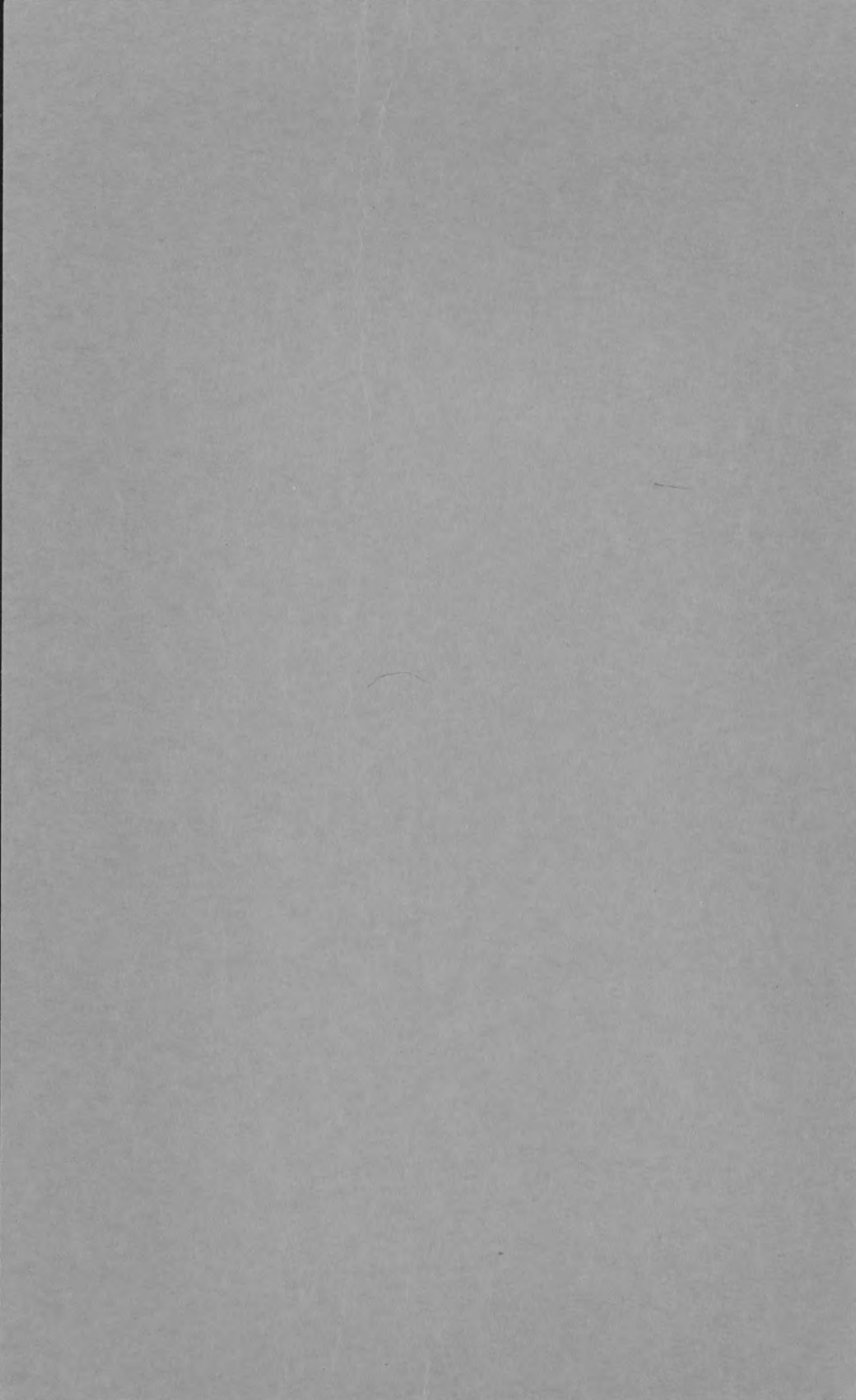
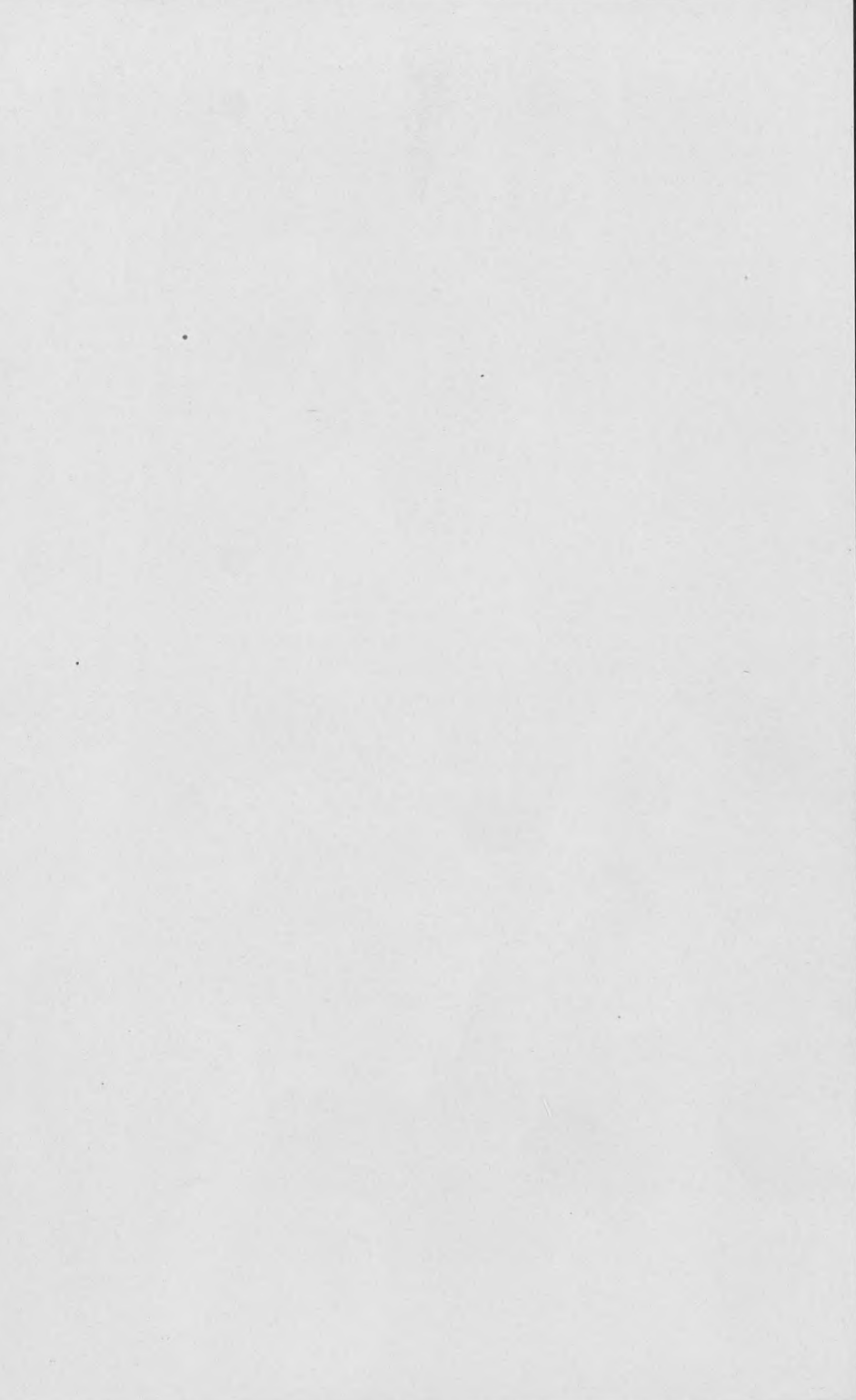


SWARTHMORE COLLEGE
CATALOGUE

SEVENTY-THIRD YEAR
1941-1942









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1941-1942

SWARTHMORE, PENNSYLVANIA

Volume XXXIX

Number 2

Tenth Month, 1941

Entered at the Post-Office at Swarthmore, Pa., as second-class matter.

COLLEGE CALENDAR

1941

Tenth Month 1-5	Freshman Placement Days
Tenth Month 4	Registration and Enrolment in Classes: 2:00 to 4:00 P. M.
Tenth Month 6	Classes begin at 8:00 A. M.
Tenth Month 6	Opening of Honors Work
Tenth Month 7	Meeting of the Board of Managers
Eleventh Month 5	Executive Committee of the Board of Managers
Eleventh Month 27	Holiday: Thanksgiving
Twelfth Month 2	Annual Meeting of the Board of Managers
Twelfth Month 20	Christmas Recess begins at NOON.

1942

First Month 5	Christmas Recess ends at 8:00 A. M.
First Month 6	Executive Committee of the Board of Managers
First Month 23	Registration and Enrolment in Classes for the Second Semester, 10:30 A. M. to NOON
First Month 24	First Semester ends for Courses and Honors Seminars
First Month 26	Second Semester begins for Honors Seminars
First Month 26, 27	Review Period for Course Students
First Month 28	Mid-Year Examinations begin
Second Month 3	Executive Committee of the Board of Managers
Second Month 5	Mid-Year Examinations end
Second Month 9	Second Semester begins at 8:00 A. M.
Third Month 3	Meeting of the Board of Managers
Third Month 27	Spring Recess begins at 6:00 P. M.
Fourth Month 6	Spring Recess ends at 8:00 A. M.
Fourth Month 7	Executive Committee of the Board of Managers
Fourth Month 11	Somerville Day
Fifth Month 5	Executive Committee of the Board of Managers
Fifth Month 9	Honors Seminars for Seniors end
Fifth Month 16	Courses for Seniors end
Fifth Month 19	Honors Written Examinations begin
Fifth Month 22	Enrolment in Classes for 1942-43
Fifth Month 23	Courses end
Fifth Month 25, 26	Senior Comprehensive Examinations
Fifth Month 25, 26	Review Period for Course Students
Fifth Month 27	Final Examinations begin
Fifth Month 28	Honors Oral Examinations begin
Fifth Month 30	Honors Oral Examinations end
Sixth Month 3	Final Examinations end
Sixth Month 5	Meeting of the Board of Managers
Sixth Month 5	Class Day
Sixth Month 6	Alumni Day
Sixth Month 7	Baccalaureate Day
Sixth Month 8	Commencement Day

COLLEGE CALENDAR

1942

Ninth Month 23-27	Freshman Placement Days
Ninth Month 26	Registration and Enrolment in Classes, 2:00 to 4:00 P. M.
Ninth Month 28	Classes begin at 8:00 A. M.
Ninth Month 28	Opening of Honors Work
Tenth Month 6	Meeting of the Board of Managers
Eleventh Month 4	Executive Committee of the Board of Managers
Eleventh Month 26	Holiday: Thanksgiving
Twelfth Month 1	Annual Meeting of the Board of Managers
Twelfth Month 11	Christmas Recess begins at 6:00 P. M.

1943

First Month 4	Christmas Recess ends at 8:00 A. M.
First Month 5	Executive Committee of the Board of Managers
First Month 22	Registration and Enrolment in Classes for the Second Semester, 10:30 A. M. to NOON
First Month 23	First Semester ends for Courses and Honors Seminars
First Month 25	Second Semester begins for Honors Seminars
First Month 25, 26	Review Period for Course Students
First Month 27	Mid-Year Examinations begin
Second Month 2	Executive Committee of the Board of Managers
Second Month 4	Mid-Year Examinations end
Second Month 8	Second Semester begins at 8:00 A. M.
Third Month 2	Meeting of the Board of Managers
Third Month 26	Spring Recess begins at 6:00 P. M.
Fourth Month 5	Spring Recess ends at 8:00 A. M.
Fourth Month 6	Executive Committee of the Board of Managers
Fourth Month 10	Somerville Day
Fifth Month 4	Executive Committee of the Board of Managers
Fifth Month 8	Honors Seminars for Seniors end
Fifth Month 15	Courses for Seniors end
Fifth Month 18	Honors Written Examinations begin
Fifth Month 21	Enrolment in Classes for 1943-44
Fifth Month 22	Courses end
Fifth Month 24, 25	Senior Comprehensive Examinations
Fifth Month 24, 25	Review Period for Course Students
Fifth Month 26	Final Examinations begin
Fifth Month 27	Honors Oral Examinations begin
Fifth Month 29	Honors Oral Examinations end
Sixth Month 2	Final Examinations end
Sixth Month 4	Meeting of the Board of Managers
Sixth Month 4	Class Day
Sixth Month 5	Alumni Day
Sixth Month 6	Baccalaureate Day
Sixth Month 7	Commencement Day

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9	Chapter VIII: The Economic History of the United States
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11	Chapter X: The Cultural History of the United States
12	Chapter XI: The Military History of the United States
13	Chapter XII: The Environmental History of the United States
14	Chapter XIII: The Space History of the United States
15	Chapter XIV: The Future of the United States

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in History (Part-time)*.....416 N. Chester Road
B.A. and M.A., Harvard University.
- JEAN B. WALTON, *Instructor in Mathematics (Part-time)*..... Parrish Hall
B.A., Swarthmore College; M.A., Brown University.
- C. BROOKE WORTH, *Instructor in Zoölogy*.....602 Elm Ave.
B.A., Swarthmore College; M.D., University of Pennsylvania.

Lecturers and Assistants

- HILDA GEIRINGER, *Lecturer in Mathematics*.....
North House, Gulph Road, Bryn Mawr
Dr.phil., University of Vienna.
- THOMAS H. JOHNSON, *Lecturer in Electrical Engineering*.....
Meriwether, Concord Road, Westtown
B.A., Amherst College; Ph.D., Yale University.
- LEONARD F. BARCUS, *Assistant in Astronomy*.....511 Walnut Lane
B.S. and M.A., University of Virginia.
- ALBERT M. BARRON, *Assistant in Physical Education for Men*.....
4244 Old York Road, Philadelphia
B.S., Pennsylvania State College; M.S., Temple University.
- KEITH W. CHALMERS, *Assistant in English*.....302 N. Chester Road
B.A., Swarthmore College.
- ALFRED D. COX, JR., *Assistant in Physical Education for Men*....Media, Pa.
B.A., Swarthmore College.
- ROY W. DELAPLAINE, *Assistant in Astronomy*.....106 Cornell Ave.
B.A., Swarthmore College.
- HENRY C. FORD, *Assistant in Physical Education for Men*.....
806 Glen Terrace, Chester
B.A., Swarthmore College; M.A., Temple University.

- SUSAN IRVING, *Assistant in Zoölogy*.....Baltimore Pike
B.A., Radcliffe College.
- LINDSAY LAFFORD, *Assistant in Music*.....Thornbrooke Manor, Bryn Mawr
F.R.C.O., London.
- BARBARA PEARSON LANGE, *Assistant in English*.....612 Ogden Ave.
- BEATRICE BEACH MACLEOD, *Assistant in English*.....401 Walnut Lane
B.A., Swarthmore Colege; M.F.A., Yale University.
- JAMES J. McADOO, *Assistant in Physical Education for Men*.....
513 E. Bringhurst St., Germantown
- ESSIE McCUTCHEON, *Volunteer Assistant in Scientific Drawing*.....
B.A., Hood College. 336 N. Princeton Ave.
- RUTH ANNE RICHARDSON, *Volunteer Assistant in Scientific Drawing*.....
B.A., Swarthmore College. 315 N. Chester Road
- HENRIETTA SAFFORD, *Assistant in Zoölogy*.....Baltimore Pike
B.A., Radcliffe College.
- PAUL STOFKO, *Assistant in Physical Education for Men*.....
3657 Woodland Ave., Philadelphia
B.S., University of Pennsylvania.
- WILLIS J. STETSON, *Assistant in Physical Education for Men*.....
144 N. Highland Road, Springfield
B.A., Swarthmore College; M.A., University of Pennsylvania.
- BETTY WALKER STRONG, *Assistant in Physical Education for Women*.....
R. F. D. 3, Linton Lodge, Media
- ARMSTRONG THOMAS, *Assistant in Astronomy*.....224 Cornell Ave.
B.A., University of Virginia.
- GRETCHEN WATSON, *Assistant in Physical Education for Women*
B.A., Swarthmore College. 735 Yale Ave.
- MARION E. WOLFF, *Assistant in Astronomy*. 242 W. Hortter St., Germantown
B.A., Wellesley College; M.A., Swarthmore College.

Research Associates

- GEORGE EDWARDS, *Research Associate in Biology*.....311 Park Ave.
B.S. and M.S., Tufts College.
- JOSEPH C. LICKLIDER, *Research Associate in Psychology*.....
B.A. and M.A., Washington University. 7 Swarthmore Place
- WILLIAM D. NEFF, *Research Associate in Psychology*.....Secane
B.A., University of Illinois; Ph.D., University of Rochester.
- P. F. SCHOLANDER, *Research Associate in Zoölogy*.....Baltimore Pike
Ph.D., University of Oslo.
- K. AA. STRAND, *Research Associate in Astronomy*.....152 Park Ave.
Cand. Mag., Mag. Scient. and Phil. Dr., University of Copenhagen.
- HANS WALLACH, *Research Associate in Psychology*.....612 Ogden Ave.
Dr.phil., University of Berlin.

VISITING EXAMINERS OF CANDIDATES FOR DEGREES WITH HONORS MAY, 1941

Division of the Humanities

Classics: PROFESSOR H. LAMAR CROSBY, University of Pennsylvania; PROFESSOR GEORGE E. DUCKWORTH, Princeton University.

English: PROFESSOR MATTHEW W. BLACK, University of Pennsylvania; PROFESSOR HOWARD F. LOWRY, Princeton University; PROFESSOR GEORGE F. WHICHER, Amherst College.

Fine Arts: PROFESSOR ROBERT M. WALKER, Harvard University.

French: PROFESSOR JEAN ALBERT BEDE, Columbia University.

German: PROFESSOR ROLAND G. KENT, University of Pennsylvania.

History: DR. GEORGE CUTTINO, University of Iowa; DR. JOSEPHINE FISHER, Baldwin School, Bryn Mawr; PROFESSOR WALTER LANGSAM, Union College; MR. HAROLD STEINBERG, New York, New York; PROFESSOR JEAN WILSON, Smith College.

Philosophy: PROFESSOR THEODORE GREENE, Princeton University; PROFESSOR GLENN R. MORROW, University of Pennsylvania.

Psychology: PROFESSOR DONALD K. ADAMS, Duke University; PROFESSOR JAMES J. GIBSON, Smith College.

Division of the Social Sciences

Economics: DR. THOMAS C. BLAISDELL, JR., National Resource Planning Board; PROFESSOR JAMES G. SMITH, Princeton University; PROFESSOR RALPH A. YOUNG, University of Pennsylvania.

History: DR. GEORGE CUTTINO, University of Iowa; DR. JOSEPHINE FISHER, Baldwin School, Bryn Mawr; PROFESSOR WALTER LANGSAM, Union College; MR. HAROLD STEINBERG, New York, New York; PROFESSOR JEAN WILSON, Smith College.

Philosophy: PROFESSOR THEODORE GREENE, Princeton University; PROFESSOR GLENN R. MORROW, University of Pennsylvania.

Political Science: PROFESSOR BENJAMIN GERIG, Haverford College; DR. ERNEST S. GRIFFITH, Director, Legislative Reference Service, Library of Congress; PROFESSOR PAUL PALMER, Kenyon College; PROFESSOR ARTHUR P. WHITAKER, University of Pennsylvania.

Psychology: PROFESSOR DONALD K. ADAMS, Duke University; PROFESSOR JAMES J. GIBSON, Smith College.

