common irregular verbs; general principles of Syntax. Super's Preparatory French Reader; varied selections (entire); dictées.

GERMAN.—Elements of German Grammar, and ability to translate, at sight, easy German prose.

(3) *For the Engineering Course*, in English Literature and in French or German,† as above.

(4) *For the Science Course*, in English Literature and in French or German,† as above.

Students applying for admission into the Freshman Class who may be found unable to meet all requirements, will be afforded an opportunity of completing their preparation by entering the Sub-Collegiate Class. This privilege will, however, be accorded

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* For three books of the Æneid, a corresponding amount of Ovid and of Virgil's Bucolics will be accepted as an equivalent.

† Latin will be accepted as an equivalent for French or German for admission to this course.

to those only who shall be able to complete such preparation in a period not longer than one year.

Admission Without Examination.—Graduates of the following Schools are admitted to the Freshman Class without examination upon presenting regular certificates properly filled up by the Principals of the Schools named.*

Friends' Central School,	Philadelphia, Pa.
Friends' Seminary,	New York, N. Y.
Friends' High School,	Baltimore, Md.
Woodstown Academy,	Woodstown, N. J.
Friends' School,	Wilmington, Del.
Friends' High School,	West Chester, Pa.
Friends' High School,	Moorestown, N. J.
Buckingham Friends' School,	Lahaska, Pa.
Friends' Academy,	Locust Valley, L. I.
Friends' Select School,	Washington, D. C.
Sherwood School,	Sandy Spring, Md.
Friends' School,	Kennett Square, Pa.
Providence Preparative Meeting School,	Media, Pa.
Oakland Boarding School,	Fallston, Md.
Friends' Normal Institute,	Rising Sun, Md.
Abington Friends' School,	Jenkintown, Pa.
Swarthmore Grammar School,	Swarthmore, Pa.
George School,	Newtown, Pa.

Blank certificates will be furnished each year to the Principals of these preparatory Schools and to such private teachers as may be named for the privilege. The right is reserved, however, to withdraw from such School or teacher the privilege of sending pupils into College on certificates.

Pupils from these Schools intending to enter the College, should apply by letter for places as soon as convenient after the completion of their preparation. They should present themselves at the College on Fifth-day, Ninth month 20th, 1894.

Principals of other Schools who wish to have students admitted on their recommendation, should correspond with the President concerning each case.

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* Other Friends' Schools may on application be added to this list, if the Faculty and Instruction Committee shall be satisfied that they are taught by competent teachers and are furnishing the requisite preparation for admission.

Examination for Higher Classes.—Candidates for classes higher than the Freshman Class must pass satisfactorily in all the subjects pursued by the lower class or classes; and students coming from other Colleges must present letters of honorable dismissal and must show that they have pursued courses of study equivalent to those taken by the classes they wish to enter.

Partial Courses of Study.—A limited number of teachers and other persons of fair education and of sufficiently mature age who may wish to improve themselves in particular studies, will be received without examination, and allowed to elect, in any of the regular classes, such work as they can pursue to advantage. They should in all cases correspond with the President in advance.

Courses of Instruction.

ALPHABETICALLY ARRANGED.

For required and elective studies, and the number of exercises per week in each, see pages 59–62.

Biology.

SPENCER TROTTER, *Professor;* JOHN C. GIFFORD, *Instructor.*

The purpose of biological studies is to train students in the right methods of thinking and the interpretation of the facts and problems continually presented to them by natural objects.

Lectures, demonstrations, and text-books are employed in connection with field and laboratory work. The Course *is required of all Science students.*

The Course is arranged as follows:

FRESHMAN CLASS.—*Required of Science Students.*—Elements of Biology.

Text-books.—Orton's "Comparative Zoology;" Trotter's "Abstract of Zoology;" Colton's "Practical Zoology."

SOPHOMORE CLASS.—Sanitary Science, elective for Engineers.

JUNIOR CLASS.—1. Physiology of Plant Life.

2. Morphology and Physiology of a high form of animal. Text-books.—Mivart, "The Cat;" Huxley & Youman's "Physiology."

SENIOR CLASS.—Vertebrate Morphology, Economic Botany, Geology. Text-book, "Le Conte's Elements" (elective).

Independent Work.—Preparation and writing of a thesis on some biological subject.

Time for work to be arranged with the Professor.

MUSEUM.

The Museum.

The Museum of the College is strictly a teaching collection, and the specimens from its cases are in constant use in the lectures and laboratories in Natural History; it is growing steadily, but always in the direction of rendering more perfect the means of illustrating the different departments of natural history, and with no intention of making it a collection of curiosities or miscellaneous articles, however interesting they may be in their way.

It includes the following collections:

1. The *Joseph Leidy Collection of Minerals*, the result of thirty years' discriminative collecting by its founder, occupies four large double cases, and consists of exceedingly choice cabinet specimens of crystallized minerals, characteristic rocks and ores, and transparent and opaque models of the various systems of crystallization.

2. The *Collection of Comparative Osteology* consists of a large series of partial and complete skeletons, prepared at Prof. Henry Ward's Natural History Establishment in Rochester, N. Y., and illustrating the structure and framework of backboned animals.

3. The *Wilcox and Farnum Collection of Birds* comprises four large double cases of stuffed specimens of native and foreign birds. Nearly all the specimens visiting this State are represented.

4. The *Frederick Kohl Ethnological Collection* consists of two cases of Indian implements, weapons, clothing, etc., mostly from Alaska.

5. The *C. F. Parker Collection of Shells* is made up of six large cases of choice typical land, fresh water, and marine shells. These specimens were all selected by the Curator from the extensive collection of the late C. F. Parker, and render further additions to this branch needless. The founder of this collection was for many years the Curator in charge of the Academy of Natural Sciences of Philadelphia.

6. The *Robert R. Corson Collection of Stalactites, Stalagmites, and Helictites*, represents the celebrated Luray Caverns, and illustrates the limestone formations which render these caverns the second in magnificence in the world.

7. The *Eckfeldt Herbarium* consists of over two thousand plants, illustrating the flora of Pennsylvania.

In addition to the above, there is a large and constantly increasing collection of stuffed and alcoholic specimens of vertebrates and invertebrates (including the U. S. Fish Commission Educational Collection), of dissected specimens for demonstration in the lectures on Physiology and Hygiene, glass and papier-maché models of invertebrates and of special points in vegetable and animal morphology, besides some three hundred classified diagrams and finely colored charts illustrating every branch of natural history.

Chemistry.

WILLIAM C. DAY, *Professor;* ARTHUR P. BRYANT, *Assistant.*

The course of instruction in this subject extends over a period of four years, and aims to impart a thorough understanding of the most essential facts and principles of the science, while special attention is given to the cultivation of systematic habits of manipulation, so that, besides possessing value as part of a liberal education, it forms a foundation for such pursuits in life as require this knowledge.

Those who may desire to continue their work beyond the limits of the regular course will have suitable work assigned them, and will find every facility for carrying it on.

The Chemical Laboratory occupies rooms in Science Hall. It includes a room for work in general Chemistry and Qualitative Analysis, one for Quantitative Analysis, and a basement room for Assaying and Metallurgy. Near to these are store-rooms, a balance-room, and a lecture-room. The Laboratory tables are covered with glazed tiles; fume-closets, suction for filtration, water and gas are provided. The lecture-room, with a seating capacity of one hundred, is furnished with water, gas, fume-closets, and abundant apparatus for lecture purposes. For lecture illustration, there is an excellent collection of the metals and their salts, and a cabinet of minerals (deposited by Hugh Foulke); in addition to these, there is a complete set of typical preparations for use in the course in Organic Chemistry.

Chemical Library.—In all cases students are encouraged in the habit of consulting for themselves the best authorities; and in a room near to the Laboratory there will be found a number of standard works on Chemistry; besides there are numerous other works on

CHEMICAL LABORATORY.

technical and analytical subjects, current chemical journals, including some complete sets of the latter.

Text-Books.—As the student advances in the course the following text-books are used: "Elementary Chemistry," Remsen; "Qualitative Analysis," Medicus; "Introduction to the Study of the Compounds of Carbon," Remsen; "Quantitative Chemical Analysis," Fresenius; "Theoretical Chemistry," Remsen. Special works in technical analysis are used as required.

FRESHMAN CLASS.

a. Lectures (Experimental).—General Elementary Chemistry (non-metals and metals), with examinations.

b. Laboratory Work.—Special exercises on topics selected with the object of stimulating intelligent experimentation.

SOPHOMORE CLASS.

a. Lectures.—Theoretical Chemistry, followed by Qualitative Analysis.

b. Laboratory Work.—Qualitative followed by Quantitative Chemical Analysis.

JUNIOR CLASS.

a. Lectures.—Chemistry of the compounds of carbon.

b. Laboratory Work.—Quantitative Analysis, followed by a number of exercises in important, typical, organic transformations.

SENIOR CLASS.

The course during this year consists largely of laboratory work. A few special subjects are given to each student, with the understanding that he is to fulfill the practical and theoretical requirements of these subjects in a complete, exhaustive, and scholarly manner. Such work will involve the study of technical works and a number of the current chemical journals. Meetings will occasionally be held for the consideration of important researches, as they appear from time to time in the journals.

Drawing and Painting.