Division of Mathematics and the Natural Sciences

Chemistry: PROFESSOR RALPH A. CONNOR, University of Pennsylvania; PROFESSOR CHARLES P. SMYTH, Princeton University; PROFESSOR GEORGE H. WALDEN, JR., Columbia University.

Mathematics and Astronomy: PROFESSOR R. E. GILMAN, Brown University; PROFESSOR D. V. WIDDER, Harvard University; PROFESSOR KEVIN BURNS, University of Pittsburgh.

Physics: PROFESSOR R. B. LINDSAY, Brown University.

Psychology: PROFESSOR DONALD K. ADAMS, Duke University; PROFESSOR JAMES J. GIBSON, Smith College.

Zoölogy: PROFESSOR A. ELIZABETH ADAMS, Mount Holyoke College; PROFESSOR DETLEV W. BRONK, Cornell Medical College; PROFESSOR HARRY HELSON, Bryn Mawr College.

Division of Engineering

Civil Engineering: PROFESSOR H. L. BOWMAN, Drexel Institute of Technology.

Electrical Engineering: PROFESSOR FINLEY W. SMITH, Lafayette College.

Mechanical Engineering: PROFESSOR NEIL P. BAILEY, Rutgers University.

DIVISIONS AND DEPARTMENTS

I. Division of the Humanities—EDITH PHILIPS, *Chairman*.

Classics, ETHEL H. BREWSTER, *Chairman*.

English, HAROLD C. GODDARD, *Chairman*.

Fine Arts, ROBERT M. WALKER, *Chairman*.

German, WALTER SILZ, *Chairman*.

History, FREDERICK J. MANNING, *Chairman*.

Philosophy and Religion, BRAND BLANSHARD, *Chairman*.

Psychology and Education, ROBERT B. MACLEOD, *Chairman*.

Romance Languages, EDITH PHILIPS, *Chairman*.

II. Division of the Social Sciences—CLAIR WILCOX, *Chairman*.

Economics, CLAIR WILCOX, *Chairman*.

History, FREDERICK J. MANNING, *Chairman*.

Philosophy and Religion, BRAND BLANSHARD, *Chairman*.

Political Science, ROLAND PENNOCK, *Chairman*.

Psychology and Education, ROBERT B. MACLEOD, *Chairman*.

III. Division of Mathematics and the Natural Sciences—

WINTHROP R. WRIGHT, *Chairman*.

Botany, SAMUEL C. PALMER, *Chairman*.

Chemistry, H. JERMAIN CREIGHTON, *Chairman*.

Mathematics and Astronomy, ARNOLD DRESDEN, *Chairman*.

Physics, WINTHROP R. WRIGHT, *Chairman*.

Psychology, ROBERT B. MACLEOD, *Chairman*.

Zoölogy, LAURENCE IRVING, *Chairman*.

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Civil Engineering, SCOTT B. LILLY, *Chairman*.

Electrical Engineering, JOHN D. McCRUMM, *Acting Chairman*.

Mechanical Engineering, CHARLES G. THATCHER, *Chairman*.

Chemistry, H. JERMAIN CREIGHTON, *Chairman*.

Mathematics, ARNOLD DRESDEN, *Chairman*.

Physics, WINTHROP R. WRIGHT, *Chairman*.

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Assistants:

NORA R. BOOTH, *Vocational Director for Women*, B.A., Swarthmore College; M.A., Columbia University.

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M.A. and Ph.D., Bryn Mawr College.

JEAN WALTON, Parrish Hall; B.A., Swarthmore College; M.A., Brown University.

Library Staff

College Library:

Librarian, CHARLES B. SHAW, B.A. and M.A., Clark University.

Reference Department:

Chief, CATHERINE J. PIERCE, B.A., Women's College of the University of North Carolina; M.S., Columbia University.

Assistants, *MARY G. ANDERSON, B.A., Smith College; ROBERT B. PURDY, B.A. and B.L.S., University of Wisconsin.

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*Absent on leave.

Assistants: GLADYS M. BROWNELL, B.A., Mt. Holyoke College; B.S., Columbia University; JUDITH SACHS, B.S. in L.S., Columbia University; Ph.D., Freyburg, Switzerland.

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Assistants: DOROTHEA D. REEVES, B.A., Radcliffe College; B.S. in L.S., Drexel Institute; ADELINE REDHEFFER, B.S. in Educ., West Chester State Teachers College; MARY I. SCOTT, B.A., Beaver College; B.S. in L.S., Drexel Institute.

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Friends Historical Library

Librarian, FREDERICK B. TOLLES, B.A. and M.A., Harvard University.

Assistants: E. VIRGINIA WALKER, B.A., Swarthmore College; B.S. in L.S., Drexel Institute; DOROTHEA G. HARRIS, B.A., Wellesley College; B.S. in L.S., Drexel Institute; ELLEN STARR BRINTON, *Curator of the Jane Addams Peace Collection.*

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Comptroller, NICHOLAS O. PITTINGER, B.A., Indiana University.

Assistant, SAMUEL G. ECKERD, B.A., Swarthmore College.

Bookkeeper, ELIZABETH R. HIRST.

Assistants: GRACE REDHEFFER BABBITT, EDNA B. CORSON, ANNE VODER CRANE.

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Manager of Bookstore, KATE WALKER MCCRUMM, B.A., Swarthmore College.

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Superintendent's Office

Superintendent, ANDREW SIMPSON, B.A., Swarthmore College; M.S., Cornell University.

Secretary, VERONICA SULLIVAN.

Director of Arthur Hoyt Scott Horticultural Foundation, JOHN C. WISTER.

Assistant, HELEN SMITH, B.E., St. Cloud Teachers College; Ambler School of Horticulture for Women.

Head Gardener, HARRY WOOD.

*Absent on leave, first semester.

House Director's Office

House Director, ETHEL STILZ, Ph.B., University of Chicago; M.A., Columbia University.

Assistant, SARA M. LITTLE, B.A., Smith College.

Dietitian

RUTH E. CARR, B.S., Simmons College.

Alumni Office

Alumni Secretary, CARL K. DELLMUTH, B.A., Swarthmore College.

Secretary, BARBARA PEARSON LANGE.

Alumni Recorder, BARBARA FENWICK McCONE, B.A., Leland Stanford Junior University.

Health Service

Physicians:

DOROTHY L. ASHTON, B.A., Bryn Mawr College; M.D., University of Pennsylvania, F. A. C. S.

PAUL T. STRONG, B.A., Swarthmore College; M.D., Jefferson Medical College.

Nurses:

BLANCHE DEVEREUX, R.N., MABEL RIGBY, R.N., ANNE AUSTIN, R.N.

Honorary Curators of the Biddle Memorial Library

CHARLES F. JENKINS, *Chairman*.....232 South Seventh Street, Philadelphia

CLEMENT M. BIDDLE.....P. O. Box 743, Church Street Station, New York

LOUIS N. ROBINSON.....411 College Avenue, Swarthmore

JANE P. RUSHMORE.....Riverton, N. J.

FRANK AYDELOTTE.....Olden Manor, Olden Lane, Princeton, N. J.

STANDING COMMITTEES OF THE FACULTY

ABSENCE: Anderson, *Chairman*.

Dr. Ashton, Brinkmann, Kille, March, Pierson, Dr. Strong, Thom.

ADMISSIONS AND SCHOLARSHIPS (MEN): Hunt, *Chairman*.

Brinkmann, Dellmuth, Lilly, Pittenger.

ADMISSIONS AND SCHOLARSHIPS (WOMEN): F. Blanshard, *Chairman*.

Brewster, Hunt, Philips, with Mrs. Raymond Denworth and Mrs. William Rogers.

ARTS AND CRAFTS: Spiller, *Chairman*.

Hunt, B. MacLeod, McCrumm, Swan, Walker.

ATHLETICS: Dellmuth, *Chairman*.

Anderson, B. Blanshard, Carpenter, Dunn, Palmer, Pittenger, Simpson, Thatcher, with Charles C. Miller.

AWARDS AND PRIZES: Keighton, *Chairman*.

F. Blanshard, Carpenter, Hunt, E. Wright.

COLLECTION: Enders, *Chairman*.

Brandt, Hicks, Pennock, Thom.

COLLEGE LIBRARY: B. Blanshard, *Chairman*.

Brewster, Dresden, Manning, Shaw, Silz, E. Wright.

COOPER FOUNDATION: Pennock, *Chairman*.

Elmore, Hunt, Irving, R. MacLeod, Mandelbaum, Philips, Silz.

FELLOWSHIPS: Garrett, *Chairman*.

Albertson, Keighton, Marriott, Pierson, Shero, Silz.

FRIENDS HISTORICAL LIBRARY: Manning, *Chairman*.

B. Blanshard, Brewster, Shaw, Spiller, Tolles.

INSTRUCTION: Nason, *Chairman*.

F. Blanshard, Hunt, Kille, Lilly, R. MacLeod, Philips, Wilcox, W. Wright.

PRESCRIBED AND EXTRA WORK: Creighton, *Chairman*.

Anderson, F. Blanshard, Enders, Hunt, Lilly, Mandelbaum, March.

SCHEDULE OF CLASSES: Brinkmann, *Chairman*.

Baer, Elmore, Mandelbaum, McCrumm.

STUDENT AFFAIRS: Hunt, *Chairman*.

F. Blanshard, Carpenter, Hicks, R. MacLeod, Pittenger.

STUDENT RECORDS: F. Blanshard, *Chairman*.

Booth, Brinkmann, Hunt, Lilly, Livingston, Manning, Nason, Pittenger.

TRAVEL ALLOWANCE: Thatcher, *Chairman*.

Brewster, Cox, Crutchfield, W. Wright.

SECRETARY TO THE FACULTY: Shero.

HISTORY AND LOCATION

Swarthmore College was founded in 1864 by members of the religious Society of Friends. In accordance with Friendly traditions, the purpose of the College has been to develop better individuals by the training of disciplined intelligence, the discovery of individual capacities, and the establishment of a sense of social responsibility. The College demands rigorous standards of scholarship and a responsible attitude toward the College and society as necessary means to a liberal culture.

The College is situated in the Borough of Swarthmore, eleven miles southwest of Philadelphia on the West Chester branch of the Pennsylvania Railroad, and close to the highway, Route 1, which leads to Baltimore. The Borough is primarily a residential suburb with a small business section.

The enrolment of the College is limited to approximately seven hundred resident students. The endowment is seven and a half million dollars.

EDUCATIONAL EQUIPMENT AND RESOURCES

GROUNDS

The Arboretum

Two hundred and thirty-seven acres are contained in the College property, including a large tract of woodland and the valley of Crum Creek. Much of this tract has been developed as an Arboretum through the provisions of the *Arthur Hoyt Scott Horticultural Foundation*, established in 1929 by Mrs. Arthur Hoyt Scott and Owen and Margaret Moon as a memorial to Arthur Hoyt Scott of the Class of 1895. The Arboretum is designed both to beautify the campus and to afford examples of the better kinds of trees, shrubs and herbaceous plants which are hardy in the climate of Eastern Pennsylvania and suitable for planting by the average gardener. There are exceptionally fine displays of Japanese cherries and tree peonies, and a great variety of lilacs and chrysanthemums. Many donors have contributed generously to the collections. (For full information see *Bulletin of Swarthmore College*, Vol. xxxvii, No. 5.)

Playing Fields

There are two large tracts of playing fields for men, one overlooking Crum Woods and the other on the lower campus

near the Field House. The former includes *Swarthmore Field* and *Alumni Field* which provide grounds for football, baseball and lacrosse, and a quarter-mile cinder track. A permanent grandstand, seating eighteen hundred persons, was the gift of Morris S. Clothier, 1890. The lower tract contains additional fields for lacrosse and soccer. There are also seven tennis courts near Wharton Hall.

Cunningham Field for women was given by students, alumnae, and friends of the College in memory of Susan J. Cunningham, for many years Professor of Mathematics and Astronomy. It includes hockey fields, tennis courts, practice golf course, and a riding ring. The Women's Athletic Association owns also an Outing Club cabin on a farm near Nottingham, Pennsylvania.

BUILDINGS

Class-Rooms, Laboratories, and Offices

Parrish Hall contains the offices of the President, Deans, Comptroller, House Director and Dietitian; the offices of the departments of classics, English, fine arts, French and mathematics, the mathematics library, and a number of class-rooms and seminar rooms.

The *Isaac H. Clothier Memorial* is the gift of Mrs. Isaac H. Clothier and members of her family in memory of Isaac H. Clothier, for forty-eight years one of the Board of Managers, and for seven years President of the Board. The Memorial is a quadrangle of buildings, including a bell tower connected by cloisters with a suite of seminar rooms and the Managers' Room, and a hall seating one thousand persons, equipped with stage and organ. The organ was the gift of Herbert J. Tily in memory of Isaac H. Clothier.

Trotter Hall, in its east wing, provides offices and class-rooms for the departments of economics, history, philosophy, and political science. The central section contains the laboratories, offices and lecture room of the department of physics. The west wing houses groups working in music, dramatics and art.

The *Hall of Chemistry* is equipped with laboratories, offices, a lecture amphitheatre, and a library for instruction and research in chemistry.

The *Edward Martin Biological Laboratory*, given by Fred M. Kirby of Wilkes-Barre, in honor of Dr. Edward Martin, houses the departments of botany, zoölogy, and psychology. It pro-

vides classrooms, laboratories, and a library for both undergraduate instruction and advanced research.

The *Sproul Astronomical Observatory* houses the astronomical work of the department of mathematics and astronomy. The astronomical equipment has been purchased from a fund given by William C. Sproul, 1891, and is extensively used for advanced research. The *Student's Astronomical Observatory* occupies one wing of *Cunningham House*.

Hicks Hall and *Beardsley Hall* house the division of engineering. *Hicks Hall* was given by Frederick C. Hicks, 1893, in memory of the Hicks family of Long Island—Isaac Hicks, Elias Hicks, Benjamin Hicks, and Alice A. Hicks. The building provides civil, electrical and mechanical laboratories, class-rooms, offices, a library, and an auditorium. *Beardsley Hall* contains forge and foundry, machine shop and wood working equipment.

The *Bartol Foundation Building*, erected on the campus by The Franklin Institute for research in physics, is entirely independent of the College, but makes a contribution to Swarthmore life by bringing here a group of research physicists.

Gymnasiums

The *William J. Hall Gymnasium* for men contains offices, examining room, a main exercise hall, and hand ball courts.

The *Field House* for men was designed by Robert E. Lamb of the Board of Managers. Its dimensions are 315 feet by 115 feet; it includes two basketball floors, and a clay floor large enough for baseball, football, soccer, lacrosse, and other games normally played out of doors. The building also has a running track, tennis courts, and rooms for wrestling and boxing.

A *bowling alley* is provided in a building near the Chester Road dormitories for men.

Somerville Hall, erected in 1893 by the Somerville Literary Society, is the gymnasium for women students.

Swimming pools for men and for women are connected with the Hall and Somerville Gymnasiums. Both were given by Philip M. Sharples, Emeritus member of the Board of Managers.

LIBRARIES

The SWARTHMORE COLLEGE LIBRARY is part of the gift of Andrew Carnegie, contains reading rooms, offices, and a collection of 130,000 volumes. Some 6,000 volumes are added an-

nually. About 600 periodicals are received regularly. The general collection, including all but the scientific and technical books and journals, is housed in the library building, situated on the front campus. An addition providing storeroom for 150,000 volumes was erected in 1935. Important special units of the main Library are the Appleton collection of classics and English literature and the Potter collection of legal material. The library is definitely a collection of books and journals for undergraduate use. The demands of honors work, however, make necessary the provision of large quantities of source material not usually found in collections maintained for undergraduates. It is a point of library policy to supply as fully as it can, either by purchase or through inter-library loan, the books needed by students or members of the faculty for their individual research.

The FRIENDS HISTORICAL LIBRARY, founded in 1870 by Anson Lapham, is one of the most outstanding collections in the United States of manuscripts, printed books and pamphlets, pictures, and other materials relating to the history of the Society of Friends. The library is the central depository for the records of Friends' meetings belonging to Philadelphia Yearly Meeting (Hicksite), and contains over 800 record books, many of which have been reproduced on microfilm. A reading machine for microfilms is available. Among the other manuscript holdings are the Charles F. Jenkins Autograph Collection, including signatures of many members of the Continental Congress; the Charles F. Jenkins Whittier Collection, consisting of first editions, holograph letters and poems of John Greenleaf Whittier; many letters of Elias Hicks; and journals, letters and miscellaneous papers of other Friends. Also housed in the Friends Historical Library is the Jane Addams Peace Collection started in 1930 by a gift of books and personal papers from Jane Addams; it comprises a large number of books, pamphlets, and periodicals dealing with international peace, and has become a depository for the correspondence files of many peace organizations. The library's collection of printed materials by and about Friends includes a large number of seventeenth-century imprints, as well as many books, pamphlets and periodicals of a later date. There is also an extensive collection of photographs of meeting houses and portraits of representative Friends, including Sir Peter Lely's painting of George Fox. The entire collection is housed in the Biddle

Memorial Library, a fireproof structure of stone and steel, given by Clement M. Biddle, 1896, in memory of his father, Clement M. Biddle. It is hoped that Friends and others will consider the advantages of depositing in this library, for preservation and for the use of reasearch students, books, family papers, and other materials in their possession which may throw light on the history of the Society of Friends.

THE WILLIAM J. COOPER FOUNDATION

The WILLIAM J. COOPER FOUNDATION provides a varied program of lectures and concerts which enriches and supplements the academic work of the College. The Foundation was established by William J. Cooper, a devoted friend of the College, whose wife, Emma McIlvain Cooper, served as a member of the Board of Managers from 1882 to 1923. Mr. Cooper bequeathed to the College the sum of \$100,000 and provided that the income should be used "in bringing to the College from time to time eminent citizens of this and other countries who are leaders in statesmanship, education, the arts, sciences, learned professions and business, in order that the faculty, students and the College community may be broadened by a closer acquaintance with matters of world interest." Admission to all programs is without charge.

The Cooper Foundation Committee works with the departments and with student organizations in arranging single lectures and concerts, and also in bringing to the College speakers of note who remain in residence for a long enough period to enter into the life of the community. They not only give public addresses, but also attend seminars and classes, and meet students and members of the Faculty informally. Some of these speakers have been invited with the understanding that their lectures should be published under the auspices of the Foundation. This arrangement has so far produced 7 volumes:

Lindsay, Alexander Dunlop. *The Essentials of Democracy*. Philadelphia, University of Pennsylvania Press, 1929.

Lowes, John Livingston. *Geoffrey Chaucer and the Development of His Genius*. New York, Houghton Mifflin Co., 1934.

Weyl, Hermann, *Mind and Nature*. Philadelphia, University of Pennsylvania Press, 1934.

America's Recovery Program, by A. A. Berle, Jr., John Dickin-son, A. Heath Onthank . . . and others, edited and with an

introduction by Clair Wilcox, Herbert F. Fraser and Patrick Murphy Malin . . . London, New York, etc. Oxford University Press, 1934.

Madariaga, Salvador. *Theory and Practice in International Relations*. Philadelphia, University of Pennsylvania Press, 1937.

Streit, Clarence Kirshman. *Union Now; a proposal for a Federal union of the democracies of the north Atlantic*. New York, Harper, 1939.

Krogh, August. *The Comparative Physiology of Respiratory Mechanisms*. University of Pennsylvania Press.

COLLECTIONS OF ART AND MUSIC

The BENJAMIN WEST SOCIETY, an organization of alumni, members of the Faculty, and friends of the College, has built up a collection of 286 paintings, drawings, and etchings, which are exhibited as space permits in various College buildings. The Society owes its name to the American artist of the eighteenth century who was born in a house which still stands on the Swarthmore Campus, and who became President of the Royal Academy.

The GEORGE GREY BARNARD collection, the gift of the artist, contains 200 casts of his works, many of great size. It is not open to visitors, since the building in which it is temporarily stored for safe keeping is not suitable for exhibitions.

The BRONSON M. CUTTING MEMORIAL COLLECTION OF RECORDED MUSIC was established at Swarthmore College in 1936 by a gift of approximately four thousand phonograph records, a radio-phonograph, books and musical scores, from the family of Bronson Murray Cutting, late Senator from New Mexico. Its object is to make the best recorded music available to the undergraduates, faculty, and friends of Swarthmore College, in cooperation with the work of the College Department of Music.

COOPERATION WITH NEARBY INSTITUTIONS

Since 1933 Swarthmore College and three nearby institutions—Haverford College, Bryn Mawr College, and the University of Pennsylvania—have had a cooperative plan involving the occasional exchange of instructors and students. This has made it possible for students at Swarthmore by special arrangement to enroll for courses in the other institutions. Cooper-

ation between the three Quaker colleges is being carried further at the present time, with plans for a more systematic exchange of instructors and collaboration among the students in those extracurricular activities which will profit by a wider range of talent. Consideration will be given to the material and instruction already available in building up library facilities and new departments with the aim of taking maximum advantage of the resources of the institutions concerned.

HOUSING

Swarthmore is primarily a residential college, conducted on the assumption that an important element in education comes from close association of students and instructors. The College accepts a limited number of day students whose homes are within easy commuting distance. All other students live in dormitories and have their meals in the College Dining Room.

Dormitories

There are five dormitories for men: *Wharton Hall*, named in honor of its donor, Joseph Wharton, at one time President of the Board of Managers; three buildings on Chester Road, and *Thomas House* on Harvard Avenue.

The women's dormitories include the upper floors in the wings of *Parrish Hall*; *Worth Hall*, the gift of William P. Worth, 1876, and J. Sharpless Worth, ex-1873, as a memorial to their parents; *Woolman House*, now the *French House*, given by Emma C. Bancroft, for many years Chairman of the Household Committee of the Board of Managers; *Bassett Dormitory*.

Dining Rooms

All students, both men and women, have their meals in two adjoining College Dining Rooms in Parrish Hall.

Infirmaries

The infirmary for men is in Section F of Wharton Hall. The women's infirmary is at the east end of Parrish Hall. A registered nurse is in charge of each, under the direction of the college physicians.

PROVISION FOR SOCIAL LIFE

Collection Hall

A large recreation room, *Collection Hall*, is in the central section of Parrish Hall above the dining rooms. It provides space for dancing, tables for ping pong and bridge, and a program of formal and informal social events directed by the College Social Committee of men and women students.

Bond Memorial Hall and Activities Lodges

Bond Memorial Hall, adjacent to Worth Hall, contains a large drawing room equipped for teas and class dances. On the upper floors are rooms for the use of the Women's Student Government Association, Mortar Board, and the Cutting Collection.

Bond Tower and the two *Activities Lodges* contain four College guest rooms. Each *Activities Lodge* provides also a room furnished as a living room for meetings of small groups and for informal entertaining.

Men's Fraternity Lodges

Five national fraternities for men maintain chapters at Swarthmore: Phi Kappa Psi, Kappa Sigma, Delta Upsilon, Phi Delta Theta, Phi Sigma Kappa. Each has a small lodge, used solely for informal social gatherings. About half the men students are members of fraternities, but all men, regardless of such affiliations, live in College dormitories and have their meals in the College dining rooms.

Women's Class Lodges

Four lodges, connected with Bond Hall, are assigned to the women members of each of the four classes. The lodge which a class takes over as freshmen remains a center of their informal social life throughout their College course.

Class and *Activities Lodges* were originally the property of six chapters of national women's fraternities. These chapters gave up their charters as the result of a decision by the Women's Student Government Association that they interfered with the development of general College social life.

STUDENT WELFARE

Health

There are two part-time College physicians, one for men and one for women, each of whom holds daily office hours at the College. Students may consult them during office hours without charge. A student must report any illness to the College physicians, but is free to go for treatment to another doctor if he prefers to do so.

The College physicians give physical examinations to all students at the beginning of their freshman year, and arrange to see every student at least once in each subsequent year.

The College health program now includes tuberculin tests, which are compulsory for all students.

The infirmaries are open to resident students without charge unless the services of a special nurse are required. Students suffering from a communicable disease or from illness which makes it necessary for them to remain in bed must stay in the infirmaries for the period of their illness.

The psychiatrists of the Institute of the Pennsylvania Hospital are consulted when need arises.

Student Advisers

The Deans and their assistants serve as student advisers. They rely also on the help of upper class men and women in work with Freshmen. Members of the Senior Honorary Societies of Book and Key and Mortar Board carry special responsibility for the Freshman Placement Program.

Vocational Advice

The Alumni Secretary and an Assistant to the Dean provide information on vocations and arrange conferences to assist students in their choice of a career; they also attempt to help undergraduates and graduates find employment.

GENERAL COLLEGE ACTIVITIES

RELIGIOUS EXERCISES

The Society of Friends is founded on the principle that the ultimate seat of the spiritual authority lies in the Inner Light of each individual. It is committed to the belief that religion is best expressed in the quality of every-day living. There are accordingly no compulsory religious services. Students are encouraged to attend the churches of their choice. Episcopal, Presbyterian, Methodist, and Christian Science churches are located in the borough. Catholic churches are to be found in the nearby towns of Morton, Media, and Chester.

The Swarthmore Meeting House is located on the campus. Students are cordially invited to attend its active religious service on Sunday. A fifteen-minute meeting for quiet meditation after the manner of Friends is held every Monday, Tuesday, Thursday, and Friday morning. Students and faculty attend on a voluntary basis. Extra-curricular groups under faculty direction exist for the study of the Bible and the exploration of common concerns in religion. Through periods of silent meditation, through groups active in some social cause, through the attitude of members of the faculty, religion is made, not a matter of formal exercise, but of individual spiritual adjustment to one's fellow men and to the multifarious activities of life. In keeping with the tradition of the Society of Friends it is less a matter of profession and creed than of attitude and behaviour.

COLLECTION

There is an assembly of the College, called *Collection*, from 9:00 until 9:25 a. m., every Wednesday in the Clothier Memorial; attendance of students is required. The program is opened by a period of silence according to the Friendly tradition, followed by an address or music.

COLLEGE PUBLICATIONS

The *Swarthmore College Bulletin*, published quarterly by the Administration, includes as three of its numbers the *College Catalogue*, the *Annual Report of the President and Treasurer*, and the *Students' Handbook*. The fourth number is devoted to special reports.





The *Garnet Letter*, edited by the Alumni Secretary, carries news of the College to the Alumni. It appears four times a year.

Three publications are under student management: a weekly newspaper, the *Swarthmore Phoenix*; a literary magazine, the *Dodo*; and a year-book, the *Halcyon*, edited by the Junior Class. Students serve also as assistant editors of the *Students' Handbook*.

The releasing of College news to papers in Philadelphia and elsewhere is in the hands of the student group, the *News Bureau*, which works with the Administration in issuing official statements, and takes care of reporting all undergraduate activities.

ALUMNI OFFICE

In 1938 the college added to its administrative staff the office of Alumni Executive Secretary. This office serves a threefold function: (1) To maintain an accurate record of the whereabouts of Swarthmore's 6,500 living alumni. (2) To supervise the entire program of college-alumni relationships, including the publishing of the *Garnet Letter*. (3) To assist men students in choosing careers for which they are best fitted—and to lend assistance in placing men in permanent positions at the time of graduation.

ARTS AND CRAFTS

Work in the arts and crafts at Swarthmore is done in extra-curricular groups which do not involve academic credit. The program is under the supervision of a faculty committee and the groups are directed by members of the Faculty or professional artists or craftsmen. Students are encouraged to take part in at least one such activity as a valuable supplement to their academic work.

Music

The *Swarthmore College Orchestra* and *Mixed Chorus* hold weekly meetings to prepare programs for presentation at the College and elsewhere. These groups study the best classical and modern music. The *Swarthmore College Glee Club*, a men's chorus, includes some popular music in the concerts which it gives in various cities under alumni auspices.

An informal chamber music group plays weekly in the house of a member of the Faculty. There are also informal singing groups which gather from time to time in Faculty homes.

The *Theater Workshop* offers extra-curricular work in directing, acting, stage and costume design and construction, lighting, playwriting, and make-up. These activities provide the groundwork for two or more public productions a year in the Clothier Memorial Auditorium. Responsibility for these performances is shared by the Director of Dramatics and an elective student organization, *The Little Theater Club*, whose members have shown distinction in the Workshop.

Writing

As a supplement to the required work in composition (p. 75), groups in narrative, poetry, play, and article writing are arranged as desired. Manuscripts are submitted for the Hayes prizes (p. 140) and national competitions.

The *Bookmakers Club* writes, prints, and binds its own work.

Speech

As a supplement to the required work in composition (p. 75), advanced groups in speech and debate are arranged as desired. Public speaking contests include the Potter prize (p. 136), the Delta Upsilon prizes (p. 140), and the Bunting Extemporaneous Speaking prize (p. 140).

The *Speech Choir* gives several public performances.

Intercollegiate debates, radio broadcasts, and speeches to nearby clubs are arranged by the *Debate Board*, an undergraduate body including all students who have represented the College in public debate in cooperation with the faculty adviser on debating.

The *Town Meeting* provides opportunities for all students to hear and participate in discussions of public questions.

The Graphic Arts

Instruction in painting, drawing, and modeling in clay and stone is provided by the *Sketch Club*. The *Camera Club* offers facilities for those interested in photography. There are also groups in metal and woodworking, in printing and binding, and in pottery. An exhibition of the work done in these groups is held each spring.

Radio

The *Radio Club* operates Amateur Radio Station W3AJ and is affiliated with the American Radio Relay League. Campus broadcasts include popular recordings, concert records from the Cutting Collection (p. 24), as well as performances of the choral, instrumental, and speech groups.

The Dance

Instruction in modern, folk, and classical dancing is provided by the Physical Education Department (p. 96).

ATHLETICS

The College maintains a varied program of activities for men and women with a schedule of both extra-mural and intra-mural games. The aim of the athletic program is to develop the capacities of each individual student, and to give a large number of students the experience of representing the College on athletic teams. The Departments of Physical Education for men and women work closely with the two student *Athletic Associations*. For information about the requirements in physical education, and the choice of possible ways of meeting them, see pages 94 and 96.

STUDENT ORGANIZATIONS

THE STUDENT COMMUNITY

Student Council

The whole undergraduate community of men and women is represented by the *Student Council* which attempts to coordinate all student activities, and confers with the *Administrative Council* of the Faculty on College problems.

Men's Executive Committee

The men students of the College are represented by the *Men's Executive Committee*, a group elected to take responsibility for specified problems which have to do primarily with dormitory life.

Women's Student Government Association

All women students are members of the *Women's Student Government Association*, headed by an Executive Committee elected to promote a great variety of women's interests. This Committee includes the chairmen of certain important committees: *Conduct*, which maintains social regulations; *Personnel*, which has a special concern for helping freshmen; *Social* (see below); *Vocational*, which assists the women's Vocational Director; *Student-Alumnae Relationships*, which arranges the program for Somerville Day, on which alumnae are invited to return to the College; *Somerville Lectures*, which brings to the College popular speakers on subjects related to the Arts.

Social Committee

An extensive program of social activities is managed by the Social Committee, under the direction of two elected co-chairmen, a man and a woman. The program is designed to appeal to a wide variety of interests, and is open to all students.

Somerville Forum

All women undergraduates and graduates are members of the *Somerville Forum*, an outgrowth of the Somerville Literary Society, which was established in 1871. The undergraduates hold open meetings devoted to music, art and literature; the alumnae maintain two fellowships for women for graduate work, the Lucretia Mott Fellowship and the Martha E. Tyson Fellowship. The final meeting in April, known as Somerville Day, is a gathering of alumnae and undergraduates.

SOCIETIES AND CLUBS

Honorary Scholarship Societies

Phi Beta Kappa, the national society for the recognition of scholarship, has had a chapter at Swarthmore since 1896. A chapter of *Sigma Tau*, the national society recognizing scholastic attainment in engineering, was established in 1917. A chapter of *Sigma Xi*, the national scientific society for the promotion of research, was granted a charter in 1922.

Departmental Clubs

Departmental clubs which hold stated meetings during the academic year include: the *Cercle Français*, the *Chemistry Club*, the *Classical Club*, the *Engineers Club*, the *German Club*, and the *Mathematics Club*. The programs of these clubs give the opportunity for the presentation of papers and addresses by undergraduates and frequently by visiting scholars and scientists.

Swarthmore Student Union

The *Swarthmore Student Union* is an organization of liberal students who have an active interest in public affairs. Committees devoted to work on peace, labor problems and education carry on programs in their special fields. The Union publishes a bulletin containing articles by students and faculty which appears quarterly, and sponsors study groups in social problems and public lectures by distinguished speakers in various fields. The Union is entirely independent and has no affiliation with any national organization.

International Relations Club

The *International Relations Club* is an organization which studies the international situation from a non-partisan viewpoint. It holds meetings at which outside speakers on foreign affairs are frequently present. The club is under the supervision of two members of the faculty, and the membership is unlimited.

No student organization of the College may incur any financial obligation, or make any contract involving monetary consideration without first obtaining the sanction of the Comptroller of the College, or of the proper faculty committee under whose supervision the organization is placed. Students contemplating a new organization must first consult the faculty committee on Student Affairs.

REQUIREMENTS FOR ADMISSION

Applications for admission should be addressed to the Deans of the College: from men applicants, to Dean Everett L. Hunt; from women, to Dean Frances Blanshard.

GENERAL STATEMENT

An applicant for admission will be judged on the basis of the following evidence:

1. Record in secondary school.
2. Recommendation of the school principal or headmaster.
3. Rating in the Scholastic Aptitude Test, and in any other College Entrance Board examinations which may be required in special cases.
4. Personal interview with one of the Deans or an appointed representative (interviews are normally arranged only for applicants of promise).

For several years the number of qualified applicants has exceeded the limits of the Freshman class, putting admission on a competitive basis. In the selection of students, strong intellectual interests and excellence in some particular direction will receive more consideration than a record which shows a higher average without promise of unusual ability in any one field. Children of Friends and Alumni of the College who rank high in their graduating class will be assured of admission; those who do not rank high will be considered under the terms of the selective process described above.

In general candidates are admitted on the basis of (1) high rank in school and in the Scholastic Aptitude test; (2) evidence of sturdiness of character. Students who show special distinction in one line in spite of irregularities of preparation may be given the opportunity of qualifying for admission by taking certain content examinations of the College Entrance Examination Board.

SUBJECTS OF PREPARATORY STUDY

In preparation for College work an applicant is expected to complete a four-year secondary school course which includes work in English, foreign language, mathematics, history, and

usually a laboratory science. The table below shows the possible distribution of work among these subjects. A "unit" represents a course involving four or five periods a week throughout one school year except in the case of English where three units are assigned for four such courses.

Required Subjects, Ten and One-Half Units

	<i>Units</i>
Elementary and Intermediate Algebra	1½
Plane Geometry	1
English (4 years)	3
*Foreign Language	4
History	1

Elective Subjects, Four and One-Half Units

	<i>Units</i>		<i>Units</i>
Advanced Algebra	½	English History	1
**Solid Geometry	½	American History	1
**Plane Trigonometry	½	Civics	½
Latin	2, 3 or 4	Problems of Democracy	1
Greek	2, 3 or 4	Physics	1
French	2, 3 or 4	Chemistry	1
German	2, 3 or 4	Botany	½ or 1
Spanish	2, 3 or 4	Biology	½ or 1
Ancient History	1	Physical Geography	½ or 1
Medieval and Modern History	1	Freehand Drawing	½ or 1
Modern History	1	Mechanical Drawing	½ or 1
		Music	1
		(with History and Theory)	
		Art History and Appreciation	1

IMPORTANT DATES FOR ADMISSION APPLICANTS

A formal application should be submitted during the Junior year, whenever possible, and must be filed by March 1 of the year in which admission is desired. Applicants are required to take the Scholastic Aptitude Test in April of their Senior year if they have not taken it at the end of their Junior year. Applicants normally receive notice of the action of the Admissions Committee during May. Provisional acceptance at this time must be ratified after a candidate's final grades have been submitted, together with a Health Certificate and evidence of successful vaccination.

*Five units, three of one language and two of another, are recommended whenever possible. Engineering students need offer only two units. Applicants who expect to concentrate in science are strongly advised to include German, and if possible also French, in their school program. This will permit a more flexible program in college.

**Required of engineering students.

SCHOLARSHIPS

The date before which applications for scholarships must be filed is March 1. All candidates for awards in the freshman year are required to take special qualifying tests, consisting of the Scholastic Aptitude Test and the Scholastic Achievement Tests administered by the College Entrance Examination Board.

Scholarship Examinations and Early Examinations for Admission to be Held on April 11, 1942

The College Entrance Examination Board will hold examinations at approximately 150 places in the United States on April 11, 1942, for applicants for scholarships and for admission to college. A list of these places and a detailed announcement regarding the April series of examinations will be ready for distribution on October 1.

Every candidate is required to file an application with the Executive Secretary of the College Entrance Examination Board, 431 West 117th Street, New York, N. Y., not later than March 15, 1942. (Candidates west of the Mississippi should file their applications by March 8, those outside of the United States, by February 8.) A candidate who takes the examinations in order to qualify for a scholarship should secure the blank form from the College. A candidate taking the Scholastic Aptitude Test for admission only may secure an application form directly from the College Board. In order to facilitate the making of arrangements for the proper conduct of the examinations, it is desired that all applications be filed as early as possible. The examination fee of ten dollars for *both tests*, or five dollars for the *Scholastic test alone* should accompany the application and should be remitted by postal order, express order, or draft on New York to the order of the College Entrance Examination Board.

Inasmuch as no special preparation will be needed for this series of examinations, detailed information regarding them, with the exception of the practice booklet for the Scholastic Aptitude Test, will not be distributed to candidates.

The College Entrance Examination Board will report to the institution indicated on the candidate's application the results of his examinations. Candidates should not expect to receive from the Board reports upon their examinations.

ADVANCED STANDING

For favorable consideration, applicants for advanced standing must have had a high scholastic record in the institution from which they wish to transfer, and must present full credentials for both college and preparatory work and a letter of honorable dismissal. As a general rule, students are not admitted to advanced standing later than the beginning of the sophomore year. The minimum requirement of residence is two years, one of which must be the senior year.

Applications must be filed by March 1.

REQUIREMENTS FOR GRADUATION

General Statement

Swarthmore College offers the degree of Bachelor of Arts and the degree of Bachelor of Science. The latter is given only in the Division of Engineering; the former, in the Divisions of the Humanities, the Social Sciences, and Mathematics and the Natural Sciences.* Four years of resident study are normally required for the completion of the work leading to a Bachelor's degree.