BEATRICE MAGILL, *Instructor.**

A course of Freehand Drawing and Painting is open to all. Aside from its intrinsic value as a means of culture, it leads to habits of close observation, and is a very important adjunct to the other courses, especially to those of Engineering and Science.

It consists of drawing from objects and casts, and painting from still-life, flowers, etc., and a series of lectures on Practical Perspective and the History of Painting. A Sketch Class is open to the students qualified to work in it. It is held one afternoon a week for out-door sketching in the Spring and Autumn, and during the Winter-time sketches are made in the studio from casts and still-life, in color and light and shade.

FRESHMAN CLASS.—Drawing from geometrical objects; cast, ornament, still-life.

SOPHOMORE CLASS.—Drawing from cast, details of figure. Painting from still-life.

JUNIOR CLASS.—Drawing from cast, details of figure. Painting, still-life, flowers, out-door sketching.

SENIOR CLASS.—Drawing from cast, head or figure. Painting, still-life, flowers, out-door sketching.

History of Art.

JUNIOR CLASS.—(*Elective*), *two periods a week.*

First Semester:—History of Italian Art, the Renaissance.

Second Semester:—History of Art in Germany, England, and Spain.

SENIOR CLASS.—(*Elective*), *two periods a week.*

First Semester:—History of Art in France; Modern Art.

Second Semester:—Grecian Art.

The students are required to present written sketches upon the subjects under consideration and to visit the different art exhibitions held in Philadelphia during each season.

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* For the present year CAROL H. BECK, *Instructor.*

MACHINE SHOP.

Engineering and Mechanic Arts.

ARTHUR BEARDSLEY, *Professor;* JOSEPH BAYLEY, JR., *Shop Practice.*

This department, in connection with that of Physics, is intended to give a good preparation to those students who are expecting to become either Civil or Mechanical Engineers, or to engage in any of the several specialties of engineering practice.

The studies and exercises are so arranged that the graduates will be prepared to become immediately useful in the office, works, or field, in subordinate positions, and, after a fair amount of such practice, to design and take charge of important works.

The location of the College is most favorable for residence and study, combining the quiet of the country with ready access to Philadelphia and the many important manufacturing cities in its vicinity, and permitting frequent visits to industrial and engineering works of every kind.

The department is well provided with the necessary field instruments, transits, levels, plane-table, etc., and each student is made familiar with their use and management by practical exercises in the field and draughting-room, carefully planned to illustrate the actual practice of the engineer. Included in the work of this department is a course in the Mechanic Arts, in which regular and systematic instruction is given in thoroughly-equipped workshops, and by skilled instructors in the use of tools and machinery, and in methods and processes.

The Draughting-Rooms are lighted from the north, and furnished with adjustable tables, models, etc., are well ventilated and warmed, and are open for work during the greater part of the day.

The Engineering Laboratory contains an Olsen's testing-machine, arranged for tensile, compressive, and transverse tes s, a steam-engine indicator, apparatus for hydraulic and steam-engine experiments, and other valuable instruments and appliances. It includes several shops, in which the students become familiar with the nature and properties of the materials of construction (iron, wood, brass, etc.), employed by the engineer, and with the process of working them into the desired forms for their intended uses.

The Machine Shop contains an excellent and complete assortment

of tools, including 4 screw-cutting engine lathes, 3 speed-lathes (simple and back-geared), an iron planer, a complete universal milling machine, a set of milling cutters adapted for general purposes and for making other cutters, a shaper, a twist-drill grinder, 2 upright drills, an emery grinder, a mill grinder, a grindstone, 16 vises (plain and swivel), 14 lathe chucks (combination, independent, scroll, and drill), a milling machine chuck, a rotary planer chuck, planer centres, a set of Bett's standard gauges, surface plates (Brown & Sharpe), sets of twist drills, reamers, mandrels, screw-plates, taps and dies, lathe centre grinder, a complete set of steam-fitters' tools with pipe vise, ratchet drill, etc., together with the many necessary small tools, hammers, chisels, files, etc. Additions are constantly being made to this collection, as they are needed, either by manufacture in the shops or by purchase. Power is furnished by a steam engine and boiler, the former fitted with an improved indicator, and the latter with the necessary attachments for determining its efficiency, etc.

The Wood-Working Shop contains 20 benches with vises, and 20 sets of wook-working tools, a grindstone, and wooden-turning lathes.

The Smith Shop contains 7 forges, 10 anvils, and sets of blacksmith tools, bench, and vise.

The Foundry contains a brass-furnace, moulders' benches, a variety of patterns, and full sets of moulders' tools.

The details of the course vary somewhat from year to year ; but, in general, are represented by the following arrangement of the studies :

FRESHMAN CLASS.

Shop Practice.—Wood-working and Pattern-making, Blacksmithing and Foundry Practice. Vise work, chipping and filing to line, scrapings, fitting, tapping, reaming, hand-turning in brass and iron.

Drawing.—Special geometric problems, working drawings, orthographic projections, shadows, brush work and tinting, machine drawing from copy and from measurements, gears, eccentrics, cams, pulleys, belting, etc.

Engineering.—Lectures on use of tools, on the properties of materials, etc.

SOPHOMORE CLASS.

Engineering.—Analytical mechanics of solids and fluids ; descriptive geometry, including shades, shadows, and perspective, and the

careful construction of the more important problems; land surveying, with field practice and map drawing.

Machine-Shop Practice.—Lathe work, turning, boring, screw-cutting, drilling, planing, milling, grinding, polishing, etc., construction of a project. Lectures on machine tools, on materials of construction, etc.

Drawing.—Working drawings, sketches, drawings and blue prints for special work and projects, elements of machines, shadows and intersections, perspectives and finished drawings.

JUNIOR CLASS.

Engineering.—Theory and practice of road surveying and engineering.

Geodesy.—Theory, adjustment and use of engineering field instruments; farm surveying; leveling; topographical, triangular, and hydrographical surveying.

Applied Mechanics.—Friction and other resistances; stress and strength of materials.

Drawing and Mechanism.—Topographical, structure, and machine drawing; principles of mechanism; visits to and sketches of special machinery and structures.

Practical Exercises in the field in the Fall and Spring months, and in general laboratory practice, including the testing of metals and building materials, the setting up, testing, and management of steam-engines, boilers, and machinery, throughout the year; with occasional visits to mechanical establishments, and to important engineering works in or near Philadelphia.

For the Electrical Work, see department of Physics.

SENIOR CLASS.

Engineering.—Theory and practice of road surveying and engineering, continued; building materials; stability of structures; foundations and superstructures; bridge construction.

Applied Mechanics.—Practical hydraulics; practical pneumatics; general theory of machines; theory of prime movers, steam-engines, turbines, etc.; measurement of power.

Mechanism.—Principles of mechanism, of machine design, of the transmission of power; construction and use of tools.

Drawing.—Stone-cutting problems; topographical, structure, and machine drawing; plans, profiles, and sections of road surveys; working drawings.

Practical Exercises.—As in Junior year, continued; tests of building materials; graduating thesis.

The Degree conferred at the completion of the course is Bachelor of Science in Engineering.

English Composition.

J. Russell Hayes, *Instructor.*

The aim of this course is to secure a mastery of the art of expressing thoughts clearly and correctly.

It is required of all regular students and extends over the whole four years.

Course in Letters.—The composition work is intimately connected with the study of English Literature. The subjects of the essays are drawn from the particular authors upon which the class is engaged. In the earlier years attention is directed to Form, Punctuation, Paragraphing, etc. In the advanced classes a study is made of the various styles of writing. The masters of good English are followed, and the methods of criticism and authorship are inquired into.

Courses in Arts, Science, and Engineering.—The details of correct composition are taught, and the same progressive work is done as in the course above described. As far as possible the essays are upon subjects relating to the studies of the student's particular course.

No text-book is used in the lower classes. In the Junior year Genung's Rhetoric and Rhetorical Analysis are used.

English Language and Literature.

William H. Appleton, *Professor.**

The course in English Literature extends through four years, instruction being given by recitations and lectures. During this time

* Richard Jones, Professor-elect, will assume charge of the English Department in the second semester of the present college year. William H. Appleton, Professor of Greek, will be associated with Professor Jones, and will continue in charge of one of the advanced classes.

the English Language is studied in connection with the Literature from the Anglo-Saxon period down to the present day. The particular feature of the course is the critical reading in the class-room of representative authors, such as Chaucer, Shakespeare, Milton, Pope, Tennyson. Peculiarities of style and language are considered, allusions are looked up, and every effort made for a thorough comprehension of the work in hand. The author's life is studied in its relation to the history of the time, and his works are compared with those of his contemporaries. By this course it is expected that the student will be enabled, from his own observation, to form an intelligent estimate of the style and merits of the great authors of English Literature.

The courses offered are as follows:

FRESHMAN CLASS.

The nineteenth century authors of England and America. (Hereafter this year's work will include a historical survey of the Greek and Latin Literatures.)

Independent of the above is a special one-year course, required of Freshmen students in Engineering. This begins with lectures on the Greek and Latin authors, and extends over the whole field of English Literature. Parts of Homer's *Iliad* are read through the translation of Alexander Pope. The chief English authors of each age are taken up and selected portions of their works studied.

SOPHOMORE CLASS.

The period from about 1750, continuing into the nineteenth century.

SENIOR AND JUNIOR CLASSES.