The work of the first two years is marked off from that of the last two. During the first two years, all students are expected to complete general College requirements, to choose their major and minor subjects, and to prepare for advanced work in these subjects by taking certain prerequisites. A student's normal schedule comprises four *full courses* a year, each of which represents from ten to twelve hours of work a week, including class meetings and laboratory periods. The program for the last two years affords a choice between two methods of study: Honors Work, which may lead to a degree *with Honors*, and General Courses. An honors student concentrates upon three related subjects which he studies by the seminar method; the system will be explained more fully below. A student in General Courses may concentrate somewhat less, and continues to have a schedule of four full courses a year.

In addition to scholastic requirements for graduation, all students must meet certain standards of participation in Phys-

*For groupings of departments see page 14.

ical education as set forth in the statement of that department (see pp. 94, 96) and must attend the Collection exercises of the College (see p. 28).

Course Advisers

The course advisers of freshmen and sophomores are the Deans, in cooperation with the departments in which the students are enrolled as majors. For juniors and seniors the advisers are the chairmen of their major departments or their representatives.

PROGRAM OF THE FIRST TWO YEARS

The general requirements for the first two years include:

(a) Two full courses selected from two of the three Divisions: Humanities, Social Sciences, Mathematics and the Natural Sciences.

(b) Prerequisites for the work of the last two years in major and minor subjects.

(c) Completion of the minimum foreign language requirement. An exceptionally well prepared freshman may demonstrate that he has completed this requirement before entering College by his achievement in a placement test which he takes at the beginning of his College course. The results of the test indicate, however, that most students need to devote from one to four semesters to further study of language.

The language requirement is explained as follows:

Each student will pursue one foreign language to a point equivalent to the completion of Course 2. Achievement in this course or its equivalent will be measured by a test given in September as an aid to placement, and in January and June at the regular examination periods. All students will be required to pass this test in the language which they are offering toward completing the requirement. The standard for admission to Course 2. is such as might reasonably be expected from a student who has had two years' preparation in the language; the standard for completion or equivalence of Course 2 is such as might be expected from a student who has had four years' preparation in the language.

PROGRAM OF THE LAST TWO YEARS

WORK IN COURSES

The work of the last two years in Courses must include a major and one minor, both in the same Division, and electives. At the end of the sophomore year, a student's choice of his major and minor subjects must be approved by the departments concerned.

Each student in Courses offers for graduation at least four full courses or their equivalent in his major subject and at least three full courses or their equivalent in his minor subject.

The completion of sixteen full courses, with a minimum average of C (see p. 46), normally constitutes the course requirement for a degree. A student may carry extra work after the freshman year with the approval of his course adviser and of the Committee on Prescribed and Extra Work, provided that his record in the previous year has been satisfactory. In addition to completing his courses, the student at the end of his senior year must pass a comprehensive examination in his major subject, set by the faculty of the major department.

HONORS WORK

DESCRIPTION OF THE SYSTEM

Honors work is a system of instruction designed to free from the limitations of class-room routine those students whose maturity and capacity enable them to do independent work. Students who are chosen toward the end of their sophomore year to read for honors are exempt from the usual course requirements. Instead, during their junior and senior years they study a few subjects intensively and independently. They meet their instructors weekly in small seminars lasting about three hours. In these meetings it is customary for students to present frequent papers, although the methods of stimulating discussion vary greatly. In scientific subjects additional time is spent in the laboratory. The work is so planned that a student takes two seminars each semester, making a total of eight seminars during his last two years. Departments sometimes permit their major students to prepare a thesis instead of one seminar.

Honors work involves a concentration of the student's efforts upon a limited and integrated field of studies. He chooses seminars in three (or sometimes four) allied subjects, and, custom-

arily devotes at least one-half of his time to a single department in the line of his major interest, in which he is expected to demonstrate real achievement. Combinations of seminars are not governed by rigid rules but must be approved by the departments and divisions in which work is taken. Combinations involving seminars from two Divisions must be approved by the Instruction Committee. No examinations or grades are given from semester to semester.* At the end of the senior year honors students take written and oral examinations given by examiners from other institutions.†

The student should attain a degree of proficiency which will enable him to meet a rigorous and searching examination. This examination is designed to test his competence in a field of knowledge rather than his mastery of those facts which an instructor has seen fit to present in seminar. This is one of the chief ends for which the system of external examiners has been instituted. The examiners first set a three-hour written examination on the subject of each seminar, and after reading the written examination have an opportunity to question each student orally, in order to clarify and enlarge the basis of their judgment of the student's command of his material.

Upon recommendation of the examiners, successful candidates are awarded the bachelor's degree with honors, with high honors, or with highest honors. Highest honors are awarded only to those who show unusual distinction. When the work of a candidate does not, in the opinion of the examiners, merit honors of any grade, his papers are returned to his instructors, who decide, under rules of the faculty, whether he shall be given a degree in course.

Students admitted to honors work who prove unable to meet the requirements or who for other reasons return to regular classes may receive proportional course credit for the work they have done while reading for honors.

Regulations governing possible combinations of major and minor subjects in the four divisions appear below. Lists of seminars offered in preparation for examinations follow departmental statements.

*It is customary for honors students to take practice examinations at the end of the Junior year over the work covered thus far. These papers are read by the instructor concerned and are used as a basis for advice and guidance for the work of the senior year.

†For list of examiners in May, 1941, see page 13.

REGULATIONS

Combinations of Majors and Minors

DIVISION OF THE HUMANITIES

Major subjects include English, French, German, Greek, History, Latin, Philosophy and Psychology; related minor subjects include those already listed, and Fine Arts. At least half of the student's time will probably be devoted to his major subject, the remainder being divided between two related subjects within the division.

DIVISION OF THE SOCIAL SCIENCES

Major and minor subjects include Economics, History, Philosophy, Psychology, and Political Science. Students in this division normally devote half their time to their major subject, dividing the remainder among related minor subjects according to plans approved by the division.

DIVISION OF MATHEMATICS AND THE NATURAL SCIENCES

Major subjects include Botany, Chemistry, Mathematics, Physics, Psychology, Zoölogy; related minor subjects include the subjects listed, and Astronomy and Philosophy. At least half of the student's time will probably be devoted to his major subject, with the remainder divided between two other related subjects within the division.

DIVISION OF ENGINEERING

Major subjects for honors work in this division include Civil Engineering, Electrical Engineering and Mechanical Engineering; a minor may be taken in either or both of the engineering departments in which the student does not have his major, or in Chemistry, Mathematics, Physics or Economics. At least one-half of the student's time will be devoted to his major in engineering. The degree granted is the B.S. in Engineering.

The final examination will include papers on the fundamentals of the three professional departments of engineering, four papers on the seminars of the senior year, and one or two additional papers based upon the course which the student has taken, the number of the papers and their subjects to be determined by the faculty of the division. (See pp. 69, 71, 73.)

Procedure for Admission

A candidate for admission to an honors division must file his application in the spring of his sophomore year with the chairman of his division, and must indicate the particular combination of related subjects on which he wishes to be examined for his degree. His acceptance by the division depends in part upon the quality of his previous work as indicated by the grades he has received but mainly upon his apparent capacity for assuming the responsibility of honors work. The names of successful candidates are announced later in the spring. The major department will then arrange, in consultation with the student, a definite program of subjects to constitute the field of knowledge on which he will be examined at the end of his senior year. That department is responsible for drawing up the original plan of his work, for supervising his choice of seminars in all departments and for keeping in touch with his progress from semester to semester. The division is responsible for approval of the student's original program and for any subsequent changes in that program. Proposals for combinations of subjects or departments not provided for in the divisional arrangements must be submitted by the division to the Committee on Extra and Prescribed Work for final approval.

DEGREES

BACHELOR OF ARTS AND BACHELOR OF SCIENCE

The degree of Bachelor of Arts and Bachelor of Science are conferred upon students who have met the requirements for graduation as stated on pages 39 and following; 64 and following.

MASTER OF ARTS AND MASTER OF SCIENCE

The degrees of Master of Arts and Master of Science may be conferred upon graduates of Swarthmore College or of other institutions of satisfactory standing who spend at least a year in residence at this College, pursuing a course of study approved by the faculty. Each candidate for the Master's degree must prepare a satisfactory thesis on a subject assigned by the professor in charge of the major subject, and must pass a final oral examination before a committee of the faculty. In recent years the policy of the faculty has been opposed to accepting candidates for the Master's degree.

ADVANCED ENGINEERING DEGREES

The advanced degrees of Mechanical Engineer (M.E.), Electrical Engineer (E.E.), and Civil Engineer (C.E.), may be obtained by graduates who have received their Bachelor's degree in Engineering upon the fulfilling of the requirements given below:

1. The candidate must have been engaged in engineering work for five years since receiving his first degree.
2. He must have had charge of engineering work and must be in a position of responsibility and trust at the time of application.
3. He must make application and submit an outline of the thesis he expects to present, one full year before the advanced degree is to be conferred.
4. The thesis must be submitted for approval one calendar month before the time of granting the degree.
5. Every candidate shall pay a registration fee of \$5 and an additional fee of \$20 when the degree is conferred.

FACULTY REGULATIONS

Attendance at Classes and Collection

Members of the Faculty will hold students responsible for regular attendance at classes.

When illness necessitates absence from classes the student should report at once to the nurses or to the College physicians.

The last meeting before vacation and the first meeting after vacation in each course must be attended. The minimum penalty for violation of this rule is probation: for absence at Thanksgiving, probation until the end of the semester; for absence at Christmas, probation until spring vacation; for absence at Washington's Birthday, probation until May 1; and for absence at spring vacation, probation for the rest of the year. The exact definition of probation in individual cases is left to the Deans with the understanding that it shall include attendance at all classes without cuts.

Absences from Collection are acted upon by the Deans as instructed by the Collection Committee of the Faculty. All students are allowed two absences from Collection each semester.

Grades

Instructors report to the Dean's office at intervals during the year upon the work of students in Courses. Informal reports during the semester take the form of comments on unsatisfactory work. At the end of each semester formal grades are given in each course under the letter system, by which *A* means excellent work; *B* means good work; *C* means fair work; *D* means poor work, and *E* shows failure. *W* signifies withdrawn and *Cond.* signifies conditioned in the course.

Reports are sent to parents and to students at the end of each semester.

For graduation in General Courses, a *C* average is required; for graduation in Honors work, the recommendation of the visiting examiners. (See p. 42.)

The mark "conditioned" indicates either (1) that a student has done unsatisfactory work in the first half of a course, but by creditable work during the second half may earn a passing grade for the full course, and thereby remove his condition;

(2) that a student's work is incomplete in respect to specific assignments or examinations; when he completes it, he will remove his condition.

Conditions of both types must normally be made up in the semester immediately following that in which they were incurred; for the removal of conditions of type (2), a date is set at the end of the first six weeks of each semester when make-up examinations must be scheduled and late papers submitted. Under special circumstances involving a use of laboratories or attendance at courses not immediately available, a student may secure permission to extend the time for making up a condition until the second semester following. Any condition not made up within a year from the time it is imposed shall thereafter be recorded as *E*, i. e., *complete failure*, which cannot be made up.

Examinations

Any student who is absent from an examination, announcement of which was made in advance, shall be given an examination at another hour only by special arrangement with the instructor in charge of the course.

No examination *in absentia* shall be permitted. This rule shall be interpreted to mean that instructors shall give examinations only at the college and under direct departmental supervision.

Summer School Work

Students desiring to transfer credit from a summer school are required to obtain the endorsement of the chairman of the department concerned before entering upon the work, and after completing the work are required to pass an examination set by the Swarthmore department.

Residence

All men students except freshmen choose their rooms in order determined by lot. All freshmen, both men and women, are assigned to rooms by the Deans. Upper class women have a preferential system carried out by a committee of students and members of the administrative staff.

In September, students are not admitted to the dormitories before the day preceding registration except by special permission in advance from the Deans.

The College dining-room is closed during the Christmas and spring recesses. The College dormitories are closed during the Christmas recess. Students leaving property in any College building during the summer recess do so at their own risk.

All freshmen must leave the College immediately after their last examination in the spring in order that their rooms may be used by Commencement visitors.

Prohibition of Automobiles at Swarthmore

By action of the Faculty, approved by the Board of Managers, undergraduates are forbidden to maintain automobiles at the College or in the Borough of Swarthmore. The regulation is as follows:

Resident students are not allowed to keep automobiles on the campus or in the Borough of Swarthmore. The rule prohibits equally the keeping of automobiles owned by students and those owned by other persons but placed in the custody or control of students. Day students may use cars in commuting to college.

Under exceptional circumstances, a student may obtain permission from one of the Deans to keep an automobile in the Borough for a limited time.

Parents and students must realize that this regulation will be strictly enforced; students who do not observe it will be asked to withdraw from College.

Exclusion from College

The College reserves the right to exclude at any time students whose conduct or academic standing it regards as undesirable, and without assigning any further reason therefor; in such cases the fees due or which may have been paid in advance to the College will not be refunded or remitted, in whole or in part, and neither the College nor any of its officers shall be under any liability whatsoever for such exclusion.

EXPENSES

The charge for tuition is \$400 a year, payable in advance. The charge for residence at the College is \$500 a year, of which half is payable at the beginning of each semester. There is a uniform laboratory and activities fee of \$25 per semester, which covers both academic and extra-curricular College activities and supersedes all separate fees formerly charged. A deposit of \$50 is required of each student, payable in advance, to cover incidental bills.

Charges for the year are therefore made as follows:

First semester:

Tuition	\$400
Residence	250
Deposit for incidental bills	50
Fees	25
	<hr/>
Total first semester charges	\$725

Second semester:

Residence	\$250
Fees	25
	<hr/>
Total second semester charges	275
	<hr/>
	\$1000

The first payment by all students is due not later than Registration Day. Bills for the first payment are mailed before the opening of the College year, and for the second payment about the first of January. Payments should be made by check or draft to the order of SWARTHMORE COLLEGE. In case bills for the first semester are not paid by November 1, and bills for the second semester by March 1, students owing such bills may be excluded from all College exercises.

No reduction or refunding of the tuition charge can be made on account of absence, illness or dismissal during the year. If a student shall withdraw or be absent from College for any reason, there will be no reduction or refund because of failure to occupy the room assigned for that semester. In case of illness or absence for other reasons from the College for six

weeks or more, there will be a proportionate reduction for board, provided that notice be given to the Comptroller at the time of withdrawal. Fees cannot be refunded for any reason whatever.

Students may charge incidental bills, including purchases at the College bookstore, laundry, telephone and room breakage, against the \$50 deposit. When this deposit has been exhausted a new deposit will be required immediately. Any unused balance is returned at the end of the year.

The funds used in paying for scholarships are derived from the income of the endowment fund and are received from time to time during the year. Students receiving these benefits will have the amount deducted from their bill due on January 1. Should the amount of the scholarship exceed the amount of the January bill, it will be deducted from the bill for the entire year, the balance becoming due in September.

Special students who enroll for less than the prescribed number of courses will be charged \$50 per half course.



COURSES OF INSTRUCTION

BOTANY

PROFESSOR: SAMUEL COPELAND PALMER, *Chairman*

ASSISTANT PROFESSOR: LUZERN G. LIVINGSTON

INSTRUCTORS: RUTH McCLUNG JONES

NORRIS JONES

1. Biology. Mr. Livingston, Mr. Jones, Mr. Kille, Mrs. Jones, Mr. Scott.

Full course.

This introductory course is designed to present the fundamental aspects of biology. Wherever possible, principles will be illustrated by both plants and animals with particular reference to their interdependence and interrelationships. The topics for consideration during the first semester (Mr. Livingston, Mr. Jones) include: protoplasm, the cell, structure and function in the higher plant, plant reproduction, genetics, and a brief survey of the plant kingdom. The topics in the second semester (Mr. Kille, Mrs. Jones, Mr. Jones, Mr. Scott) include: principles of vertebrate structure and physiology, embryology, a comparative study of a few invertebrate phyla, ecology and evolution. The course is a prerequisite for advanced courses in botany and zoölogy.

Three lectures or conferences and one laboratory period per week.

2. Plant Physiology. Mr. Livingston.

Half course, second semester.

A course with laboratory work designed to give the student an insight into the fundamentals of plant function.

- 2b. Survey of the Plant Kingdom. Mr. Livingston. *Half course, first semester.*

A comparative study of the structure and life habits of the Thallophytes, Bryophytes, and Tracheophytes (exclusive of the Angiosperms). Particular attention will be given to current concepts of evolutionary relationships from the standpoints of both comparative morphology and paleobotanical evidence.

Given in alternate years. (*Omitted in 1941-42.*)

3. Genetics and Eugenics. Mr. Palmer.

Half course, first semester.

A study of the fundamental principles of genetics. With the application of these principles to eugenics.

4. Taxonomy. Mr. Palmer.

Half course, second semester.

A course devoted to a study of the horticultural as well as native species and varieties of the campus and woods. A large number of species are available for comparison.

5. Microscopic Anatomy of Plants. Mr. Livingston.

Half course, first semester.

A course open to biology majors to introduce the technique of normal plant tissue preparation and the fundamentals of plant microscopic anatomy.

Given in alternate years. (*Offered in 1941-42.*)

6. Cytology. Mrs. Jones. *Half course, second semester.*

An advanced course including a study of both cytoplasmic and nuclear structures. Prerequisite either Botany 5 or Zoölogy (Histology).

7a. Scientific Drawing. Mr. Jones. *Half course.*

An elementary course in freehand drawing for those who wish to learn the proper methods of graphic representation of biological forms.

7b. Scientific Drawing. Mr. Jones. *Half course.*

A succeeding course with the same purpose as 7a, in which the elementary principles of water color painting are introduced. Prerequisite 7a.

8. Advanced Scientific Drawing. Mr. Jones. *Full course.*

Special problems in biological illustrating. Prerequisite Botany 7a and 7b.

9. Plant Pathology. Mr. Livingston. *Half course, second semester.*

A course designed to give the student an insight into the fundamental principles of the study of plant diseases.

10. Geology. Mr. Palmer and Mr. Jones. *Half course, second semester.*

A lecture course in general geology designed to acquaint the student with the forces at work fashioning the earth into its present form. Some time given to the study of historical geology, with special reference to the problem of evolution.

11. Plant Ecology. Mr. Palmer and Mr. Livingston. *Half course.*

Lectures and field work; closely related to course in Taxonomy.

12. Bacteriology.

Arrangements can be made for properly qualified Swarthmore students to study Bacteriology at the University of Pennsylvania. This arrangement can be made either for course or Honors students.

13. Special Topics. Mr. Palmer, Mr. and Mrs. Jones, and Mr. Livingston.

Half course.

Open to Seniors who wish to do special advanced work. Hours to be arranged with the instructor.

Numerous libraries, museums and parks in and around Philadelphia offer unusual opportunities to students to carry on investigations in the botanical sciences.

HONORS WORK

Prerequisites. The following courses, or their equivalents, are required for admission to Honors work in Botany: Biology (see Course 1 above) and General Inorganic Chemistry. Students are also urged to present additional preparation in Physics, Mathematics, and Chemistry whenever this is possible. Candidates for Honors should arrange a discussion of their course program in relation to future Honors work as early as possible in their freshman year.

Seminars. The following seminars prepare for examinations for a degree with Honors:

1. Plant Physiology.

An integrated study of the physical, chemical and biological aspects underlying plant function.

2. Plant Taxonomy and Distribution.

A close study of the classification and distribution of our most important plant families. Laboratory and field work in plant identification, and a consideration of the effects of environmental factors on the distribution of plants.

3. Genetics.

A study of the structure and development of the cell-theories of inheritance, Mendelism, Eugenics, etc.