The period from Shakespeare to Dr. Johnson.

In future the Junior English will consist of the study of Anglo-Saxon, Chaucer, and Spenser; and the Senior class will study, in an advanced and philosophical manner, the works of Homer, Dante, and Goethe in English translation, and in the same manner the works of our own ethical poets, Shakespeare, Wordsworth, and Browning.

French.

EDWARD H. MAGILL, *Professor.*

The objective points in the study of the French language will be wide and extensive reading, making the student as familiar as the time will allow with as many as possible of the best works in French Literature. To this end a minimum of grammar will be required, and rapid reading at sight encouraged early in the course. While the classical authors of the seventeenth century will receive careful attention, as much of the literature of the present generation as is found practicable will be introduced into the course. It is not possible nor necessary to name the various works used, as they will be changed from year to year, as circumstances and the condition of classes seem to require. Course III will be given to the Seniors and Juniors together, and will be so arranged as to amount to two years' work for those who have completed Courses I and II, and the same authors will not be read in this course in two consecutive years.

COURSE I. Time, one year. French Grammar—inflections of regular verbs and auxiliaries; forms of articles, nouns, adjectives, and pronouns; common irregular verbs; general principals of syntax. Super's Preparatory French Reader; Magill's "Modern French Series," Vol. I; Dictées.

Required of Sub-Collegiate students who do not elect German, and subject of examination for entrance to Freshman Class by those who offer a year's work in French; also first year's work for those who must begin French after entering the Freshman Class. The corresponding Course I in German may be substituted for this course by students of *Arts* and *Engineering*, or may precede it for other students.

COURSE II. Time, one year. French Grammar reviewed and completed; Magill's "Modern French Series," Vol. II; varied selections (entire) from modern French writers; Dictées.

Required of students of French who have completed Course I or have passed an entrance examination upon it.

COURSE III. Time, one year. Magill's "Modern French Series," Vol. III; Corneille's Cid and Polyeucte; Racine's Athalie and Esther; Molière's Misanthrope and Les Précieuses Ridicules; Vic-

tor Hugo's Hernani and other selections (entire) from modern French writers; Dictées; Mme. Delphine Duval's Littérature Française.

Required of students of French who have completed Courses I and II.

N. B.—Science and Engineering students will omit the Second Semester's work in this course, and substitute for it a special course in Scientific French.

NOTE.—Students in Letters and Science who complete French during their Freshman and Sophomore years will take German during their Junior and Senior years, and *vice versa*.

German Language and Literature.

MARIE A. KEMP, *Professor*.

The course in German language and literature extends through four years. Its object is to give the student a reading and—in so far as possible—speaking knowledge of modern colloquial German; also a general acquaintance with German literature, to be gained from lectures, private reading, and critical study of some of the German classics.

FIRST YEAR.

Joynes-Meissner's German Grammar (Part I).
Selections from Grimm's *Märchen*.
Riehl, two *Novellen*.
Lessing, *Minna von Barnhelm*, or Freytag, *Die Journalisten*.
Prose composition.
Memorizing of lyrics and ballads.

SECOND YEAR.

Joynes-Meissner's German Grammar (continued).
Freytag, *Aus dem Staat Friedrichs des Grossen*.
Goethe, *Götz von Berlichingen*.
Schiller, *Historische Skizzen*.
Private reading from Scherer's *History of German Literature*.

THIRD YEAR.

Schiller, *Wallenstein*.
Heine, *Harzreise* (ed. Buchheim).
Goethe, *Iphigenia auf Tauris*.
Lectures on History of German Literature.
Private reading from Buchheim's *Deutsche Lyrik*.

FOURTH YEAR.

Goethe, *Egmont* (ed. Buchheim) *Briefwechsel Zwischen Goethe und Schiller* (ed. Cotta).

Goethe, *Faust* (ed. Thomas).

Von Scheffel, *Ekkehard* (first part).

Private reading: *Ekkehard* (concluded), and Sime's *Life of Goethe*.

Greek.

WILLIAM H. APPLETON, *Professor;* ABBY M. HALL, *Assistant.*

I. Students who present the usual College requisition in Greek (see page 27) will be required to continue the study for two years, with the privilege of electing it thereafter, in accordance with the following scheme:

FRESHMAN YEAR (REQUIRED).

Poetry—Homer: The Iliad or Odyssey (Selections).

Prose—The Greek Historians: Herodotus and Thucydides (Selections).

SOPHOMORE YEAR (REQUIRED).

Poetry—Greek Tragedy: Æschylus, Sophocles. One play of each.

Prose—Plato's Apology and Crito, Xenophon's Memorabilia. (A study of Socrates.)

JUNIOR YEAR (ELECTIVE).

Poetry—Euripides: Several plays.

Prose—Demosthenes: The Oration on the Crown.

SENIOR YEAR (ELECTIVE).

Poetry—Aristophanes, Lyric poets.

Prose—Plato's Dialogues. Modern Greek. Readings in Vincent and Dickson's Hand-book, with colloquial exercises. Lectures on the History of Greek Literature.

Note.—All the classes have exercises in Greek Composition with much practice in sight-reading.

II. Students who present no Greek at the admission examinations will be required, in order to graduate with the degree of A. B., to take the language for the entire four years as follows:

FRESHMAN YEAR.

Goodwin's Grammar, Xenophon's Anabasis, Greek Testament.

SOPHOMORE YEAR.

Xenophon's Memorabilia, Plato's Apology and Crito.

JUNIOR YEAR.

Homer: The Iliad or Odyssey (six books).
Greek Historians (Selections).

SENIOR YEAR.

Greek Drama: Two plays. Greek Prose, Modern Greek, Lectures on Greek Literature.

Note.—Greek Composition and sight-reading in all the classes.

History and Political Science.

WILLIAM P. HOLCOMB, *Professor.*

This department, in connection with that of Political Economy and Social Science, is designed to furnish information that is necessary for intelligent citizenship, and to provide a valuable preliminary training for those who intend to engage in the law, in journalism, in business, or in the public service. Instruction is given by means of lectures, recitations, and oral and written reports by the students on assigned topics. In the most advanced courses each student is required to make an independent and detailed study of some assigned or chosen subject. For this purpose the library contains a good working collection of public documents and reports, both Federal and State, in addition to the standard treatises.

All the courses are for a half-year each, and are given four hours a week.

The following is a detailed statement of the courses:

HISTORY.

FRESHMAN YEAR.

First Semester: History of Greece and Rome. The germs of civilization received by the Greeks from the Orient are first studied, then a general survey of Grecian civilization, and a detailed study of

the Spartan and Athenian institutions. This is followed by the history of Rome with special reference to her laws and constitution, and the administration of the early Empire.

Second Semester: The History of Civil Government in the United States, embracing local, State, and National, and the Constitution of Pennsylvania.

SOPHOMORE YEAR.

First Semester: The Renaissance and Reformation. The course is introduced with a study of Primitive Christianity and the History of the Church during the Middle Ages, the Mediæval Empire, the Rise of Free Cities, Feudalism and the Crusades, followed by the study of the Italian Renaissance, and the Reformation, with special reference to Germany.

Second Semester: The French Revolution, including a study of Civilization under the Absolute Monarchy, the Establishment of Democracy, Napoleonism, and the later history of Democracy in France and its spread in Europe. The class work will be chiefly confined to the period from the reign of Louis XIV to the Fall of the First Republic.

JUNIOR YEAR.

First Semester: Political and Constitutional History of England during the last three centuries, with required reading and examination on the preceding portion. Detailed study of Puritan England, with biographical accounts of its great men.

Second Semester: Political and Constitutional History of the United States, including a survey of the Social and Institutional History of the Colonies.

POLITICAL SCIENCE.

SENIOR YEAR.

First Semester: Lectures on the Theory of the State. Constitutional Law of the United States, and comparisons of its leading provisions with those of the Constitutions of England, France, and Germany.

Second Semester: The Elements of International Law, with the History of its Growth, and the History of American Diplomacy. In this course the question of Peace and Arbitration receives prominent treatment, and the History of Arbitration is carefully studied.

Latin.

FERRIS W. PRICE, *Professor.*

FRESHMAN CLASS.

Horace, Odes; Cicero's Letters; Latin Composition; Mythology.

SOPHOMORE CLASS.

Horace, Satires and Epistles; Livy; History of Latin Literature, lectures and study of characteristic passages from all the most important authors.

JUNIOR CLASS.

Remnants of Early Latin; Plautus, Trinummus; Terence, Phormio; Cicero, De Senectute; Latin Hymns.

SENIOR CLASS.

Selections from Lucretius and Catullus; Juvenal, three Satires; Tacitus, Agricola; Virgil, Georgics, and Æneid (Books VII–XII).

Sight-reading throughout the course.

The above will be the work for 1894–5.

A Latin Seminary is held monthly in two sections. The Senior-Junior section will this year (1893–94) investigate certain phases of Roman life and civilization, as religion, the family, education, etc. In the Sophomore-Freshman section, the aim will be to gain a clear conception of the actual appearance and physical conditions of ancient Rome, by a careful study of the topography, of the architectural remains, and of the notices in the works of Latin authors.

Logic.

WILLIAM I. HULL, *Instructor.*

SENIOR CLASS.

Two exercises a week during First Semester. (Jevons.)

Mathematics.

SUSAN J. CUNNINGHAM, *Professor;* HENRY V. GUMMERE, *Assistant.*

FRESHMAN CLASS.

Charles Smith's Treatise on Algebra; Elements of Geometry (Halsted); Plane Trigonometry (Loney).

SOPHOMORE CLASS.

Halsted's Geometry, finished; Byerly's Differential Calculus; Charles Smith's Conic Sections.

JUNIOR CLASS.

Byerly's Integral Calculus; Chauvenet's Spherical Trigonometry.

Elective Courses.

1. Modern Pure Geometry. An advanced course in pure geometry; subjects treated: Harmonic Ranges and Pencils, the theories of Involution, Perspective, Similar Figures, Reciprocation, Inversion, etc.

2. Higher Algebra, beginning with the Theory of Equations (Burnside and Panton) and continuing with Invariants, etc.

3. Plane Analytic Geometry, including Higher Plane Curves; the course will be a continuation of Conic Sections and will be based on Clebsch-Lindemann's Geometrie.

4. Solid Analytic Geometry (Charles Smith's).

5. Curve Tracing.

6. Differential Equations.

7. Trigonometric Series, Spherical Harmonics, etc. (Byerly's).

8. Elementary Quaternions (Kelland and Tait).

Astronomy (elective).

1. Young's General Astronomy.

2. Chauvenet's Spherical and Practical Astronomy.

3. Theoretical Astronomy (Orbit Determination).

Pedagogics.

PRESIDENT DE GARMO.

This department is in the hands of the President. Instruction in this branch of education consists, first, of a fundamental study of the principles of instruction by text-book, lectures, and practical exercises prepared by the student. A second department of work embraces a thorough-going study of each of the elementary branches in its pedagogical aspects, such as its rapidity of development in the course of

study, its history as a branch of education, both as regards its introduction and growth in importance, and the various stages of method through which it has passed. A third phase of the work is the study of the government and management of schools, and a fourth the study of the history of education.

Philosophy.

PRESIDENT DE GARMO,

SENIOR CLASS.

Psychology.—First Semester: Dewey's Psychology. Special attention paid to the processes of knowledge, together with their application to modern problems of education. The spiritual nature of the mind clearly exhibited. Extended study of the nature of knowledge, feeling, and volition; also of the psychological basis of moral character.

History of Philosophy.—Second Semester: The history of Ancient and Modern Philosophy is taught in alternate years. First course, Schwegler's History of Philosophy, from Thales to Leibnitz inclusive, with especial reference to Socrates, Plato, and Aristotle; second course, from Descartes to the present, with a study of the text of Locke's Essay Concerning Human Understanding. The ethical bearings of each prominent system are dwelt upon.

Physical Culture.

DR. J. K. SHELL.

The system of Physical Culture is based on a thorough examination of each student, carefully noting all defects of development, and functional weakness, and the ratio existing between the tested strength and the muscularity; and on these data formulating a course of exercises such as will meet the requirement of each individual, so as to produce an evenly developed and healthy organism.

The young men are required to give three hours each week for carrying out the prescription of the Director.

The sports of foot-ball, base-ball, and athletics are under the direct supervision of the Director, and only those who are physically fit are allowed actively to compete; great care is taken that the games

be kept within proper limits, so as not to take too much of the students' attention or energy.

The physical culture of the young women is under the most careful supervision of a student of the Sargent system. Examinations are made and prescriptions given according to the special needs of each student.

Physics.

GEORGE A. HOADLEY, *Professor.*

The Physical Laboratory is already provided with apparatus for determinations in the mechanics of solids and fluids, in heat, sound, light, electricity, and magnetism; as also with a large amount for lecture experiments. Most of this has been selected with care from the best American and foreign makers, but some is of home manufacture; and the co-operation of the Engineering Department and the increasing skill of our students enable us now to make each year a larger proportion for regular use in the Laboratory. It is our aim to afford students continued opportunities for instruction in the principles of construction of ordinary and special apparatus. Power for running dynamos and for other purposes is near at hand. The instruction begins in the Sophomore year, and extends through the course as follows:

FOR STUDENTS IN ARTS AND LETTERS:

SOPHOMORE CLASS.

General Physics.—This course consists of the investigation of the general laws of Physics and the consideration of their practical application.

The work of the course is done by lectures and recitations, accompanied by experimental verification of the laws discussed, and extends over the entire year.

JUNIOR CLASS.

During the Junior year the course is an elective in Heat, Magnetism, Electricity, and Light.

FOR STUDENTS IN SCIENCE AND ENGINEERING.

This course occupies two consecutive years, requiring two periods per week in the Sophomore year, and four in the Junior. It is in-

tended to be pre-eminently a practical course, consisting largely of laboratory work, in the investigation and verification of the laws of Physics.

The recitation work will cover the topics treated in Ganot's Physics, or some other text-book of equal rank, and will be supplemented by lectures on the various branches of the subject.

The division of the work is as follows:

SOPHOMORE CLASS.

Applied Mechanics and Dynamics, and Sound.

JUNIOR CLASS.

Heat, Magnetism, Electricity, and Light.

SENIOR CLASS.

Applied Electricity.

This is an elective of eight periods per week, counting as four. In this the Junior work in Magnetism and Electricity is supplemented by the practical study of their application to the telephone, telegraph, dynamo, electric light, motor transmission of power, etc.

Work in the manufacture and use of these various appliances, as well as in the measurement of the electrical current, is accompanied by text-book work in Ayrton's Practical Electricity and by the reading and class discussion of current electrical journals. Visits to the electrical plants of the neighboring villages and cities are made at convenient times, for the purpose of studying the machinery in actual use.

Political Economy and Social Science.

WILLIAM I. HULL, *Associate Professor.*

The study of Political Economy extends through the Junior and Senior years, and consists of lectures, recitations, and reports by the students. Parallel readings of standard authorities are required, and an essay on some economic subject is written yearly by each student.

The courses offered are as follows:

JUNIOR YEAR.

First Semester: General Principles of Political Economy. Four hours a week.

Second Semester: Protection and Free Trade; Money and Banking. Four hours a week.

SENIOR YEAR.

First Semester: Finance and Taxation; Socialism. Four hours a week.

Second Semester; History of Economic Theories; Social Problems. Four hours a week.

The course in Protection and Free Trade will include a study of the general principles underlying each, and a history of Protection in the United States. The Course in Social Problems will treat of such topics as Charity; Penology; Women Wage-Earners; The Labor of Children in Factories; The University Settlement Idea and its Extension, including Toynbee Hall and allied movements.

Reading and Speaking.

MYRTIE E. FURMAN, *Assistant Professor.*

This course extends over four years. It consists of training in respiration, articulation, enunciation, and the Delsarte system of gesture as far as practicable. Thought-conception is made the first step toward natural and effective expression. A careful study of the authors chosen is required, so that the course becomes to some extent one in English literature. The student studies critically and becomes familiar with many selections of acknowledged excellence.

General Remarks on the Courses of Study.

In arranging the courses of study, while recognizing the fact that the domain of human knowledge is so vast that he who would succeed best must confine his attention chiefly to some chosen field, we have endeavored not to lose sight of the equally important fact that those are best equipped for work in any particular department who have the most extended view of the realm of learning as a whole.

To secure in a measure both these results, minor courses in many of the subjects of the curriculum are required of all; while the more extended courses in each subject are taken only by those whose taste and inclination lie in that particular direction.

In pursuing this policy for several years, we have developed four distinct lines of study. In each of them are required those subjects which are essential to the logical and natural development of the course. The courses are as follows:

THE COURSE IN ARTS.

The characteristic feature of this course is the study of Classical Antiquity, including the language and literature of the Greeks and Romans, with their art, philosophy, religion, and political and social history. Combined with this are courses in Modern Languages, Mathematics, and Science, with some elective subjects. While this course affords that broad culture which should be the foundation of any subsequent career, it may be made to afford special preparation for Law or Journalism by including electives in History and Political Economy, or it may be shaped in the direction of Medicine by choosing electives in Biology and Chemistry. This course leads to the degree of *Bachelor of Arts*.

THE COURSE IN LETTERS.

This course is arranged to provide a liberal education for those who do not wish to pursue the study of the ancient languages, nor to

take all the science required in the Science Course. Its leading features are a liberal amount of English, French, and German, and of History and Political Science. It includes the amount of Mathematics usually prescribed in a college course, with a fair amount of Science, and some elective subjects, including Latin. This course leads to the degree of *Bachelor of Letters*.

THE COURSE IN SCIENCE.

The characteristic feature of this course is more extended instruction in science than in the preceding courses, together with a fair amount of Mathematics and Modern Language study, including English. The instruction in Physics, Chemistry, and Biology is of a two-fold character; first, systematic treatment in experimental lectures; secondly, practical work in the laboratories. Thus the student acquires a familiarity, not only with the more important facts and fundamental principles of those sciences, but also with the correct methods of work, so that his course may form a foundation for subsequent higher work in any department of science. This course leads to the degree of *Bachelor of Science*.

THE COURSE IN ENGINEERING.

This course offers, in its various studies and exercises, a training which is believed to be well adapted to the needs of Civil and of Mechanical Engineers, as well as of the large class who are to be concerned with the material interests of the country, with manufacturing, with industrial pursuits, or with any of the many other occupations allied to Engineering. It embraces liberal and technical instruction in the mathematical, physical, and graphical sciences, and their applications in practical field engineering, in the arts of design and construction, and in the use of tools, materials, and machinery, and in processes. This course leads to the degree of *Bachelor of Science in Engineering*.