4. Cytology.

A detailed study of plant and animal cells from the point of view of morphology and function. Especial attention is given to cytogenetics.

5. Problems of Growth and Development.

A morphological and physiological study of growth phenomena in plants.

6. Bacteriology. (See 12 above.)

CHEMISTRY

PROFESSORS: H. JERMAIN CREIGHTON, *Chairman.*
EDWARD H. COX

ASSOCIATE PROFESSOR: DUNCAN G. FOSTER.

ASSISTANT PROFESSOR: WALTER B. KEIGHTON, JR.

INSTRUCTOR: SAMUEL R. ASPINALL.

1. Inorganic Chemistry. Mr. Creighton and Mr. Keighton. *Full course.*

Lectures, demonstrations, written exercises, individual laboratory practice and weekly conferences on the general principles of inorganic chemistry. This course is primarily for students majoring in chemistry and the other sciences and is a prerequisite for Chemistry 2. It consists of two lectures, one four-hour laboratory period and a one-hour conference weekly. Text-books: Hildebrand, *Principles of Chemistry* and Latimer and Hildebrand, *Reference Book of Inorganic Chemistry*; Bray and Latimer, *A Course in General Chemistry*.

2. Analytical Chemistry. Mr. Foster. *Full course.*

First semester: Qualitative analysis. The theory and practice of the detection of the commoner chemical elements. Text-book, Hammett, *Solutions of Electrolytes*.

Second semester: Quantitative analysis: The principles and practice of volumetric analysis. Text-book, Talbot, *Quantitative Chemical Analysis*.

One lecture, one recitation or conference and two laboratory periods per week. Prerequisite, Chemistry 1, with a minimum grade of C.

4. Analytical Chemistry. Mr. Foster. *Full course, first semester.*

A laboratory course in the principles of gravimetric analysis, organic and gas analysis. Text-book, *Quantitative Inorganic Analysis*, Kolthoff and Sandell; reference-books, Treadwell-Hall, *Analytical Chemistry and Fales, Inorganic Quantitative Analysis*. Eighteen hours' laboratory work with conferences when necessary, to be arranged at the beginning of the course. (Offered in 1942-43.)

5. Physical Chemistry. Mr. Keighton. *Full course. Offered alternate years.*

Three hours of conference and lectures and one four-hour laboratory period weekly. The fundamental principles of theoretical chemistry are studied and a number of numerical exercises are worked. In the laboratory work the student uses a wide variety of physical-chemical apparatus. Books recommended: Getman and Daniels, *Outline of Theoretical Chemistry*; Daniels, Mathews, and Williams, *Experimental Physical Chemistry*.

Prerequisites, Chemistry 1 with a minimum grade of C, and a course in General Physics. This course is offered to Juniors and Seniors and alternates with Chemistry 4. (Offered in 1942-43.)

6. Organic Chemistry. Mr. Aspinall. *Half course, first semester.*

Lectures, demonstrations, written exercises, and laboratory work. Two lectures, one conference, and one four-hour laboratory period a week. In the laboratory, the students carry out reactions and syntheses of various organic compounds, as given in Adams and Johnson, *Laboratory Experiments in Organic Chemistry*. The lectures follow such texts as Conant, *Organic Chemistry* (revised edition) and cover both the aliphatic and aromatic series. The course is designed for students majoring in zoölogy and pre-medical work. Prerequisite-Chemistry 1, with a minimum grade of C.

6a. Organic Chemistry. Mr. Aspinall.

Half course, second semester.

This course is a continuation of course 6. In the laboratory, the students carry out some of the more difficult preparations as given in Adams and Johnson, Gilman, *Organic Syntheses*, and the other laboratory manuals. In the lectures the aliphatic and aromatic series are reviewed from an advanced point of view, and follow such texts as Conant, *Chemistry of Organic Compounds*, and current review articles. This course is designed for students majoring in chemistry and for pre-medical students who desire more organic chemistry. Prerequisite—Chemistry 6.

HONORS WORK

The following seminars prepare for examinations for a degree with Honors:

1. Analytical Chemistry. Mr. Foster.

First semester.

A laboratory seminar designed to give the student as thorough a groundwork in the principles and practice of quantitative analytical chemistry as the time will allow. Approximately twenty-four hours a week are spent in the laboratory under the guidance, but not the supervision of the instructor, carrying out examples of gravimetric, advanced volumetric and gas analytical methods. Conferences are held when necessary.

2. Physical Chemistry. Mr. Creighton and Mr. Keighton.

Both semesters.

Weekly seminar and laboratory. The work of the seminar includes the study of the states of aggregation of matter, elementary principles of thermodynamics, the relation between physical properties and molecular structure, equilibrium, the theory of solutions, electro-chemistry and colloid chemistry. One day per week is spent in the laboratory.

A seminar is given in the first semester for minors and another in the second semester for majors.

3. Advanced Physical Chemistry. Mr. Creighton and Mr. Keighton.

Second semester.

Weekly seminar and laboratory. The work of the seminar includes the study of thermodynamics, the activity concept and activity coefficients, the Debye-Hückel theory of strong electrolytes, and chemical kinetics including photochemistry and acid-base catalysis. One day per week is spent in the laboratory.

4. Organic Chemistry. Mr. Cox and Mr. Aspinall.

Second semester.

For students majoring in Chemistry and others wishing to take Honors 6, Advanced Organic Chemistry. A four-hour conference and eight-hour laboratory period once a week. Conant's *The Chemistry of Organic Compounds* is preferred in covering the groundwork, although any good standard text may be substituted. The groundwork is covered in three months. The remaining part of the semester is given over to reviews of the text material and discussion on reaction mechanisms and advanced topics. Adams and Johnson's *Laboratory Experiments in Organic Chemistry* is used as the basis of laboratory work.

5. Organic Chemistry. Mr. Cox and Mr. Aspinall.

First semester.

For students taking Chemistry as their minor subject. A three-hour conference and six-hour laboratory period once a week. The groundwork for the conferences is taken from any one of the elementary organic texts (preferably Conant's *The Chemistry of Organic Compounds*). In the laboratory students prepare various organic compounds as given in Adams and Johnson's *Laboratory Experiments in Organic Chemistry*.

6. Advanced Organic Chemistry. Mr. Cox and Mr. Aspinall.

Second semester.

A continuation of Honors 4. Students write thirteen weekly comprehensive papers on advanced subjects. These papers are gathered from Reviews, Monographs, and original journal articles. A four-hour conference and eight-hour laboratory period once a week. In the laboratory the students prepare more difficult compounds and pursue approximately five weeks of qualitative organic analysis. Prerequisite—Honors 4.

REQUIREMENTS FOR MAJOR AND MINOR

Students with a major in chemistry follow a course of study leading to the degree of A.B. This degree may be taken either in course or with Honors. In either case there must be completed, during the first two years, the following: Two courses in chemistry, two courses in mathematics, one course in physics, and two courses in German (or their equivalent).

In the junior and senior years, students in course are required to complete courses 4, 5, 6 and 6a in the department of chemistry and to complete the requirements in their minor subject. For students who have been accepted for Honors work there are offered the seminars listed above. At the end of their senior year, Honors students majoring in chemistry take (1) not less than four nor more than five examination papers in Chemistry; (2) one paper in Physics; (3) and the remaining papers in topics selected from the following: Mathematics, Physics, Philosophy, Physiology.

For admission to minor Honors work in chemistry, one *full* course in chemistry is a prerequisite.

Students intending to prepare for the medical profession will find it to their advantage to take as many as possible of the following courses in chemistry: Nos. 1, 2, 5, 6.

CLASSICS

PROFESSORS: E. H. BREWSTER, *Chairman.*

L. R. SHERO.

GREEK

1. Elementary Greek. Mr. Shero. *Full course.*
Study of the essentials of Greek grammar and reading of easy selections from Greek literature, with collateral study of various aspects of Greek civilization.
2. Intermediate Greek. Mr. Shero. *Full course.*
Selections from Homer and from Herodotus, Plato's *Apology*, and a tragedy are read.
Students planning to read for honors will be permitted to do some of the reading for this course in Latin, if it is impossible for them to take Latin 4.
3. Greek Survey. Mr. Shero. *Full course*
A survey of Greek literature with reading of some of the masterpieces of prose and of poetry of the classical period.
4. Advanced Greek Reading. Mr. Shero. *Full course. (Offered as required.)*
The reading done in this course is determined by the interests and needs of the members of the class.
5. The History of Greece. Mr. Shero. *Half course, first semester.*
A study of Greek civilization in its most significant aspects to the time of the Hellenistic Kingdoms, preceded by a brief survey of the Oriental civilizations by which the Greeks were influenced. Special attention is given to the 6th and 5th centuries B. C.
6. Greek Literature in English. Mr. Shero. *Half course, second semester.*
Study in English translation of some of the masterpieces of Greek literature (the Homeric epics, several of the dramas, Plato's *Republic*, etc.) and of important texts in the special fields of interest of the various members of the class; part of the reading is individually assigned in accordance with the student's own particular requirements.
7. Greek Life and Thought. Mr. Shero. *Half course, second semester. (Offered in 1942-43.)*
A general survey of those aspects of Greek civilization which have had special significance for the modern world, with detailed study of some of the masterpieces of Greek art and of Greek literature (in translation).
8. Introduction to Classical Archaeology. Miss Brewster, Mr. Shero. *Half course, first semester. (Offered in 1942-43.)*
A study of the methods of archaeological investigation, with a survey of the development of Greek and Roman architecture, sculpture, painting, ceramics, numismatics, and town-planning. Special attention is given to the early Greek period.

LATIN

1. Sub-Freshman Latin. *Full course. (Offered as required.)*
For students who begin Latin in college or for those who are not prepared to enter Latin 2. (Equivalent normally to two years' preparation in secondary school.)

2. Intermediate Latin. Miss Brewster, Mr. Shero.

Full course or two half courses.

Prose and verse (including Aulus Gellius, Roman Law; Virgil) selected according to the interests and needs of the members of the class. For students who have had two or more years of preparatory Latin and are not prepared to enter Latin 3.

3. Latin Survey. Miss Brewster.

Full course or two half courses.

A survey of Latin literature with emphasis upon Comedy, Livy; Lucretius, Horace. The course aims to give students some conception of the Roman spirit as manifested in Latin literature and in the personality of Latin writers. Open to those whose Placement Tests indicate adequate preparation.

4. Advanced Latin Reading. Miss Brewster, Mr. Shero.

Full course or two half courses.

* Selected Letters of Cicero and Pliny, selections from Tacitus; Catullus, Virgil's *Eclogues* and *Georgics*, Elegiac Poets.

5. Roman Satire and Epigram. Miss Brewster.

Half course, first semester.

6. Latin Philosophical Writings. Miss Brewster.

Half course, second semester.

7. Latin Language. Miss Brewster.

Half course, first semester.

A study of the development of the Latin language. Practice in reading Latin, in writing Latin prose, and in translating Latin (including mediæval Latin) at sight.

8. Comprehensive Survey. Miss Brewster.

Half course. (Offered as required.)

Review readings and supplementary reading in Latin authors and in modern authorities on Roman history, public and private life, art, literature, and religion. Designed to enable students, through independent study and occasional conferences, to prepare themselves for final comprehensive examinations. Open to Seniors with a major in Latin.

9. The History of Rome. Miss Brewster.

Half course, first semester. (Offered in 1942-43.)

Survey of the history of Rome from the earliest times to the accession of Marcus Aurelius, with emphasis upon the Republic and the Augustan principate. The course stresses the Roman genius for organization and administration.

10. European Backgrounds. Miss Brewster.

Half course, second semester. (Offered in 1942-43.)

A study of the provinces of the Roman Empire as a background for modern Europe and the Mediterranean world.

11. Pagan-Christian Centuries. Miss Brewster.

Half course, second semester. (Offered in 1943-44.)

A study of the development of Christian forms and ideas in the Roman Empire before the Edict of Constantine. Lectures and reports supplemented by readings in translation from pagan and Christian sources.

12. Latin Literature—in Latin and in English. Miss Brewster.

Half course. (Offered as required.)

Designed for non-classical students who may desire a classical background for their special fields. The Loeb Series of texts and translations of classical authors will be used.

HONORS WORK

I. *General prerequisites:* For a major in Greek or Latin: Elementary Greek (1), Intermediate Greek (2), Latin Survey (3).

For a minor in Greek: Elementary Greek (1), Intermediate Greek (2).

For a minor in Latin: Latin Survey (3).

II. *Supplementary preparation advised:* History of Europe (1), Introduction to Philosophy (2), French or German literature.

III. *Seminars:* The following seminars prepare for examinations for a degree with Honors:

1. History of Ancient Greek and Roman Civilization, a survey concentrating upon political institutions, art, and religion. Mr. Shero. *First semester.*
2. Intensive Study of a Special Period of Greek or Roman History: Solon to the End of the Peloponnesian War. Mr. Shero. *First semester.*
The Gracchi to Nero. Miss Brewster. *First semester. (Offered in 1942-43.)*
3. Plato. (See p. 93 under Department of Philosophy.)
4. Greek or Latin Language: an introduction to classical philology, epigraphy, palæography; practice in reading and writing in Greek or in Latin. Mr. Shero, Miss Brewster. *Second semester.*
5. Prose Authors: Greek—Thucydides, Plato, the Attic Orators. Mr. Shero. *Second semester. (Offered in 1942-43.)*
Latin, with emphasis upon Cicero and the Historians. Miss Brewster. *First semester.*
6. Poets: Greek, with emphasis upon Epic and Tragedy. Mr. Shero. *Second semester.*
Latin, with emphasis upon Epic (including Lucretius) and Satire. Miss Brewster. *Second semester. (Offered in 1942-43.)*
7. Greek and Roman Archæology: intensive study of the results of excavations in a few important cities and sanctuaries (e. g., Corinth, Olympia; Pompeii, Ostia). *First semester. (Offered in 1942-43.)*
8. Greek and Roman Political Thought: the principles presented in the writings of Plato, Aristotle, Polybius, and Cicero, and in the careers of representative Roman statesmen. *(Offered as required.)*

Required for a major in Greek or Latin: Nos. 5, 6, either 3 or 4, and one elective from the group above.

Required for a minor in Greek or Latin: Nos. 5 and 6 above and an additional paper testing Translation at Sight.

IV. A thesis may be substituted for No. 1 or No. 2 above if students have adequate preparation in History, Ancient Art, and Modern Languages.

ECONOMICS

PROFESSORS: CLAIR WILCOX, *Chairman.*
*HERBERT F. FRASER.

ASSISTANT PROFESSORS: **PATRICK MURPHY MALIN
FRANK C. PIERSON.
WOLFGANG F. STOLPER.

INSTRUCTOR: JOHN SEYBOLD.

Prerequisites and Requirements: Economics 1 is prerequisite to all advanced courses and seminars in the department. Economics 2 is strongly recommended to all students who plan to major in the department. Economics 3 is open to all upperclassmen. All other advanced courses and seminars are open only to Juniors and Seniors. Money and Banking is required of all majors and should be taken, in course or in seminar, during the Junior year. Economic Theory is required of all students taking four seminars in the department and should be taken during the Junior year.

Course Offerings: Courses 1, 2 and 4 and all seminars are offered annually. All other advanced courses are offered in alternate years. A single semester of Courses 2, 3, 7, 8 and 10 may be taken for half-course credit.

INTRODUCTORY COURSES

1. Introduction to Economics. Messrs. Wilcox, Pierson, Stolper, and Seybold.

Full course.

A description of the structure of the economy. A study of economic processes. An elementary analysis of the determination of prices and the distribution of income. A discussion of contemporary economic problems.

2. Accounting and Statistics.

The student should familiarize himself with the tools which are employed in quantitative studies in economics. To this end he should take introductory courses in accounting and statistics. This requirement may be satisfied by the completion of Engineering 10 and either Engineering 11 or Psychology 12. These half-courses are described in the statements of those departments.

ADVANCED COURSES

3. Resources, Population, and Technology. Mr. Pierson.

Full course. (Offered in 1942-43.)

First semester: a survey of recent economic trends; natural resources; changes in population, migration, and industrial location. Second semester: an examination of sources of economic instability with special reference to production trends, price changes, technological innovations, and urban problems.

*Absent on leave, first semester.

**Absent on leave.

4. Money and Banking. Mr. Seybold. *Full course.*
Development and significance of the institutions of money, credit, and banking. Theory and practice of commercial banking. Central banking, liquidity, prices, monetary standards, business cycles, and credit control. Objectives in monetary policy.
5. International Economics. Mr. Stolper. *Half course, first semester.*
International monetary problems: the balance of payments, the gold standard, free exchanges, exchange equalization accounts, exchange control. The theory of international trade. Commercial policy: tariffs, quotas, clearing agreements, reciprocal trade agreements.
6. Public Finance. Mr. Stolper. *Half course, second semester.*
A study of government expenditures, indebtedness, and revenues, with particular emphasis upon the problem of deficit financing and the economics of taxation.
7. Economics of Business. Mr. Fraser. *Full course. (Offered in 1942-43.)*
The economic problems which confront the business executive. First semester: corporate organization and finance; investment banking and the securities exchanges. Second semester: marketing problems and price policies; risk, speculation, and insurance.
8. Public Control of Business. Mr. Wilcox. *Full course.*
First semester: government regulation of prices and production in transportation, public utilities, agriculture, and the extractive industries. Second semester: types of non-competitive activity in construction, manufacturing, marketing and the service trades; public enforcement and regulation of competition.
9. Labor Problems. Mr. Pierson. *Half course, first semester.*
The position of the industrial worker; the American labor movement; the structure and functions of unions. Employer approaches to labor relations; personnel programs. The economics of wage policies. Governmental control of labor relations.
10. Social Economics. Mr. Wilcox. *Full course. (Offered in 1942-43.)*
First semester: an examination of the extent, consequences, and causes of economic inequality. Second semester: an appraisal of economic reforms with particular reference to social security, medical care, housing, minimum wage laws, the social use of the taxing power, consumers' cooperation, socialism, and economic planning.

SEMINARS

The following seminars prepare for examinations for a degree with Honors:

1. Money and Banking. Mr. Pierson. *Each semester.*
The subject matter includes the material covered in Course 4 above. The method consist of systematic seminar discussions on the basis of assigned readings, oral reports, and written papers.
2. Economic Theory. Mr. Stolper. *Each semester.*
An advanced analysis of the processes by which the prices of goods and services and the incomes of the factors of production are determined under various market conditions. A study of theories of the business cycle. Directed reading and discussion, supplemented by reports on the theoretical problems raised by factual studies.
3. International Economics. Mr. Fraser. *Second semester.*
A more detailed examination of the topics listed under Course 5 is followed by a study of the economics of war and post-war readjustment. Directed reading and written reports.

4. Public and Private Finance. Mr. Fraser. *Second semester.*
The subject matter parallels that of Courses 6 and 7. Directed reading, oral reports, and a term paper.
5. Public Control of Business. Mr. Wilcox. *First semester.*
The subject matter parallels that of Course 8. Each student is required to engage in independent research and present a written report.
6. Social Economics. Mr. Wilcox. *Each semester.*
The subject matter parallels that of Courses 9 and 10. Independent reading under guidance in an extensive bibliography. No written reports.

TUTORIALS AND THESES

Class-room instruction is supplemented by individual tutorials for majors in courses during the Senior year.

A thesis may be substituted for a course or for the examination on the subject matter covered in a seminar, under exceptional circumstances, by special arrangement.