PHYSICAL LABORATORY.

The Course in Arts.

REQUIRED STUDIES.

Greek, 2 or 4 years; Latin, 3 years; Mathematics, 1½ years; History, 1 year; Biology, Chemistry, or Physics, 1 year; Economics, ½ year; Psychology, ½ year; History of Philosophy, ½ year; Elocution, 2 years; Composition, 4 years.

COURSE ELECTIVES (TWO REQUIRED).

Physics, 1 year; Biology, 1 to 2 years; Chemistry, 1 year; Economics, ½ to 1½ years; History, 1 to 2 years; English, 1 to 2 years; French, 1 to 2 years; German, 1 to 2 years; Latin, 1 year; Mathematics, 1 to 2 years.

OPEN SEMESTER ELECTIVES.

Civil Government; Astronomy; Drawing and Painting; Pedagogy; Logic; Mineralogy; Geology; Mathematics; Elocution; Botany; Zoology; Physiology.

Distribution of Studies.

Freshman Year.

FIRST SEMESTER. PERIODS.	SECOND SEMESTER. PERIODS.
Greek, ... 4	Greek, ... 4
Latin, ... 4	Latin, ... 4
Mathematics, ... 4	Mathematics, ... 4
Biology or History, ... 4	Biology or History, ... 4

Elocution and Composition.

Sophomore Year.

Greek, ... 4	Greek, ... 4
Latin, ... 4	Latin, ... 4
Mathematics, ... 4	Elective, ... 4
History, Physics, French, or German, ... 4	History, Physics, French, or German, ... 4

Elocution and Composition.

Junior Year.

Greek, ... 4	Greek, ... 4
Latin, ... 4	Latin, ... 4
Economics, ... 4	Elective, ... 4
Elective, ... 4	Elective, ... 4

Composition.

Senior Year.

Greek, ... 4	Greek, ... 4
Psychology, ... 4	Philosophy, ... 4
Elective, ... 4	Elective, ... 4
Elective, ... 4	Elective, ... 4

Composition.

The Course in Letters.

REQUIRED STUDIES.

French or German, 4 years; Mathematics, 1½ years; English, 3 years; Economics, 1 year; History, 1 year; Biology, Chemistry, or Physics, 1 year; Psychology and Philosophy, 1 year; Elocution, 2 years; Composition, 4 years.

COURSE ELECTIVES (TWO REQUIRED).

Chemistry, 1 year; Biology, 1 to 2 years; Physics, 1 year; Economics, 1 year; History, 1 to 2 years; English, 1 to 2 years; Mathematics, 1 to 2 years; Latin, 1 to 4 years.

OPEN SEMESTER ELECTIVES.

Civil Government; Astronomy; Drawing and Painting; Pedagogy; Logic; Mineralogy; Geology; Mathematics; Elocution; Botany; Zoology; Physiology.

Distribution of Studies.

Freshman Year.

FIRST SEMESTER.	PERIODS.	SECOND SEMESTER.	PERIODS.
French or German,	4	French or German,	4
Mathematics,	4	Mathematics,	4
English,	4	English,	4
Biology, History, or Latin,	4	Biology, History, or Latin,	4

Elocution.

Sophomore Year.

French or German,	4	French or German,	4
Mathematics,	4	English,	4
English,	4	Elective,	4
History, Physics, French, German, or Latin,	4	History, Physics, French, German, or Latin,	4

Elocution.

Junior Year.

French or German,	4	French or German,	4
Economics,	4	Economics,	4
English,	4	English,	4
Elective,	4	Elective,	4

Senior Year.

French or German,	4	French or German,	4
Psychology,	4	Philosophy,	4
Elective,	4	Elective,	4
Elective,	4	Elective,	4

Composition.

The Course in Science.

REQUIRED STUDIES.

French or German, 3 years; Chemistry, 2 years; Biology, 2 years; Physics, 2 years; Mathematics, 1½ years; Psychology and Philosophy, 1 year; Elocution, 2 years; Composition, 4 years.

COURSE ELECTIVES (TWO REQUIRED).

Chemistry, 1 to 2 years; Biology, 1 year; Physics, 1 year; English, 1 to 2 years; Economics, 1 to 2 years; History, 1 to 2 years; French or German, 1 to 2 years; Mathematics, 1 to 2 years.

OPEN SEMESTER ELECTIVES.

Civil Government; Astronomy; Drawing and Painting; Pedagogy; Logic; Mineralogy; Geology; Mathematics; Elocution; Botany; Zoology; Physiology.

Distribution of Studies.

Freshman Year.

FIRST SEMESTER. PERIODS.	SECOND SEMESTER. PERIODS.
French or German, ... 4	French or German, ... 4
Chemistry, ... 4	Chemistry, ... 4
Biology, ... 4	Biology, ... 4
Mathematics, ... 4	Mathematics, ... 4

Elocution and Composition.

Sophomore Year.

French or German, ... 4	French or German, ... 4
Chemistry, ... 4	Chemistry, ... 4
Physics, ... 4	Physics, ... 4
Mathematics, ... 4	Elective, ... 4

Elocution and Composition.

Junior Year.

French or German, ... 4	French or German, ... 4
Physics, ... 4	Physics, ... 4
Biology, ... 4	Biology, ... 4
Elective, ... 4	Elective, ... 4

Composition.

Senior Year.

Psychology, ... 4	Philosophy, ... 4
Elective, ... 4	Elective, ... 4
Elective, ... 4	Elective, ... 4
Elective, ... 4	Elective, ... 4

Composition.

The Course in Engineering.

REQUIRED STUDIES.

Draughting, 3 years; Mathematics, 2½ years; Chemistry, 2 years; English, 1 year; shop work, 3 years; Mechanics and Physics, 2 years; Engineering, Theory, 2 years; Engineering, Applications, 2 years.

COURSE ELECTIVES.

Sanitary Science, ½ year; French or German, 1 year; Electrical Physics, 1 year; English, 1 year; Astronomy, 1 year.

OPEN SEMESTER ELECTIVES.

Civil Government; Astronomy; Drawing and Painting; Pedagogy; Logic; Mineralogy; Geology; Mathematics; Elocution; Botany; Zoology; Physiology.

Distribution of Studies.

Freshman Year.

FIRST SEMESTER.	PERIODS.	SECOND SEMESTER.	PERIODS.
Draughting,	9=3	Shop Work,	9=3
Mathematics,	7	Mathematics,	7
Chemistry,	4	Chemistry,	4
English,	4	English,	4

Sophomore Year.

Shop Work,	9=3	Descriptive Geometry, etc	9=3
Mathematics,	4	Mathematics,	4
Mechanics,	4	Physics,	4
Chemistry,	4	Chemistry,	4
Electives,	4	Electives,	4

Junior Year.

Engineering, Theory,	6	Engineering, Theory,	6
Engineering, Practice,	12=4	Engineering, Practice,	12=4
Physics,	6	Physics,	6
Mathematics,	4	Electives,	4

Senior Year.

Engineering, Theory,	8	Engineering, Theory,	8
Engineering, Practice,	12=4	Engineering, Practice,	12=4
Elective,	4	Elective,	4
Elective,	4	Elective,	4

Graduation and Degrees.

As a condition of graduation, each student must submit to the Faculty a satisfactory Oration or Essay, which he must be prepared to deliver in public, if required to do so.

The Degree of Bachelor.

The Degrees of Bachelor of Arts, of Letters, and of Science are conferred on the completion of the corresponding courses.

The Degree of Master.

Candidates for the Master's Degree (A. M., M. L., and M. S.) are required to pursue a course of study at Swarthmore, or elsewhere, under the direction of the Faculty, and to pass examination in the same. Persons residing at the College and devoting their whole time to the work can accomplish a sufficient amount in one year; for non-resident candidates, who are at the same time engaged in other work, the course must occupy not less than two years. Application should be made directly to the Faculty, and should state the subject or subjects in which the applicants wish to present themselves. Work will then be assigned to them by the Faculty.

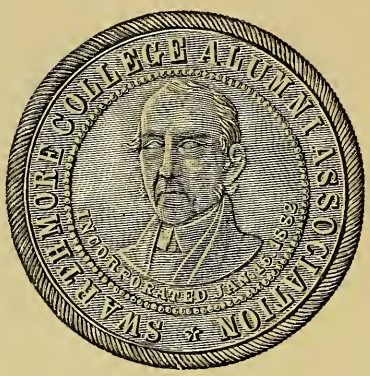
The Examinations for the Degrees will be both oral and written, and will be conducted by a Committee of the Faculty, upon whose report the Faculty will decide upon the fitness of the candidate for the Degree. An extended thesis, bearing upon some part of the work assigned, will in all cases be required.

The Degree of Civil Engineer.

The Degree of C. E. will be conferred upon Bachelors of Science of the Engineering Department who shall have been engaged for not less than three years, in successful professional practice, in positions of responsibility, and who shall present an acceptable thesis upon a subject pertaining to Engineering. Application for this Degree must be made, and the thesis presented at least *three months* before commencement.

Officers of the Alumni Association.

INCORPORATED 1882.



President.

W. Llewellyn Baner, '82, . . . New York, N. Y.

Vice-Presidents.

William H. Ridgway, '75, . . . Coatesville, Pa.
Florence Hall, '80, ... Swarthmore, Pa.
Hetty Lippincott Miller, '88, . Riverton, N. J.

Secretary.

Esther T. Moore, '73 . . . . . Swarthmore College, Pa.

Treasurer.

William J. Hall, '78, ... Swarthmore College, Pa.

Recorder.

Herman Hoopes, '74, ... 436 Drexel Building, Phila., Pa.

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Ferris W. Price, '74, ... Swarthmore, Pa.
Morris L. Clothier, 90, ... Wynnewood, Pa.
Mary E. Broomell, '92, ... Jenkintown, Pa.

Graduates.

Class of 1873.

SARAH H. (ACTON) HILLARD, A.B, ... Salem, N. J.
HELEN (MAGILL) WHITE, A.B. (Ph.D., Boston University, 1877), ... St. Petersburg, Russia.
ELIZABETH C. (MILLER) HOLCOMB, A.B., ... Swarthmore, Pa.
ESTHER T. MOORE. A.B., ... Swarthmore College, Pa.
*MARIA C. (PIERCE) GREEN, A.B., ... 1877.
LOWNDES TAYLOR, A.B., ... West Chester, Pa.

Class of 1874.

ELLEN H. (EVANS) PRICE, A.M., 1884, ... Swarthmore, Pa.
AMY W. (HALL) HICKMAN, A.B., ... West Chester, Pa.
*ALFRED T. HAVILAND, B.S., ... 1874.
MARY (HIBBARD) THATCHER, A.B., ... Wilmington, Del.
HERMAN HOOPES, C.E., 1879, ... Philadelphia, Pa.
FERRIS W. PRICE, A.M., 1887, ... Swarthmore, Pa.
ELIZABETH S. (WOOLSTON) COLLINS, A.B., ... Swarthmore, Pa.

Class of 1875.

JOHN B. BOOTH, A.B., ... Pittsburgh, Pa.
HELEN (COMLY) WHITE, A.B., ... Lansdowne, Pa.
FRANKLIN H. CORLIES, B.S., ... Philadelphia, Pa.
*HERBERT G. DOW, A. B. (and Harvard, 1877), ... 1878.
LIZZIE (HANES) TAYLOR, A.B., ... Woodstown, N. J.
EDITH R. (HOOPER) ROBERTS, A.B., ... Titusville, Pa.
BARTON HOOPES, JR., B.S., ... Philadelphia, Pa.
*OLIVER KEESE, JR., B.S., ... 1879.
J. REECE LEWIS, B.S., ... Waynesville, N. C.
HOWARD W. LIPPINCOTT, A.B., ... Philadelphia, Pa.
MARTHA (MCILVAIN) EASTWICK, A.B., ... Philadelphia, Pa.
JOHN K. RICHARDS, A.B. (and Harvard, 1877), ... Ironton, Ohio.
WILLIAM H. RIDGWAY, C.E., 1879, ... Coatesville, Pa.

Class of 1876.

FRANK L. BASSETT, B.S. (D.D.S., Phila. Dental College, 1878), ... Swarthmore, Pa.

* Deceased.

ARTHUR W. BRADLEY, A.B., ... Chicago, Ill.
FRANCES (LINTON) SHARPLES, A.M., 1881 (M.D., Women's Medical College, Phila., 1886), ... West Chester, Pa.
ELIZABETH L. (LONGSTRETH) BOYD, A.B., ... Haverford College, Pa.
JAMES T. MCCLURE, B.S., ... Philadelphia, Pa.
EMMA (MCILVAIN) COOPER, A.B., ... Riverton, N. J.
EDWIN MITCHELL, JR., A.B. (B.L. and B.S.R., Sorbonne, Paris, 1877), ... New York, N. Y.
LUCY R. (PRICE) MCINTYRE, A.B. (1880), ... Philadelphia, Pa.
ISAAC G. SMEDLEY, B.S. (M.D., Hahnemann Medical College, 1879), ... Philadelphia, Pa.
HERBERT W. SMITH, A.B. (and Harvard, 1878; Ph.D., Göttingen, 1884), ... Bryn Mawr College, Pa.
MARY WILLITS, A.M., 1881 (M.D., Women's Medical College, Phila., 1881), ... Philadelphia, Pa.
WILLIAM P. WORTH, B.S., ... Coatesville, Pa.

Class of 1877.

JOSEPH T. BUNTING, B.S. (LL.B., Univ. of Pa., 1880), . . Philadelphia, Pa.
NORMAN B. CORSON, A.B., ... Norristown, Pa.
EUDORA MAGILL, A.B., ... Washington, D. C.
JESSE R. NORTON, A.B. (and Harvard, 1879), ... Chicago, Ill.
CARROLL R. WILLIAMS, A.M., 1882 (LL.B., Univ. of Pa., 1880), ... Philadelphia, Pa.
FLORENCE M. YEATMAN, A.B., ... Norway, Pa.

Class of 1878.

CAROLINE E. (BURR) HALL, A.B., ... Swarthmore, Pa.
MAYBELL P. DAVIS, A.B., ... Providence, R. I.
HOWARD DAWSON, A.M., 1882, ... Boston, Mass.
TACY A. (GLEIM) DUNNING, A.B., ... Seattle, Wash.
WILLIAM J. HALL, B.S., ... Swarthmore College, Pa.
MARY P.(HALLOWELL) HOUGH, A.M., 1881 (M.D.,Women's Medical College, Phila., 1881), ... Ambler, Pa.
CHARLES A. HAWKINS, A.B., ... York, Pa.
WILLIAM PENN HOLCOMB, M.L., 1882 (Ph.D., Johns Hopkins Univ., 1886), ... Swarthmore College, Pa.
REBECCA S. (HUNT) WHITE, A.M., 1881 (M.D., Women's Medical College, Phila., 1881), ... Lansdowne, Pa.
ANNA E. (JACKSON) MONAGHAN, B.L., ... West Chester, Pa.
LLEWELLYN H. JOHNSON, B.S., ... Orange, N. J.
EDWARD MARTIN, A.M., 1882 (M.D., Univ. of Pa., 1883), Philadelphia, Pa.
FRANCIS J. PALMER, B.S., ... Brooklyn, N. Y.
ISRAEL ROBERTS, B.S., ... Camden, N. J.

*William Seaman, C.E., 1884, ... 1892.
C. Harry Shoemaker, B.S., ... Philadelphia, Pa.

Class of 1879.

Isaac R. Coles, C.E., 1880, ... Glen Cove, N. Y.
William P. Fender, A.B., ... Williamsport, Pa.
William Lea Ferris, A.B., ... Aspen, Col.
Joseph Fitch, A.B., ... New York, N. Y.
Ruth Anna Forsythe, A.B., ... Philadelphia, Pa.
Elizabeth (Furnas) Bogardus, B.L., ... New York, N. Y.
P. Lesley Hopper, A.B., ... Havre de Grace, Md.
Marie Antoinette Kemp, A.M., 1892, ... Swarthmore College, Pa.
Elisha E. Lippincott, B.S., ... Gallitzin, Pa.
*Samuel Craig McComb, C.E., 1882, ... 1891.
Charles R. Miller, B.L. (LL. B., Univ. of Pa., 1881), . . Wilmington, Del.
Josephine White Breckens, A.B., ... Cheyenne, Wyoming.
Abigail M. (Woodnutt) Miller, B.L., ... Wilmington, Del.

Class of 1880.

Anna E. Constable, A.B., ... Camden, N. J.
Arthur Coleman Dawson, B.L., 1882, ... Chicago, Ill.
Florence Hall, A.B , ... Swarthmore, Pa.
Myra T. Hillman, A.B., ... Washington, D. C.
Emily L. (Hough) Savidge, A.B. (and Univ. of Minn., 1881), ... Boise City, Idaho.
Edward H. Keiser, M.S., 1881 (Ph. D., Johns Hopkins Univ., 1884), ... Bryn Mawr College, Pa.
Georgine (Kurtz) Muhlenberg, A.B., ... Reading, Pa.
Albert R. Lawton, A.M., 1885, ... New York, N. Y.
Robert J. Marcher, B.S., ... Syracuse, N. Y.
Thomas L. Moore, A.B., ... Richmond, Va.
Ellen S. (Preston) Griest, A.B., ... Cedarville, Va.
John Turton, B.S., ... New York, N. Y.
Fannie (Willets) Lowthorp, A.B., ... Trenton, N. J.
Henry S. Wood, C.E., 1883, ... San Francisco, Cal.

Class of 1881.

Martha Bunting, B. L., ... Philadelphia, Pa.
William Canby, Jr., B.L., ... St. Paul, Minn.
Charles B. Doron, B.L., ... Rochester, N. Y.
Mary J. Elliott, B.L., ... Philadelphia, Pa.
Emma Kirk, B.L., ... Bryn Mawr, Pa.
Gertrude B. Magill, A.B., ... Boise City, Idaho.

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* Deceased.