ENGINEERING

PROFESSOR: SCOTT B. LILLY, *Chairman.*
: CHARLES G. THATCHER

ASSOCIATE PROFESSORS *HOWARD M. JENKINS

ASSISTANT PROFESSORS: *ANDREW SIMPSON
GEORGE B. THOM
SAMUEL T. CARPENTER
JOHN D. MCCRUMM

INSTRUCTORS: GEORGE A. BOURDELAIS
C. JUSTUS GARRAHAN
CHARLES B. OLER

INSTRUCTORS, PART TIME: S. W. JOHNSON
T. H. JOHNSON

There are three departments of Engineering: Civil, Electrical and Mechanical. These departments cooperate in a program of (1) introductory courses, taken normally by freshman and sophomore engineers; (2) general courses, open to all students in the College. Each department offers also its own separate program of advanced work.

An engineering student devotes about half his time to engineering courses; the other half he divides between basic sciences, such as physics and mathematics, and the non-technical fields useful for a liberal education.

During their first three years, all engineering students follow the schedule of courses outlined below. During the sophomore year students may elect Course 8, Principles of Electrical Engineering. Those who propose to major in electrical engineering should take this course. Those students whose ability in the field of mathematics and the natural sciences is marked, and those who intend to go on into graduate work, should take an additional course in mathematics in the junior year; those students whose greatest interest lies in administration, operation, or management of engineering enterprises should choose their fourth course in the field of economics or industrial management.

All students devote their last two years: (1) to developing their special interests; (2) to fulfilling the major requirements of one of the departments of Engineering; (3) to certain basic courses required of all engineers. (For details see below.)

Engineering students qualify for the degree of Bachelor of Science in Engineering.

*Absent on leave.

OUTLINE OF THE CURRICULUM IN ENGINEERING

Freshman Year—Four Courses

Humanities or Social Science elective
Mathematics 1, 2
Chemistry 1
Engineering 1, 2, 3
Summer Session Engineering 4, 5

Sophomore Year—Four Courses

Humanities or Social Science elective
Mathematics 11,12
Physics 1
Engineering 6, 7

In addition students who plan to major in electrical engineering should take

Principles of Electrical Engineering 8 (Second semester only)

Junior Year—Four Courses

Humanities, Social Science or Natural Science elective
Mechanics of Fluids, consisting of
22—Elementary Fluid Mechanics
40—Thermodynamics
Mechanics of Solids, consisting of
20—Analytic Mechanics
21—Strength of Materials
Electrical Engineering 30-A or
Electrical Machinery 30-B

The courses taken in the senior year are described under the headings Civil, Electrical and Mechanical Engineering.

HONORS WORK

In the Division of Engineering, since so much of the prescribed work is of a fundamental nature, Honors work is limited to the senior year. For a general statement, see page 43 *et seq.*, and for details see statements of the Departments of Civil, Electrical and Mechanical Engineering, pages 69, 71, 73.

COURSES OF INSTRUCTION

Introductory Courses

1. Surveying. Mr. Carpenter. *One-quarter course, first semester.*
Surveying instruments and their adjustment; practice in taping, leveling, running traverses, taking topography, stadia work, preparation of profiles and maps from field notes.
Required course for freshman engineers. Open to all students who have had trigonometry in high school or college.
2. Freshman Drawing and Shop Practice. Mr. Bourdelais, Mr. Oler.
Half course, all year.

Woodworking, pattern making, principles of foundry practice, forging and welding and machine shop. Industrial trips. Orthographic projection and modern drafting practice. Sketching with emphasis on accurate visualization.
Required course for freshman engineers; open to all students.

3. Descriptive Geometry. Mr. Carpenter, Mr. Oler.

One-quarter course, second semester.

A continuation of the principles of orthographic drawing as applied to problems of location and description of bodies in space. It is concerned with the solutions of problems that arise in connection with the determination of distances, angles, and intersections. Emphasis is placed upon the application to practical engineering problems.

Two three-hour laboratory periods.

Required course for freshman engineers; open to all students.

4. Long Survey. Mr. Carpenter.

One week during the summer following the freshman year.

Supplementary to Engineering 1. One week of continuous work in surveying and mapping, including running of levels and of a topographical survey by the stadia method.

Required course for freshman engineers; open to all students who have taken Engineering 1.

5. Advanced Drawing and Shop Practice. Mr. Bourdelais, Mr. Oler.

Two weeks during the summer.

Machine Shop practice. Industrial trips. Sketching of original ideas. Limited number of carefully made drawings.

Required course for sophomore engineers; open to all students who have taken Engineering 2.

Given in June after closing of college; 2 weeks of work, 8 hours a day.

6. Kinematics. Mr. Thom, Mr. Oler.

Half course, first semester.

A comprehensive study of the relative motions of links in a mechanism; the determination of the velocities and accelerations of these members; the development of cams, of gears and transmission machinery from the standpoint of motion. Drawing room solutions of problems of a practical nature.

Required course for sophomore engineers; open to all students.

7. Materials of Engineering. Mr. Thatcher.

Half course, second semester.

Study of the chemistry and metallurgy, physical properties, practical and economic uses of the common metals and alloys, wood, cement, and concrete. Laboratory exercises and written reports. Trips to nearby plants.

Required course for sophomore engineers; open to all students who have had chemistry in high school or college.

8. Principles of Electrical Engineering, Mr. McCrumm, Mr. Garrahan.

One-quarter course, second semester.

This course is open to all who are taking General Physics and Calculus. This is an introductory course to further work in Electrical Engineering in the junior year. It includes the study of fundamental electrical quantities and the solution of typical problems of electrodynamics and simple electrical apparatus.

Required course for sophomore engineers who plan to major in Electrical engineering; open to students who have taken Physics 1.

General Courses

10.* Accounting. Mr. S. W. Johnson.

Half course, first and second semesters.

Theory of corporate accountancy; the terminology, the functions and the interpretation of financial statements, including credit analysis and financial and operating ratios.

Open to all students.

11.* Business Statistics. Mr. Jenkins.

Half course, first and second semesters. (Omitted in 1941-42)

Study and applications of fundamental statistical methods which can be used in an analysis of business conditions and changes, and which aid in a clearer understanding of economic data.

Open to all students.

12. Industrial Management. Mr. Thom.

Full course, all year.

A survey study of the organization and management of industrial activities, including historical background, organization, physical plant, standardization, job standardization, wages, personnel and control.

Open to all students.

14. Art Metal and Wood Working. Mr. Bourdelais.

One afternoon a week, all year. No credit. (Omitted in 1941-42)

Designed to give the student a chance to express himself with his hands. The medium is usually wood or metal, the project varying with the desire of the student. Emphasis is placed on both the artistic and the practical side, and on developing powers of observation of detail.

Open to all students.

15. Contemporary Engineering Topics. Mr. Thom.

One hour per week, all year. No credit.

This course includes the preparation of at least three carefully written papers on contemporary engineering topics, and the oral presentation of the subject matter involved from notes. The program is varied by extemporaneous speeches by students, or talks by outside speakers.

Required of all seniors majoring in engineering.

16. Analysis of Physical Problems. Mr. McCrumm.

Full course, all year.

The origin, meaning, and method of solution of differential equations especially those arising from the behavior of physical systems; emphasis on linear differential equations with constant coefficients. The origin and solution of physical problems involving hyperbolic functions, elliptic integrals, Gamma and Bessel functions. Also Fourier series, Graeffe's general theory, infinite series, dimensional analysis, and other special topics.

Open to students who have had Mathematics 12 and Physics 1.

CIVIL ENGINEERING

SCOTT B. LILLY, *Chairman*

COURSES

20. Analytic Mechanics. Mr. Lilly.

Half course, first semester.

Composition and resolution of forces; center of gravity; moments; acceleration; velocity; collision of bodies; the integration of simple equations of motion. This course is a study of the behavior of particles and solid bodies, when acted upon by forces, assuming that the solid bodies do not change form under such action.

Open to students who have taken Mathematics 12 and Physics 1.

21. Strength of Materials. Mr. Carpenter.

Half course, second semester.

This course treats of the internal stresses and changes of form which always occur when forces act upon solid bodies. The mechanics involved in the design of simple engineering structures is presented, so that the student may realize the problems which must be solved in order to secure the required strength and stiffness in such structures.

Open to students who have taken Engineering 20.

*Courses No. 10 and No. 11, combined, are known as "Methods of Economic Analysis" (Economics No. 2).

22. Fluid Mechanics. Mr. Lilly.

Half course, first semester.

Properties of fluids; statics of fluids; flotation; accelerated liquids in relative equilibrium; dynamics of fluids; impulse and momentum in fluids; dynamic lift and propulsion; the flow of viscous fluids, flow of fluids in pipes; flow with a free surface; flow through orifices and tubes; the resistance of immersed and floating bodies; dynamics of compressible fluids; thermodynamics of compressible viscous fluids; dynamic similarity.

23. Structural Theory and Design. Mr. Carpenter.

Full course, all year.

Analysis of determinate and indeterminate structures; design of structural members and connections; design of reinforced concrete. The work of the first semester is arranged to meet the requirements of mechanical and electrical engineers.

Open to students who have taken Engineering 20 and 21.

Required of seniors majoring in civil engineering; Credit given for first semester to seniors majoring in electrical or mechanical engineering.

24. Engineering Economy. Mr. Lilly.

Half course, second semester.

A study of the methods which the engineer uses when he investigates a proposed course of action in order that he may decide whether it will prove to be economical in the long run.

Open to all students.

25. Civil Engineering Option. Mr. Lilly, Mr. Carpenter.

Full course.

This course is designed to give the student an opportunity to apply the fundamental principles of the mechanics of solid bodies or of the mechanics of fluids to some particular field. This further training will include more fundamental theory. Especial emphasis will be placed on the methods of attacking problems in engineering rather than a minute application of the theory to practical problems. The subjects to be studied will be decided upon by the student and the instructor. In 1940-41 the students spent approximately one-third of their time on each of the following subjects: soil mechanics and foundations; water supply; sewerage systems and sewage disposal. These subjects will be studied in series.

29. Thesis. Mr. Lilly, Mr. Carpenter.

Half course, second semester.

MAJOR IN CIVIL ENGINEERING

The curriculum for the first three years for a student who plans to major in civil engineering is given on page 65.

The courses which must be taken in the Senior year are:

- 23. Structural Theory and Design
- 25. Civil Engineering Option
- 41. Heat Power Engineering
- 24. Engineering Economy

Since Heat Power Engineering and Engineering Economy are half courses, one-quarter of the student's time in the Senior year is open, and he may elect any course in the Division of Engineering, Division of the Social Sciences, or Division of Mathematics and the Natural Sciences to complete his program. This elective must receive the approval of his course adviser and must be related to his course as a whole.

The fundamental theory of the Four Course Plan, under which the college is operating, is that the student shall confine

his efforts to not more than four subjects at the same time. Therefore the two courses, Structural Theory and Design, No. 23, and Civil Engineering Option, No. 25, are broad in scope. Course 23 includes a review of fundamental mechanics and continues with the computation of stresses, and the design of structures in steel, wood and concrete. Course 25 may include highway engineering, soil mechanics and foundations, hydrology, water supply, sewage disposal and sewerage systems. The subject matter is varied in content and emphasis to meet the needs and interests of different groups. The subjects mentioned are taken up in series, making it possible to avoid repetition and increase the efficiency of the teaching.

HONORS IN CIVIL ENGINEERING

Senior students, having completed their junior year as outlined above, may apply to read for honors. The topics of final examinations in civil engineering are:

1. Analytic Mechanics and Strength of Materials
2. Structural Theory
3. Municipal Engineering
4. Reinforced Concrete
5. Soil Mechanics and Foundations

The fundamental ideal of the work in honors is to encourage each student to go as far as he is capable in some one phase of civil engineering. He is urged to make himself familiar with all the latest developments in that field so that he may realize that engineering science is a living, growing profession, and that he may well spend his best energies to further that growth.

A major in civil engineering will take eight honors examinations, at least three of which shall be from the above list; at least one in electrical engineering; at least one in mechanical engineering, and the remainder in engineering, mathematics, physics, chemistry or the social sciences.

ELECTRICAL ENGINEERING

JOHN D. McCrUMM, *Acting Chairman*

COURSES

30A. Electrical Machinery. Mr. McCrUMM.

30B. Electrical Engineering. Mr. Garrahan. *Full courses.*

It is expected that majors in electrical engineering and others who have taken Course 8 will take course 30A; all other engineering majors, 30B.

These courses cover the laws, principles, and operation of large-power electrical apparatus; direct and alternating current. The laboratory work will consist of two parts: (a) the testing of typical machines and the preparation of adequate reports based on the tests, (b) a computation period to solve some of the more routine problems involved in the preparation of the reports.

Course 30A is open to students who have taken Engineering 8.

Electrical Engineering Options. Mr. Jenkins and/or Mr. McCrUMM.

Full courses for one or two semesters.

These optional courses are to be taken in the senior year by those whose major is electrical engineering and others interested in some fundamental phase of electrical engineering. The courses listed below may be chosen by properly qualified students as determined by a personal interview. These courses may or may not require laboratory work and may extend through the year or be terminated at the end of a single semester as the needs of the individual student demand.

31. Transients. Mr. Garrahan.

32. Vacuum Tubes. Mr. Garrahan.

33. Alternating Current Machinery. Mr. McCrUMM.

34. Transmission and Distribution. Mr. McCrUMM.

35. Circuit Analysis. Mr. McCrUMM.

39. Thesis. Electrical Engineering Department Staff.

Open to those who have taken Engineering 30A or 30B, or General Physics and Calculus in some cases.

MAJOR IN ELECTRICAL ENGINEERING

The general plan is that from the subjects listed above, and by courses offered elsewhere in the college, the student will work out a logically integrated, cognate, intensive study of one or more phases of the theory of electrical engineering.

It is expected that a student whose major is electrical engineering will have taken Engineering 8 in the second semester of his sophomore year. Other courses which must be taken to fulfill the requirements for the Bachelor of Science with major in electrical engineering include:

(1) General science subjects as listed under the general statement of the Division of Engineering, pages 65 ff. These subjects are pursued in the first three years in classes with the students in other branches of engineering, and are considered the essential foundation for all persons studying applied science.

(2) Subjects in the Divisions of the Humanities or Social Sciences. At least three subjects not offered in the scientific division must be taken over the period of the four college years. The choice is optional, the only requirement being that the three courses should form a rational whole.

(3) Additional subjects in allied scientific departments. Advanced calculus and differential equations are required for electrical engineering majors; in addition all or part of the following courses will be recommended for certain students:

41. Heat Power Engineering
24. Engineering Economy
Electricity and Magnetism
Atomic Physics

(4) Major studies in electrical engineering. According to the time available and the needs of the individual, two at least, of the following "options" will be taken in the senior year:

31. Transients
32. Vacuum Tubes
33. Alternating Current Machinery
34. Transmission and Distribution
35. Circuit Analysis
39. Thesis

HONORS IN ELECTRICAL ENGINEERING

The following seminars prepare for examinations for a degree with Honors:

1. Electric Circuit Analysis
2. Electronics
3. Alternating Current Machines

Honors students whose major is electrical engineering take:

(1) Not less than three nor more than four papers in electrical engineering.

(2) At least one paper each in civil and mechanical engineering.

(3) Papers in other departments in which honors work has been taken in the junior or senior years, to make a total of at least eight examinations.

MECHANICAL ENGINEERING

CHARLES G. THATCHER, *Chairman*

COURSES

40. Thermodynamics. Mr. Thom. *Half course, first semester.*
Fundamental thermodynamics. Properties of gases and vapors. Gas and vapor cycles. Applications to modern power plants. Class, problem and laboratory work. Open to students who have had Mathematics 12 and Physics 1.
41. Heat Power. Mr. Thatcher. *Half course, first semester.*
Theoretical and practical considerations of steam plants and internal combustion engines. Class and laboratory work, written reports. Calibration of instruments, testing of fuels and lubricants, engines, boilers, pumps and hydraulic equipment. Open to students who have had Engineering 40.
42. Internal Combustion Engines. Mr. Thatcher. *Half course, first semester.*
Application of the fundamental principles of thermodynamics and mechanics to the design of internal combustion engines; combustion of actual mixtures; analysis of cycles; carburetion and fuel injection; mixture distribution; balancing. Principles of machine design and practical design methods are introduced where applicable. Class and drawing room work supplemented by laboratory exercises. Open to students who have had Engineering 20, 21 and 40.
43. Refrigeration and Air-Conditioning. Mr. Thom. *Half course, second semester.*
A comprehensive study of refrigerants, cycles and performance of refrigerating equipment; principles of air-vapor mixtures; humidification, dehumidification; and distribution of air; analysis of heating and cooling systems and apparatus. Principles of machine design and practical procedure are introduced where applicable. Class and drawing room work are supplemented by laboratory exercises. Open to students who have had Engineering 20, 21 and 40.
44. Metallography. Mr. Thatcher. *Half course, second semester.*
The use of the microscope in study of structures and properties of metals and alloys, with emphasis on the ferrous metals. Class and laboratory work. Open to students who have had Engineering 7 or Introduction to Physical Chemistry 3.
45. Administrative Engineering. Mr. Thom. *Half course, second semester.*
The purpose of this course is to provide further training of a broad and practical nature for those whose interests and capabilities point toward executive participation in the operation of an industrial enterprise. Representative problems of equipment selection, plant layout, job analysis, production control and personnel relationship are evaluated; however, no attempt is made to provide specialized training in these fields. Although classroom work is supplemented by inspection trips to nearby plants, students planning to take this course are strongly urged to secure summer industrial employment for experience and background. Open to students who have had Engineering 12.
49. Thesis. Mr. Thatcher, Mr. Thom. *Half course, second semester.*

MAJOR IN MECHANICAL ENGINEERING

Students in this group, having completed the first three years as outlined on page 65 under the Division of Engineering, are required to take in their Senior year:

41. Heat Power
24. Engineering Economy
42. Internal Combustion Engines
43. Refrigeration and Air-Conditioning

The above courses, all being half courses, leave half of the Senior student's time for electives. He may choose these from any division of the college.

HONORS IN MECHANICAL ENGINEERING

The topics of examinations for a degree with Honors in mechanical engineering are:

1. Thermodynamics
2. Heat Power
3. Internal Combustion Engines
4. Refrigeration and Air-Conditioning
5. Industrial Management

A major in mechanical engineering will take eight honors examinations, at least three of which shall be from the above list; at least one in civil engineering; at least one in electrical engineering; and the remainder in either engineering, mathematics, physics, chemistry or the social sciences.

ENGLISH

PROFESSORS: HAROLD C. GODDARD, *Chairman*
EVERETT L. HUNT
PHILIP MARSHALL HICKS
ROBERT E. SPILLER

*ASSOCIATE PROFESSOR: TOWNSEND SCUDDER, 3RD

ASSISTANT PROFESSOR: ELIZABETH COX WRIGHT

INSTRUCTOR: FREDRIC S. KLEES

PART-TIME INSTRUCTOR: ALICE K. BRODHEAD

ASSISTANTS: BEATRICE BEACH MACLEOD

KEITH W. CHALMERS

BARBARA PEARSON LANGE

1. Introduction to English Studies.

Full Course, made up of two of the following:

Elizabethan Literature. Mr. Klees. *Half Course, first semester.*

The Eighteenth Century. Mr. Scudder. *Half Course, each semester.*

The Romantic Movement. Mrs. Wright. *Half Course, each semester.*

Victorian Literature. Mr. Klees. *Half Course, each semester.*

American Literature. Mr. Spiller. *Half Course, each semester.*

Contemporary Literature. Mr. Hicks. *Half Course, each semester.*

Great Books. Mr. Hunt. *Half Course, each semester.*

The study of significant literature of selected periods, with critical writing and speaking.

2. Chaucer. Mr. Klees. *Half course, second semester.*

3. Shakespeare. Mr. Goddard and Mrs. Wright. *Full course.*

4. Milton and the Seventeenth Century. Mr. Hunt. *Half course, first semester.*

Poetry of the Old Testament, John Donne, Milton.

5. English Poetry. Mr. Scudder. *Full course.*

A study of a selected period or aspect of English poetry. In 1941-42: Nineteenth Century Poetry.

6. The English Novel. Mr. Hicks. *Full course.*

7a. Comedy. Mr. Klees. *Half course, first semester.*

7b. Tragedy. Mr. Klees. *Half course, second semester.*

8a. Social Criticism. Mr. Klees. *Half course, first semester.*

8b. Travel and Biography. Mr. Klees. *Half course, second semester. (Omitted in 1941-42.)*

9. Modern Literature. Mr. Goddard. *Full course.*
A study of modern comparative literature.

*Absent on leave, second semester.

10. World Literature. Mr. Goddard. *Full course. (Omitted in 1941-42.)*
11. American Literature. Mr. Spiller. *Full course.*
In 1941-42: first semester, American Fiction; second semester, American Poetry.
13. Criticism. Mr. Hunt. *Half course, second semester.*
Classical background of English criticism in Plato, Aristotle, Longinus and Horace; representative essays of the major English critics from Philip Sidney to Walter Pater; brief survey of problems and writers in contemporary criticism.
15. Mediaeval Poetry and Romance. Mrs. Wright. *Full course. (Omitted in 1941-42.)*

Greek Literature in English. (Greek 6.) Mr. Shero. *Half course, second semester.*

Study in English translation of some of the masterpieces of Greek literature (the Homeric epics, several of the dramas, Plato's *Republic*, etc.) and of important texts in the special fields of interest of the various members of the class; part of the reading is individually assigned in accordance with the student's own particular requirements. No knowledge of Greek is required.

Latin Literature—in Latin and in English. (Latin 12.) Miss Brewster. *Half course, first semester.*

Designed for non-classical majors who may desire a classical background for their special fields. The Loeb Series of texts and translations of classical authors will be used.

Writing and Speaking. Students who fail to pass the prescribed test in either of these subjects on entering college or who are reported as deficient in either of them by a member of the faculty, are required to take "English Composition" or "Fundamentals of Speech" or such parts of them as may be necessary for the removal of the deficiency. Student organizations and informal groups for practice in creative writing, acting drama, extempore speaking, and debating meet with members of the English faculty.

English Composition. Mrs. Brodhead.

Advanced Composition. Mrs. Brodhead.

Fundamentals of Speech. Mr. Chalmers and Mrs. Lange.

HONORS WORK

Prerequisites. For admission to Honors work with a major in English, the requirements are at least one-half course in the Introduction to English Studies; and either Chaucer, Shakespeare, or Milton and the Seventeenth Century. Students are advised to take also The History of Europe or The History of England.

For admission with a minor in English, the requirement is one year in English, including at least one-half course in the Introduction to English Studies.

Seminars

The following seminars prepare for examinations for a degree with Honors:

GROUP I

- Chaucer. Mr. Scudder and Mr. Klees. *Second semester.*
A study of Chaucer's poetry and age.
- Shakespeare. Mr. Goddard and Mr. Hicks. *Either semester.*
A study of Shakespeare's principal plays, with a rapid reading of the rest of his work.
- Milton and the Seventeenth Century. Mr. Hunt. *First semester.*
Donne, Milton, and the poetry of the Bible.

GROUP II

Poetry

- A. Mr. Scudder *First semester.*
The nature and function of poetry; Wordsworth, Keats or Shelley, and Arnold.
- B. Mrs. Wright. *Second semester.*
Tennyson, Browning, and Christina Rossetti, with studies in Hopkins, Housman, and one or two contemporary writers.
- Drama. Mr. Hicks. *Second semester.*
Representative plays from different periods; the comic and tragic spirits.
- Novel. Mrs. Wright. *First semester.*
The novel as a literary form; Fielding, Meredith, Hardy, and Conrad.
- Literary Criticism. Mr. Hunt. *Second semester.*
English literary criticism from Sidney to Pater, with some study of classical backgrounds and contemporary developments.

GROUP III

- Modern Literature. Mr. Goddard. *First semester.*
Masterpieces of English and European writers of the past 75 years, with emphasis on the Russians.
- American Literature. Mr. Spiller. *First semester.*
The American mind as expressed in the writings of Emerson, Melville, Whitman, Mark Twain, and Henry Adams.
- Social Criticism. Mr. Spiller. *Second semester.*
Social theory in English and American literature.
- Problems of Literary Study. Mr. Spiller. *Either semester.*
The methods of literary research and criticism as applied to the study of a single problem, usually the work of a major author, resulting in a thesis.
- Linguistic Science. Mr. Reuning.
Admitted as a seminar in English for majors who concentrate on English or American language problems; may also be considered as a minor for students majoring in English.

Thesis

Students who wish to write theses not properly within the scope of the seminar on Problems of Literary Study may apply to the Chairman of the Department for permission to substitute such projects for the fourth seminar of major work.

Candidates for honors with a major in English must take at least one seminar from the first group and at least one from the second. Shakespeare shall be chosen from the first group if not previously elected in course. Four seminars are required for a major in English.

Candidates for honors with a minor in English may enroll in any two or three of the above seminars upon the recommendation of their major department.

MAJOR AND MINOR IN COURSE WORK

Major: The work of the major in General Courses normally consists of at least four full courses, including Introduction to English Studies in the first year, either Chaucer, Shakespeare, or Milton in the second year, and during the last two years a second one of these three courses (which shall be Shakespeare, if not previously elected), and a course in one of the types. The comprehensive examination at the close of the senior year is based on this work, but also includes questions on the other courses offered by the department for those prepared in these fields.

Minor: The work of the minor in General Courses normally consists of three full courses elected upon the recommendation of the major department, including at least one-half course in Introduction to English Studies.

DEPARTMENTAL LANGUAGE REQUIREMENTS

The foreign language requirement may be fulfilled by a reading knowledge of one or more of the following: French, German, Latin or Greek. Students planning to continue English studies in graduate school are advised to acquire a reading knowledge of Latin, French, and German.

FINE ARTS

ASSISTANT PROFESSOR: ROBERT M. WALKER, *Chairman*

INSTRUCTOR: ETHEL STILZ

1. Introduction to Art History. Mr. Walker. *Full course.*
A consideration of certain basic principles of design and expression in the visual arts. An introduction to the fundamental problems of art history and criticism through the analysis of selected examples of architecture, sculpture, and painting during significant periods in Ancient, European, and American civilizations.
Two lectures and one discussion meeting.
2. Interior Decoration. Miss Stilz. *Full course.*
Principles of color and design as applied to planning and furnishing of houses. Lectures on the historical development of European and American domestic architecture.
- *3. Art of the Middle Ages. Mr. Walker. *Full course. (Offered 1942-43.)*
Study of a civilization through its expression in architecture, sculpture, painting, and the minor arts.
- *4. Renaissance and Baroque Architecture in Europe. *Half course, first semester. (Offered in 1942-43.)*
Descriptive and critical account.
- *5. Modern Architecture in Europe and America. *Half course, second semester. (Offered in 1942-43.)*
Descriptive and critical account. General Course 4 recommended as a prerequisite.

HONORS WORK

Prerequisites. General Course I., Introduction to Art History, is required but outstanding exceptions will be given special consideration, as in the case of Honors Seminar 1. for 1941-1942.

Seminars. The following seminars prepare for examinations for a degree with Honors:

1. Italian Painting: Fourteenth through Seventeenth Century. Mr. Walker. *Second semester.*
Analysis of the work of a selected group of outstanding masters as a means of studying more intensively certain fundamental problems of art history and criticism.
- *2. Graphic Art. Mr. Walker. *Both semesters. (Offered in 1942-43.)*
Consideration of technique and history with emphasis on the critical problems of stylistic analysis and discrimination of original material. Trips to museums and private collections are part of the course work.
- *3. Rembrandt. Mr. Walker. *One semester. (Offered in 1942-43.)*
Intensive study of one great master. Special attention to such problems as historical background, stylistic development, and technique of a painter, draughtsman, and etcher.
- *4. Modern French Painting. *One semester. (Offered in 1942-43.)*
Descriptive and critical account.

For extra curricular work in Arts and Crafts, see pp. 31-32.

*Courses listed for 1942-1943 are subject to change because of departmental re-organization.

GERMAN LANGUAGE AND LITERATURE

PROFESSOR: WALTER SILZ, *Chairman.*

ASSISTANT PROFESSORS: KARL REUNING

LYDIA BAER

1. Elementary German. Mr. Silz, Miss Baer, and Mr. Reuning. *Full course.*
Training in grammar, composition, and reading, with some practice in conversation. Evans and Röseler, *College German.*
2. German Prose and Poetry, Grammar and Composition. Miss Baer and Mr. Reuning. *Full course.*
Reading of short stories and novels, plays and poems, and other suitable material. Review of grammar, practice in written and oral German.
Prerequisite, Course 1 or equivalent.
- 2s. Second Year German for Science Students. Miss Baer and Mr. Reuning. *Full course.*
Reading of a limited number of novels, plays and lyrics throughout the year. First semester: Reading of edited science selections. Second semester: Special readings selected according to the scientific interests of the students. Review of grammar with emphasis on development of reading ability.
Prerequisite, Course 1 or equivalent.
3. Introductory Studies in German Literature. Mr. Silz. *Full course.*
A study of representative German authors from the classical period to the present; reading and discussion of dramas, stories, and lyric poems. Writing of critical reports.
Prerequisite, course 2 or equivalent.
4. Great Periods in German Literature. *Full course.*
5. The Romantic Movement in Germany. *Half course.*
6. German Literature in the Second Half of the Nineteenth Century. *Half course.*
7. Goethe's Life and Works. Mr. Silz. *Full course.*
8. Schiller and His Age. Mr. Silz. *Half course.*
9. Eighteenth Century German Literature and Thought. *Half course.*
10. German Literature in the Twentieth Century. Miss Baer. *Half course.*
11. German Authors in English Translations. *Full course.*
This course may be taken by students who do not know German. Students who have a reading knowledge of German may read the texts in the original.
12. Writing and Speaking German. *Half course.*
Intensive practice in writing and speaking German. The subject matter is taken from German literature and *Kulturgeschichte.*

By special arrangement, qualified students who begin German in College are enabled to choose German as a major or minor in Course in their Junior and Senior years.

HONORS WORK

German may be offered as a major or minor subject in the Division of the Humanities. For admission to Honors work in German, Course 3 or its equivalent is required. By doing special reading, competent students who begin German in college may take Course 3 in their Sophomore year. No other preparation is required, but allied work in other departments of the Humanities is arranged, according to the needs and interests of the student.

The following seminars are offered to prepare for examinations for a degree with honors: (those actually given in any year vary according to the choices of the students and the convenience of the department).

1. Middle High German Literature and Philology. Mr. Reuning.

Introduction into Indo-European and Germanic philology and phonetics. Outline of development of the German language. Middle High German grammar. Brief survey of Old and Middle High German literature. Reading of MHG texts in the original, especially *Nibelungelied*, *Wolfram's Parzival*, and *Walther von der Vogelweide*.

2. The Age of Luther. Mr. Reuning.

Study of literary, historical, sociological and religious problems of the sixteenth century. Reading of outstanding authors of the period, such as Luther, Hans Sachs, Brant, Hutten, Fischart. A course or a seminar in History of the Reformation is recommended as preparation for this seminar.

3. Baroque Literature. Miss Baer.

A study of German literature in the seventeenth century: The reforms of Opitz, the poetry of Weckherlin, Fleming, and the *Volkslied*, the mysticism of Angelus Silesius and Jakob Böhme, the influence of the English Players on the German theatre, and the plays of Gryphius and the second Silesian School.

4. Classical Literature. Mr. Silz.

The humanism of Lessing, Goethe and Schiller.

5. The Romantic Movement. Mr. Silz.

Romanticism as the dominant movement in German literature of the first half of the nineteenth century.

6. Poetic Realism. Mr. Silz.

Study of the works of Grillparzer, Hebbel, Ludwig, Keller, Meyer, and Storm, and other writers of the drama, novel, and "Novelle" in the second half of the nineteenth century.

7. German Literature Since 1900. Miss Baer.

Gerhart Hauptmann, Thomas Mann, Rainer Maria Rilke, Hugo von Hofmannsthal.

8. Linguistic Science (in cooperation with other departments in the Division of the Humanities). Mr. Reuning.

The most important problems of Linguistics, e.g. sound-change, changes in accent and syntax, semantic changes, geographical distribution and relation of languages. Indo-European, English and American language problems. Relationship between linguistics and psychology. Some knowledge of German, French, Latin, or Greek is desirable, reading knowledge of at least one foreign language required. Students who know non-Indo-European languages are especially welcome. The seminar is conducted in English. (See also schedules of Honors Seminars in English and Psychology.)

THESIS

Students who wish to write a thesis may apply to the Department for permission to substitute such a project for the fourth seminar of major work.

HISTORY

PROFESSOR: FREDERICK J. MANNING, *Chairman.*

ASSOCIATE PROFESSORS: MARY ALBERTSON
TROYER S. ANDERSON

VISITING PROFESSOR: JORGE BASADRE

PART-TIME INSTRUCTOR: FREDERICK B. TOLLES

1. The History of Europe. All members of the department. *Full course*

A general survey of the origins and development of European civilization from the decline of the Roman Empire to the present day. Especially designed for Freshmen but open to all classes. Prerequisite to other courses or Honors seminars in European or English history, with certain exceptions.

2. The History of England. Miss Albertson and Mr. Anderson.
Half course, second semester.

A survey of the history of the British people with the main emphasis on the period since 1485. Required of students planning to take Honors seminars in English history. To be taken after History 1.

- 3a. The History of the United States to 1865. Mr. Manning.
Half course, first semester.

The political, economic, and social history of the American people from the seventeenth century through the Civil War. Not open to Freshmen. This course, or course 3b, is required of students taking Honors seminars in American history.

- 3b. The History of the United States since 1865.
Half course, second semester.

A continuation of course 3a. This course was offered in 1940-41. Course 3a is offered in 1941-42. Eventually both courses will be offered annually.

4. The History of Greece (Greek 5). Mr. Shero (Department of Classics).
Half course, first semester.

A study of Greek civilization in its most significant aspects to the time of the Hellenistic kingdoms, preceded by a brief survey of the Oriental civilizations by which the Greeks were influenced. Special attention given to the 6th and 5th centuries B.C.

5. The History of Rome (Latin 9). Miss Brewster (Department of Classics)
Half course, first semester (Offered in 1942-43).

Survey of the history of Rome from the earliest times to the accession of Marcus Aurelius, with emphasis upon the Republic and the Augustan principate. The course stresses the Roman genius for organization and administration.

6. The Italian Renaissance. Miss Albertson. *Half course, first semester.*

Lectures, readings and reports on the history of the Italian Renaissance. To be taken after History 1.

7. The History of France. Miss Albertson. *Half course, second semester.*

The history of France from Roman times to the present day. To be taken after History 1 unless with special permission of the instructor.

8. The History of Europe in the Nineteenth Century. Mr. Anderson.
Half course, first semester (Offered in 1942-43).

The development of Europe from the period of the French Revolution to the outbreak of the World War. To be taken after History 1.

9. The History of Europe Since 1900. Mr. Anderson.
Half course, first semester. (Offered in 1941-42 and alternate years.)
 A study of the origins and outcome of the First World War, the attempts to stabilize Europe after Versailles, and the coming of the Second World War.
10. The History of American Foreign Policy. *Half course, second semester.*
 From 1776 to the present day. For Juniors and Seniors, preferably after History 3.
11. The History of the Labor Movement. Mr. Manning.
Half course, second semester.
 The social backgrounds and the economic, political, and legal problems of English and American labor, with emphasis on the importance of English precedent for the American story. For Juniors and Seniors.
12. Military History. Mr. Manning. *Half course, second semester.*
 The principles of strategy as revealed in a few major campaigns, ancient and modern. Special emphasis is placed upon the army as a societal institution, upon factors which have given temporary superiority to the offense or the defense, and to governmental policies based on those factors.
13. The History and Problems of Latin America. Mr. Basadre.
Half course, first semester.
 A study of some contemporaneous problems of Latin America set in their historical background. Can be credited either as History or as Political Science.
14. Special Topics. All members of the department.
Half course, second semester.
 For Seniors with the Major in History.

HONORS WORK

The survey course in European history, the only course open to Freshmen (except by special permission from the department), is prerequisite to any other courses or seminars in European or English history. Students who expect to major in history, either in honors seminars or in regular courses, should elect European history in the Freshman year, American and English history in the Sophomore year. Students who expect to include history as a minor subject in honors work should elect European history in Freshman year, and either American or English history in Sophomore year if possible. Course 2, the History of England, are required for admission to honors seminars in Modern England, and Courses 3 or 4 in the History of the United States, is required for admission to Honors seminars in American history, unless special permission is obtained in advance.

Unless otherwise noted, the following seminars are offered by the department each year to prepare for examinations for a degree with Honors. Although an endeavor will be made to offer in either semester any seminar desired by a sufficient num-

ber of students, this will occasionally prove impossible and the department cannot guarantee in advance the semesters in which some seminars will be given.

EUROPEAN HISTORY

1. Fifteenth and Sixteenth Century Europe. Miss Albertson.

Topics in European history in these centuries with special attention to social and economic as well as political factors.

2. Modern Europe. Mr. Anderson.

The period from 1713 to 1914, with main stress on the 19th century.

3. Recent Europe. Mr. Anderson.

Europe from 1914 to the present time. Preference will be given to Seniors who have taken Modern Europe or Modern England.

4. The Origins of the First World War. Mr. Anderson.

Offered in the second semester for Seniors only. Largely devoted to a close study of the crucial days in 1914 with the purpose of introducing the student to the critical use of documents.

ENGLISH HISTORY

5. Mediaeval England. Miss Albertson.

The period from 1066 to 1485.

6. Tudor and Stuart England. Miss Albertson.

The period from 1485 to 1688.

7. Modern England. Staff.

The period from 1688 to the present time, with main stress on the 19th century.

AMERICAN HISTORY

8. Problems in American History. Mr. Manning.

Considerable attention is given to bibliography and the critical use of source materials important for any work in the social sciences or literary criticism in the American field.

9. American Foreign Policy.

From 1776 to the present day, with appropriate emphasis on contemporary problems. Preferably for Seniors.

10. The Supreme Court. Mr. Manning.

For Seniors in the second semester. Based on the printed Reports, with emphasis on recent developments and on the Common Law background for constitutional cases. The work in this seminar is not designed to anticipate or overlap the courses in constitutional law offered in the law schools.

ANCIENT HISTORY

Honors seminars in Greek and Roman history, conducted by the Classics department, are open to students who major in history. For prerequisites see the statement of that department.

HISTORY THESIS

For students with the major subject in history. The topic should be selected and approved by the end of the junior year. Whenever possible, the thesis should be based upon original source materials.