EUGENE PAULIN, JR., A.B. (and Harvard, 1883), ... Bloomfield, N. M.
MARTHA E. (RHINOEHL) OSBORN, A.B., ... Philadelphia, Pa.
EDWARD C. RUSHMORE, B.S. (M.D., Columbia, 1885), . . Tuxedo Park, N. Y.
HENRY B. SEAMAN, C.E., 1884, ... New York, N. Y.
CHARLES E. SHARPLESS, C.E., 1884, ... Phillipsburg, Pa.
ALVIN T. SHOEMAKER, B.L., ... New York, N. Y.
*I. BYRON THOMAS, B.S., ... 1891.
ERNEST F. TUCKER, A.B. (M.D., Harvard, 1884), ... Portland, Ore.

Class of 1882.

WILLIAM LLEWELLYN BANER, A.B. (M.D., Columbia, 1885), ... New York, N. Y.
EDITH B. BLACKWELL, A.B., ... El Mora, N. J.
CHARLOTTE E. (BREWSTER) JORDAN, M.L., 1886, ... Philadelphia, Pa.
WILLIAM BUTLER, JR., A.B., ... West Chester, Pa.
C. HERBERT COCHRAN, A.B., ... Philadelphia, Pa.
BERTHA (COOPER) BREWER, B.L., ... Rochester, N. Y.
P. FANNIE FOULKE, A.B., ... Philadelphia, Pa.
MARY E. GALE, A.M., 1891, ... Laconia, N. H.
*SARAH S. (GREEN) PIERCE, A.B., ... 1886.
MARGARET E. (HALLOWELL) POWELL, A.B., ... Lansdowne, Pa.
*ELIZABETH E. HART, B.L., ... 1891.
ELIZABETH HASLAM, B.L., ... Philadelphia, Pa.
ELIZABETH M. OGDEN, B.L., ... West Chester, Pa.
CHARLES PALMER, A.M., 1885, ... Chester, Pa.
*GEORGE C. PHILLIPS, B.S., ... 1883.
HORACE L. ROSSITER, A.B., ... Cleveland, O.
CHARLES B. TURTON, B.S., ... New York, N. Y.
GERRIT E. H. WEAVER, A.B. (and Harvard, 1884), A. M., 1886, ... Philadelphia, Pa.
EMILY E. (WILSON) LAWTON, A.M., 1885, ... New York, N. Y.
EDGAR M. ZAVITZ, A.B., ... Coldstream, Ontario, Can.

Class of 1883.

CHARLES A. BUNTING, B.S., ... Steelton, Pa.
*JOHN L. COCHRAN, B.S., ... 1885.
EDGAR CONROW, B.L., ... Moorestown, N. J.
LYDIA S. (GREEN) HAWKINS, A.B., ... Media, Pa.
FLORENCE N. HANES, A.B., ... Woodstown, N. J.
ALICE W. JACKSON, A.B., ... Media, Pa.
WILLIAM A. KISSAM, JR., B.S., ... Little Neck, N. Y.
BERTHA (MATLACK) RUE, B.L., ... Camden, N. J.
GUION MILLER, A.M., 1888, ... Washington, D. C.

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* Deceased.

ASTRONOMICAL OBSERVATORY.

S. Duffield Mitchell, A.B. (LL.B., Univ. of Pa.,) . . Pittsburgh, Pa.
Edward A. Pennock, A.B., ... Chatham, Pa.
George L. Pennock, B.S., ... Lansdowne, Pa.
Charles S. Pyle, B.S., ... Rising Sun, Md.
Helen C. (Pyle) Bunting, B.L., ... Steelton, Pa.
Frederick A. Seaman, Jr., B.S., ... Madison, N. J.
Annie E. (Taylor) Miller, M.L., 1888, ... Washington, D. C.
James E. Verree, B.L., ... Philadelphia, Pa.
Emma (Webb) Price, A.B., ... Philadelphia, Pa.

Class of 1884.

Horace L. Dilworth, B.S., ... Locust Valley, N. Y.
Rebecca M. (Downing) Bullock, B.L., ... Germantown, Pa.
John D. Furnas, B.S., ... Waynesville, Ohio.
Sarah L. (Hall) Stirling, A.B., ... Philadelphia, Pa.
Henry J. Hancock, A.B. (LL.B., Univ. of Pa., 1886), . . Philadelphia, Pa.
Edwin Haviland, Jr., B.S., 1885, ... Salt Lake City, Utah.
Mary E. Hughes, A.B., ... Hughesville, Va.
Laura H. Satterthwaite, A.B. (M.D., Women's Medical College, Phila., 1888), ... Trenton, N. J.
Frederick J. Taylor, B.S., ... Helena, Mont.
Mary Willits, A.B., ... Wilmington, Del.

Class of 1885.

Minnie F. Baker, A.B., ... Washington, D. C.
Abigail Evans, A.B., ... Cinnaminson, N. J.
Frederick P. Moore, A.B., ... New York, N. Y.
Mary D. (Pratt) Rhodes, A.B., ... Bowdle, S. Dak.

Class of 1886.

Emma S. (Bones) Stone, B.L., ... New Brighton, N. Y.
Arthur S. Cochran, B.S., ... Westtown, Pa.
George J. Freedley, B.S., ... Richmond, Va.
Helen G. Johnson, A.B., ... Muncy, Pa.
Ella (Merrick) Tomlinson, A.B., ... Wrightstown, Pa.
Edgar M. Smedley, B.S., ... Media, Pa.
Rowland J. Spencer, B.L., ... Salem, Ore.
Martha M. Watson, A.M., 1891, ... Trenton, N. J.
C. Percy Willcox, B.S. (Ph. B., Yale Univ., 1887; LL.B., Univ. of Pa., 1891), ... Philadelphia, Pa.

Class of 1887.

Alice T. (Battin) Lewis, A.B., ... Media, Pa.
Harriet J. (Cox) McDowell, B.S., ... New York, N. Y.

HORACE DARLINGTON, B. S., ... Darling, Pa.
HARRY B. GOODWIN, B.S., ... Bordentown, N. J.
ANNA M. (JENKINS) WEBSTER, A.B., ... Mankato, Minn.
THOMAS A. JENKINS, A.B. (Ph.B., Univ. of Pa., 1888), . . Johns Hopkins Univ.
FREDERICK K. LANE, B.S., ... Lancaster, Pa.
LINDA B. PALMER, A.M., 1893, ... West Chester, Pa.
HORACE ROBERTS, A.B., ... Fellowship, N. J.
ELIZABETH B. SMEDLEY, A.B., ... Malvern, Pa.
ELIZABETH B. (SMITH) WILSON, A.B., ... Lincoln, Va.
WILLIAM G. UNDERWOOD, B.S., ... Elizabeth City, N. C.

Class of 1888.

ALICE M. ATKINSON, A.B. (and Cornell Univ., 1889), . . Philadelphia, Pa.
THOMAS BROWN, B.S., ... Washington, D. C.
FRANK CAWLEY, C.E., 1891, ... Montreal, Can.
JESSIE L. COLSON, B.S., ... Daretown, N. J.
SADIE M. CONROW, A.B., ... Cinnaminson, N. J.
WILLIAM L. DUDLEY, B.S., ... New York, N. Y.
ROBERT P. ERVIEN, B.S., ... Clayton, N. M.
E. LAWRENCE FELL, B.S., ... Philadelphia, Pa.
JOYEUSE L. (FULLERTON) SWEET, A.B. (and Cornell Univ., 1889), ... Denver, Col.
EMMA (GAWTHROP) HAYES, B.S., ... Swarthmore College.
ALICE HALL, A.B., ... Swarthmore, Pa.
P. SHARPLES HALL, B.S. (M.D., Hahn. Med. Col., Phila., 1891), ... Philadelphia, Pa.
WALTER HANCOCK, B.S., ... Minneapolis, Minn.
J. RUSSELL HAYES, A.B. (and Harvard, 1889; LL.B., Univ. of Pa., 1892), ... Swarthmore College.
MARTHA P. (JONES) MILLER, A.B., ... Harrisburg, Pa.
T. MONTGOMERY LIGHTFOOT, M.S., 1890, ... Philadelphia, Pa.
HETTY C. (LIPPINCOTT) MILLER, A.B., ... Riverton, N. J.
ELLIS P. MARSHALL, JR., B.S., ... London Grove, Pa.
WILLIAM S. MARSHALL, B.S. (Ph.D., Leipsic, 1892), . . Madison, Wis.
AARON C. PANCOAST, B.S., ... San Antonio, Texas.
JESSIE PYLE, A.B. (and Cornell Univ., 1889), ... London Grove, Pa.
JOSEPH J. RHOADS, B.S., ... Bellefonte, Pa.
KATHERINE M. RIDER, B.L., ... Brooklyn, N. Y.
WILLIAM H. SEAMAN, B.S., ... Glen Cove, N. Y.
AMELIA SKILLIN, A.B., ... New Milford, Conn.
CARROLL H. SUDLER, A.B., ... Philadelphia, Pa.
CHARLOTTE M. WAY, B.S., ... Leland Stanford, Jr., Univ.
ANNIE E. WILLITS, A.B., ... Syosset, N. Y.
ESTHER M. (WILLITS) FELL, B.L., ... Philadelphia, Pa.
FRANK P. WILSON, A.B., ... Locust Valley, N. Y.

Class of 1889.

Justin K. Anderson, B.S., ... Breeden, Va.
Alexander G. Cummings, Jr., A.B., ... Columbia College.
Howard A. Dill, B.S. (and Mass. Inst. Tech., 1891), . . Indianapolis, Ind.
Horace B. Forman, Jr., B.S., ... Coeburn, Va.
Ellis M. Harvey, B.S. (M.D., Univ. of Pa., 1893), . . University of Penna., Pa.
Clara Haydock, B.L., ... New York, N. Y.
J. Carroll Hayes, A.B. (and Harvard, 1890), ... University of Penna., Pa.
Julia Hicks, B.S., ... Old Westbury, N. Y.
Mary Kirk, A.B., ... New York, N. Y.
Margaret J. Laurie, A.B., ... Jericho, N. Y.
George A. Masters, B.S., ... Philadelphia, Pa.
Alice S. Palmer, A.B., ... West Chester, Pa.
Louella Passmore, A.B., ... Oxford, Pa.
Frederick B. Pyle, B.S., ... Washington, D. C.
Ralph Stone, A.B, ... Grand Rapids, Mich.
Elsie D. Stoner, B.L., ... Columbia, Pa.
Willis W. Vail, B.S., ... Nuttallburg, W. Va.
Jennie F. Waddington, M.S., 1892, ... Salem, N. J.

Class of 1890.

Alvan W. Atkinson, A.B., ... Trenton, N. J.
Sara H. Atkinson, A.B., ... Holicong, Pa.
George H. Bartram, B.S., ... Milltown, Pa.
Martha M. Biddle, B.L., ... Riverton, N. J.
Emma J. Broomell, B.S. (and Univ. of Mich., 1893), Locust Valley, N. Y.
Morris L. Clothier, B.S., ... Wynnewood, Pa.
Beulah W. Darlington, A.B., ... West Chester, Pa.
Edward Darlington, B.S., ... Media, Pa.
George Ellsler, A.B., ... Vanderbilt University.
Caroline R. Gaston, A.B., ... Philadelphia, Pa.
John C. Gifford, B.S. (1893), ... Swarthmore College.
Abby M. Hall, A.B. (and Cornell Univ., 1893), ... Swarthmore College.
Clara A. Hughes, A.B., ... Lima, Ohio.
Samuel R. Lippincott, B.S., ... Cinnaminson, N. J.
William D. Lippincott, B.S., ... Cinnaminson, N. J.
Willard L. Maris, M.S. 1892, (B.S., Univ. of Mich., 1892), Philadelphia, Pa.
Robert S. McConnell, B.S., ... Philadelphia, Pa.
Frances E. Ottley, A.B., ... Austin, Texas.
* Mary D. Palmer, A.B., ... 1892.
Mary E. Pancoast, B.L., ... Marple, Pa.
James W. Ponder, A.B., ... Wilmington, Del.

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* Deceased.

ELLIS B. RIDGWAY, B.S., ... Coatesville, Pa.
WALTER ROBERTS, A.B. (M.D., Univ. of Pa., 1893), . . . Philadelphia, Pa.
RICHARD C. SELLERS, B.S., ... Swarthmore, Pa.
FANNIE B. SMITH, A.B., ... Moorestown, N. J.
MARY F. SOPER, B.S., ... Jersey City, N. J.
R. BARCLAY SPICER, A.B., ... Plainfield, N. J.
WILLIAM E. SWEET, A.B., ... Denver, Col.
ALICE W. TITUS, M.L., 1892, ... Old Westbury, N. Y.
MARY H. WHITE, A.B., ... Lansdowne, Pa.

Class of 1891.

EMILY ATKINSON, A.B., ... Moorestown, N. J.
COSMELIA J. BROWN, B.L., ... Lincoln, Va.
LOUIS P. CLARK, B.S., ... Haverford College, Pa.
HANNAH H. CLOTHIER, B.L., ... Wynnewood, Pa.
EVA M. DANIELS, B.S., 1892, ... Charleston, W. Va.
ELIZA R. HAMPTON, A.B., ... Horsham, Pa.
ISAAC O. HARPER, B.S., ... Baltimore, Md.
ESTHER HAVILAND, B.L., ... Langhorne, Pa.
ELIZA G. HOLMES, A.B., ...
JOHN W. HUTCHINSON, JR., B.S., ... New York, N. Y.
DORA LEWIS, B.L., ... Media, Pa.
*LUCY S. LIPPINCOTT, A.B., ... 1891.
CHESTER P. MARTINDALE, B.L., ... Oxford, Pa.
HARRY L. MCDONALD, B.S., ... Kansas City, Mo.
SARAH T. MOORE, B.L., ... Sandy Spring, Md.
A. MITCHELL PALMER, A.B., ... Stroudsburg, Pa.
ELLEN (PASSMORE) PYLE, B.L., ... Washington, D. C.
MARIANNA (SMITH) RAWSON, B.L., ... New York, N. Y.
WILLIAM C. SPROUL, B.S., ... Chester, Pa.
EDWARD B. TEMPLE, B.S., ... Ward, Pa.
KATHARINE L. TYLER, B.S., ... Philadelphia, Pa.
FRANCES M. WHITE, B.L., ... Lansdowne, Pa.
EDWARD C. WILSON, B.S., ... New York, N. Y.
M. LILIAN YARNALL, A.B., ... Chester, Pa.

Class of 1892.

M. ELLEN ATKINSON, B.L., ... Buckingham, Pa.
M. ROSAMOND BAKER, A.B., ... Philadelphia, Pa.
BENJAMIN F. BATTIN, A.B., ... Berlin, Germany.
JOSEPHINE BEISTLE, A.B., ... Germantown, Pa.
MARY E. BROOMELL, B.L., ... Jenkintown, Pa.

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* Deceased.

FREDERIC N. CARR, B.L., ... Charleston, W. Va.
HOWARD N. EAVENSON, B.S., ... Coeburn, Va.
HENRY H. GARRETT, B.S., ... Philadelphia, Pa.
HOWARD B. GREEN, B.S., ... Pedricktown, Pa.
CHARLES HART, B.S., ... Doylestown, Pa.
ANNIE HILLBORN, B.L., ... Swarthmore, Pa.
EDWARD A. JENKINS, B.S., ... Chicago, Ill.
CHARLES B. KETCHAM, A.B., 1893, ... New York, N. Y.
PHEBE H. KETCHAM, B.S., ... Jericho, N. Y.
HENRY MCALLISTER, JR., B.L., ... Colorado Springs, Col.
BERNARD S. MCILVAIN, B.L.. . . . . Darlington, Md.
JOHN F. MURRAY, B.S., ... Wallingford, Pa.
ELLEN PYLE, A.B., ... London Grove, Pa.
MARY E. STEBBINS, B.L., ... Baltimore, Md.
JOSEPH J. WALKER, B.S., ... New Centreville, Pa.
WILLIAM E. WALTER, B.S., ... Philadelphia, Pa.
FLORENCE N. WOLVERTON, A.B., ... Quakertown, N. J.
MARY L. WOLVERTON, A.B., ... Quakertown, N. J.

Class of 1893.

JANE ATKINSON, A.B., ... Holicong, Pa.
GEORGE H. BROOKE, B.S., ... University of Pa.
FRANCIS E. BROMELL, B.S., ... Chicago, Ill.
JOHN L. CARVER, B.L., ... Media, Pa.
JOSEPH T. FREEMAN, B.S., ... Rochester, N. Y.
DORA A. GILBERT, A.B., ... Chester, Pa.
CHARLES S. HALLOWELL, B.S., ... Denver, Col.
CLEMENT LODGE, B.S., ... Paulsboro, N. J.
LORENA B. MATLACK, A.B., ... West Chester, Pa.
CARLIE MCCLURE, A.B., ... Girard, Pa.
OMAR B. PANCOAST, B.S., ... Johns Hopkins Univ.
JESSE H. REINHARDT, B.S., ... Salem, N. J.
JULIUS STAAB, A.B., ... Harvard Univ.
JOHN B. STETSON, B.S., ... Med.-Chir. Col., Phila.
ESTHER E. SPICER, B.L., ... Baltimore, Md.
FRANCES B. STEVENSON, A.B., ... Felton, Del.
GEORGE H. STROUT, A.B., ... West Newton, Mass.
ESTHER H. SUTTON, B.L., ... Chappaqua, N. Y.
HENRY C. TURNER, B. S., ... Betterton, Md.
CARRIE B. WAY, B.L., ... Kennett Square, Pa.
LILA K. WILLETS, B.L., ... Roslyn, N. Y.
E. NEWLIN WILLIAMS, B.S., ... New Hope, Pa.
S. ELLEN WILLIAMS, B.S., ... Locust Valley, N. Y.

Honorary Degrees Conferred.

1888.

WILLIAM HYDE APPLETON, Ph.D. (A.B., Harvard, 1864; A.M., LL.B., Harvard, 1869), Professor of Greek and of English Literature.

SUSAN J. CUNNINGHAM, Sc.D., Professor of Mathematics and Astronomy.

1889.

ARTHUR BEARDSLEY, Ph.D. (C.E., Rensselaer Polytechnic Institute, 1867) Professor of Engineering and Director of Mechanic Arts.

ISAAC SHARPLESS, LL.D. (B.S., Harvard, 1873; Sc.D., Univ. of Pa., 1883) President of Haverford College.

1890.

OLIVIA RODHAM, A.B., late Assistant Librarian and Instructor in Botany.

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