REQUIREMENTS FOR WORK IN COURSE

Requirements for students who elect major or minor work in history do not turn on any particular total of courses, but rather upon the completion of such courses in history, together with related courses in the social sciences or the humanities as, in the opinion of the department, will facilitate a well-rounded preparation for their comprehensive examinations. A reading knowledge of French and some acquaintance with the principles of economic and political theory are essential for an in-

telligent appreciation of history. Most graduate schools require a reading knowledge of French, German, and Latin for any advanced degree in history.

The comprehensive examinations for major students at the end of the senior year are not based on particular courses taken at Swarthmore. They include questions on (1) European history; (2) English history; (3) American history; (4) Ancient history. Major students are expected to answer general questions in each of these fields, the standard being based on the work of any survey course offered in the College or independent reading in books recommended by the department. In at least two of the fields students should be able to answer more specific questions, based either on special courses taken in the College or on special reading undertaken with the department's approval. Course 14, Special Topics, is designed to help major students in their final preparation for these examinations.

MATHEMATICS AND ASTRONOMY

- PROFESSORS: ARNOLD DRESDEN, *Chairman*
ROSS W. MARRIOTT
PETER VAN DE KAMP
Director of Sproul Observatory
- ASSOCIATE PROFESSORS: HEINRICH BRINKMANN
JOHN H. PITMAN
- LECTURER: HILDA GEIRINGER
- INSTRUCTOR: JEAN WALTON (Part-time)
- RESEARCH ASSOCIATE: K. AA. STRAND
- ASSISTANTS: LEONARD F. BARCUS
ROY W. DELAPLAINE (part time)
ARMSTRONG THOMAS
MARION E. WOLFF (part time)

COURSES IN MATHEMATICS

- 1, 2. First Year Mathematics. Mr. Brinkmann, Mr. Dresden, Mr. Marriott, Miss Walton. *Full course.*

The courses are designed to deal with the material previously covered by the separate courses in College Algebra, Trigonometry and Analytical Geometry (courses 1, 3 and 4 of the 1933 catalogue), and to introduce some of the concepts of the Differential Calculus. Topics belonging to each of these subjects are introduced in natural sequence so as to form a more closely knit whole.

Classes normally meet four times a week.

Fine, *College Algebra*; Smail, *College Algebra*; Dresden, *Plane Trigonometry*; Palmer and Leigh, *Plane Trigonometry*; Osgood and Graustein, *Plane and Solid Analytic Geometry*.

3. Invitation to Mathematics. Mr. Dresden.

Half course, second semester. (Omitted in 1941-42.)

This course is intended for students who have a non-technical interest in mathematics. It does not take the place of the usual college courses, but aims to be an introduction to some of the important concepts of modern mathematics, to emphasize the fundamental ideas of the science rather than its technical processes, to provide a background for the study of its philosophical aspects, and to furnish a basis for an appreciation of its wider significance. Dresden, *Invitation to Mathematics*.

The class normally meets three times a week; occasionally a fourth hour will be used.

Prerequisite, a good high school course in mathematics.

5. Mathematics of Investment and Insurance. Mr. Dresden.

Half course, second semester.

The theory of compound interest; annuities; sinking funds; interest rates; theory of probability; mortality tables. Completion of this course, courses Nos. 12 and 14, and an introduction to the Theory of Finite Differences should enable the student to proceed with the examinations for admission to the Actuarial Society of America. Skinner, *Mathematical Theory of Investment...*

Prerequisite, a good high school course in algebra.

- 11, 12. Differential and Integral Calculus. Mr. Brinkmann, Mr. Dresden and Mr. Marriott. *Full course.*

These courses carry forward the work begun in courses 1, 2 and are intended to give the student a sufficient introduction to mathematics to serve as a basis for more

advanced work in analysis and its applications. Classes normally meet three times a week; students are expected to keep a fourth hour free from standing engagements so as to make it available for occasional quizzes or special exercises. Dresden, *Introduction to the Calculus*.

Prerequisite, courses 1, 2.

14. Theory of Equations. Mr. Dresden.

Half course, first semester. (Omitted in 1941-42.)

Operations on complex numbers. Solutions of cubic and quartic equations. General properties of polynomials. Separation and calculation of roots of numerical equations. Weisner, *Theory of Equations*.

Together with course 15 (below), this course supplies a year's work for students who pursue mathematics as a major or minor subject in course, usually to be taken in the junior year; classes normally meet three times a week.

Prerequisite, courses 1, 2, 11, 12.

15. Solid Analytical Geometry. Mr. Dresden.

Half course, second semester. (Omitted in 1941-42.)

Metric theory of planes, lines and quadric surfaces in Euclidean three-dimensional space, emphasis on the use of determinants and matrices. Dresden, *Solid Analytical Geometry and Determinants*.

Together with course 14 (above), this course supplies a year's work for students who pursue mathematics as a major or minor subject in course, usually to be taken in the junior year. Classes normally meet three times a week.

Prerequisite, courses 1, 2, 11, 12, 14.

16. Advanced Calculus. Mr. Brinkmann.

Half course, first semester.

Total and partial derivatives; theory of infinitesimals; definite integrals; approximations. The aim of the course is three-fold: to ground the student in the elementary work which has preceded it; to give an introduction to more advanced topics; and to develop skill in the application of the principles of the Calculus to Geometry and Mechanics. Osgood, *Advanced Calculus*; Osgood, *Mechanics*.

Together with course 17 (below) this course makes possible a year's work for students who pursue mathematics as a major or minor subject in course, to be taken in the junior or senior year. Classes normally meet three times a week.

Prerequisites, courses 1, 2, 11, 12.

17. Differential Equations. Mr. Brinkmann.

Half course, second semester.

A study of ordinary and partial differential equations, with their applications to geometrical, physical, and mechanical problems. Osgood, *Advanced Calculus*; Osgood, *Mechanics*.

Together with course 16 (above) this course makes possible a year's work for students who pursue mathematics as a major or minor subject in course, to be taken in the junior or senior year. Classes normally meet three times a week.

Prerequisite, courses 1, 2, 11, 12, 16.

31. Undergraduate Reading Course in Mathematics.

Half course or full course.

This course is to provide an opportunity for students to do special work in fields not covered by the undergraduate courses, listed above. The work consists in the preparation of papers requiring extensive and detailed examination of the literature of a problem.

Courses of graduate character are offered from time to time, in accordance with the needs of graduate and advanced undergraduate students. Normally advanced undergraduate students will do such work in honors seminars (see below). The subjects of these courses are Projective Geometry, Theory of numbers, Theory of functions of a real variable, Theory of functions of a complex variable.

Psychology 12. Elementary Statistics. Mr. Crutchfield.

Half course, first semester.

Study of the elements of statistical method, comprising treatment of certain principles in the organization and analysis of statistical data; application of these principles to data of the social sciences.

COURSES IN ASTRONOMY

1, 2. Descriptive Astronomy. Mr. Pitman. *Full course.*

A study of the fundamental facts and laws of Astronomy, and of the methods and instruments of modern astronomical research. In the laboratory sessions, the class will learn to use various types of instruments. The study of the text book will be supplemented by lectures, some of which will be held in the Planetarium. The treatment of the subject is non-mathematical. The technical details of many problems are investigated in advanced courses.

Baker, *Astronomy*.

Three class periods, one laboratory period each week.

3. Practical Astronomy. Mr. Pitman. *Half course, second semester.*

Theory and use of the transit instruments; determination of time; the latitude of Swarthmore; determination of longitude. Intended for students of Astronomy and Engineering and those desiring to take the civil service examinations for positions in the United States Coast and Geodetic Survey.

Classes normally meet three times each week.

Prerequisites, Mathematics 1, 2 and Astronomy 1, 2.

4. Laboratory Astronomy. Mr. Pitman. *Half course, first semester.*

Theory and practice of micrometric measures of double stars, comets and asteroids. Visual and photographic photometry. Photography of selected objects. Since much of this work is dependent upon the weather, the class will adjust its program to conditions. Normally two class sessions and one laboratory period per week.

Prerequisites, Mathematics 1, 2 and Astronomy 1, 2.

31. Undergraduate Reading Course in Astronomy.

Half course or full course.

Undergraduate students may, under direction, prepare papers upon subjects requiring a rather extensive examination of the literature of a problem. Courses 32 and 51 to 55 are half courses, offered from time to time to meet the needs of graduate students and of advanced undergraduates.

32. Spherical Astronomy. Mr. Pitman.

51. Orbit Computation. Mr. Pitman.

54. Statistical Astronomy. Mr. van de Kamp.

55. Celestial Mechanics. Mr. Strand.

HONORS WORK IN MATHEMATICS

The following seminars prepare for examinations leading to a degree with Honors:

1. Advanced Calculus.

The differential calculus for functions of several variables and its geometric applications, double and triple integrals, improper integrals, line and surface integrals, the elements of vector analysis.

2. Differential Equations.

Ordinary differential equations of the first order, linear differential equations, with particular attention to special cases of the equation of second order; some aspects of the theory of partial differential equations, of Fourier series, of the calculus of variations and of functions of a complex variable.

For senior honors students two or more of the following seminars are offered each year, according to the needs and interests of the students.

3. Theory of Equations.

The topics covered are the following: Properties of polynomials, solution of cubic and quartic equations, numerical solution of equations, Sturm's theorem and related theorems, symmetric functions, resultants, application to geometrical problems.

4. Solid Analytic Geometry.

The analytic geometry of 3-dimensional space is studied, along with the algebraic tools that are necessary for that purpose. The subjects taken up are: Determinants, matrices, systems of linear equations, lines and planes, transformation of coordinates, quadric surfaces, classification of the general equation of the second degree, special properties of quadric surfaces, such as rulings and circular sections, system of quadric surfaces.

5. Theory of Functions of a Complex Variable.

A fairly detailed study of the linear fractional transformation in the complex plane. Derivatives and integrals of analytic functions. Expansion in series. Contour integrals.

6. Foundations of Mathematics.

Postulational treatment of mathematics. The problem of consistency. Relation of logic and mathematics. Some of the systematic treatments of the foundation of logic. Modern developments.

7. Advanced Geometry.

An introduction to differential geometry, projective geometry, and more-dimensional geometry. Use of elementary matrix calculus; group theoretical concepts.

8. Statistics and Probability.

A study is to be made of elementary mathematical theories which are finding application in statistics. Applications are to be made to various fields in the social and in the natural sciences.

9. Theory of Numbers.

Among the subjects treated in this seminar are; Elementary properties of integers, the congruence relation, continued fractions, quadratic residues, simple examples of fields of algebraic numbers.

10. Analytic Mechanics.

The main subject matter of this seminar is the study of the motion of particles and rigid bodies when acted upon by forces. The equilibrium of such forces will be studied briefly. Many examples will be worked to illustrate the fundamental principles.

HONORS SEMINARS IN ASTRONOMY

Seminars on the following topics will be arranged for those desiring to take one or more papers in Astronomy.

1. Spherical Astronomy: A mathematical discussion of the reduction of visual and photographic observations of position; solution of visual and spectroscopic binary orbits.

Prerequisites, Astronomy 1, 2; Mathematics 11, 12.

2. Statistical Astronomy: Fundamental data. Stellar motions and parallaxes. Distribution of objects in space. The galactic system.

Prerequisites: Mathematics, 11, 12.

3. Theory of Orbits and Computation of Orbit of an Asteroid or Comet.
Prerequisites, Astronomy 1, 2; Mathematics 11, 12.
4. Celestial Mechanics.
Prerequisites, Astronomy 1, 2; Mathematics 11, 12.
5. Photographic Astrometry.
Prerequisites, Astronomy 1, 2; Mathematics 11, 12.

REQUIREMENTS FOR MAJOR AND MINOR IN COURSE

For students who intend to major in mathematics in course the normal sequence of courses is the following: Freshman year, courses 1, 2; Sophomore year, courses 11, 12; Junior year, courses 14, 15; Senior year, courses 16, 17. Those who intend to pursue astronomy as a major subject in course should have in addition courses 1, 2 in that subject during the Freshman or Sophomore year; advanced courses selected from the list given above combined with work in mathematics constitute the further requirement.

For students who select mathematics or astronomy as their minor, the minimum of three courses should be selected from the following: Mathematics 1, 2; 11, 12; 14, 15; 16, 17; Astronomy 1, 2, 3. Completion of course 12 is the minimum requirement.

Prerequisites for admission to honors seminars in mathematics either as a major or as a minor are the completion of courses 1, 2; 11, 12; the completion of the course in General Physics; a thorough reading knowledge of French or German. For honors work in Astronomy, completion of courses 1, 2 in that subject is necessary in addition to the requirements indicated above.

LIBRARIES AND OBSERVATORY

The astronomical part of the departmental library is located on the first floor of the Observatory; the mathematical section on the fifth floor of Parrish Hall. The Library contains complete sets of nearly all the American mathematical and astronomical periodicals, and sets (some of which are complete, some of which are not) of the leading English, German and French periodicals. This library receives the publications of many of the leading observatories in exchange for the publication of the Sproul Observatory.

The principal instrument of the Sproul Observatory is the twenty-four inch visual refractor of 36 foot focal length, used almost exclusively for photography. The instrument has been in continuous operation since 1912 and has provided a valuable collection of photographs which, at present, is growing at the rate of over 2000 plates each year. The principal program of the observatory is an accurate study of the distances, motion and masses of the nearer stellar systems. Results of departmental studies are published in the Sproul Observatory publications and in various scientific journals.

Advanced study in conjunction with the research program of the observatory may be arranged in consultation with the director of the Sproul Observatory.

The Observatory is open to visitors on the second and fourth Tuesday nights of each month, except those Tuesday nights that fall in a vacation period. Visitors thus have an opportunity of seeing, in the course of a year, many celestial objects of various types.

MUSIC

ASSOCIATE PROFESSOR: ALFRED J. SWAN, *Chairman*

ASSISTANT: LINDSAY A. LAFFORD

1. Introduction to Music, Analysis of Musical Forms, and Historical Survey. Mr. Swan. *Full course.*

As indicated above, the purpose of the course is a three-fold one: to define and clarify the scope of music for the average listener, to attain to a knowledge of the rudiments of music that will enable the student to analyze such classical forms as the fugue, sonata, or rondo, and to present the material in historical order, pointing out the place of music and the rôle of individual composers in the successive epochs of the Christian era (up to Beethoven).

2. Music Since Beethoven. Mr. Swan. *Full course.*

As with Music 1, the purpose of this course is the establishment of a method of criticism, the development of thought as well as the excitation of emotion in listening to music; but since the training is here done on such complex works as the symphonies of Brahms and Tchaikovsky, the music dramas of Moussorgsky and Wagner, etc., a limited acquaintance with the musical forms of the Viennese classics is presupposed.

3. The Theory of Music. Mr. Lafford. *Full course.*

Introduction to Musical Theory, comprising the mechanics of notation, time, and of written music generally. Harmony, from two part and figured Harmony to unfigured Harmony in any form, and counterpoint to fifth species in three parts, with an introduction to Fugue. (Omitted in 1941-42.)

MUSICAL ACTIVITIES

The Swarthmore College Chorus. Mr. Swan, Mr. Lafford.

The Chorus is composed of 55-60 men and women. Entrance requirements are: a good voice, a good ear, and an ability to read music. The annual concert is held in March or April. The a cappella music for the chorus is chosen from the older masters (from the later Middle Ages to Bach, with an emphasis on some of the madrigalists), with some modern settings of folk-songs and religious chants thrown in. In conjunction with the college orchestra the chorus performs large works of the classic masters, and opera. The major productions of the past fifteen years have been one act from Vaughan William's "Hugh the Drover", three scenes from Rimsky-Korsakoff's "Sadko", the B flat major Mass of Haydn, and the Passion Music of Schütz. The last two have been recorded by Victor and Columbia respectively. Members of the chorus are expected to sing freely in Latin and several modern languages. Rehearsals are held once a week with additional work before the concerts.

The Swarthmore College Orchestra. Mr. Swan, Mr. Lafford.

The Orchestra is composed of 30-35 men and women. Entrance requirements are: a good, clean tone on an orchestral instrument and an accurate rhythm. The orchestra takes in hand a certain number of original classical and modern scores in rehearsal (no arrangements of any kind), from which one or two are picked for the annual concert. An important function of the orchestra is likewise the accompaniment of professional soloists who are brought to Swarthmore by the Cooper Foundation (see p. 23). Rehearsals are held once a week with additional work before the concerts.

Chamber Music.

No formal instruction in the playing of chamber music is offered, but for years the undergraduates have been given the opportunity of gathering once a week at the home of Professor Arnold Dresden for the purpose of playing the best classic and romantic works of chamber music. The best players and groups are picked to perform at student vespers.

Informal Singing.

In the same way as chamber music, informal group singing has been carried on at the houses of Professors Hunt and Wilcox once very fortnight.

The Bronson Cutting Collection.

This highly valuable collection (see p. 24) is resorted to all along in class work. Furthermore students are expected to use it in the preparation of their assignments, and request programs are played at specified hours.

PHILOSOPHY AND RELIGION

PROFESSOR: BRAND BLANSHARD, *Chairman*

ASSISTANT PROFESSORS: MAURICE H. MANDELBAUM

RICHARD B. BRANDT

FRANCIS G. HEALEY

1. Logic. Mr. Blanshard, Mr. Brandt. *Half course, first semester.*
A study of the forms of reasoning, inductive and deductive. Special attention is given to the application of logical rules in the analysis of arguments and the detection of fallacies.
2. Introduction to Philosophy. All instructors. *Half course, both semesters.*
A survey of the principal problems of philosophy and the alternative answers to them. Stress is laid on the writing of philosophical essays.
4. Ethics. All instructors. *Half course, both semesters.*
An introduction to ethical theory, with a brief consideration of the various types of ethics and of the application of ethical principles in practice.
5. The Philosophy of Science. Mr. Brandt. *Half course, second semester.*
A critical study of the nature of modern science and of some of its leading problems, of the philosophical significance of some recent theories in the physical and mathematical sciences (such as the relativity and quantum theories), of metaphysical problems involved in fundamental concepts like space, material substance, causation, and emergent evolution.
- 6a. Greek Philosophy. Mrs. Blanshard. *Half course, first semester.*
The pre-Socratics, Plato, Aristotle, Stoics and Epicureans, Neoplatonists and Sceptics, early Christianity. Readings in the sources.
- 6b. History of Modern Philosophy. Mr. Brandt. *Half course, second semester.*
A review of the principal systems of thought from Descartes on. The greater philosophers are studied through selections from their works; these readings are coordinated through a standard history of philosophy.
7. Aesthetics. Mr. Mandelbaum. *Half course, first semester.*
A historical and critical study of the theory of beauty and of standards of literary and artistic criticism. Recommended for students majoring in literature or the fine arts.
- 12a. The History of Religions. Mr. Healey. *Half course, first semester.*
A historical and comparative study of the great religions: Buddhism, Hinduism, Mohammedanism, Judaism, Christianity.
- 12b. The Philosophy of Religion. Mr. Healey. *Half course, second semester.*
A study of religious experience, and the conceptions and problems that grow out of it: the idea of God, the problem of evil, freedom, immortality, the implications of religion for conduct.

HONORS WORK

Prerequisites: For admission to honors study in philosophy, the requirement is at least two semester courses. It is strongly recommended that one of these be the Introduction to Philosophy (course 2). Students who do not take this course should consult their instructors to make sure that their combinations will be acceptable as prerequisites for honors work.

Seminars: The following seminars prepare for examinations for a degree with Honors:

1. Moral Philosophy. Mr. Healey and others. *Both semesters, as required.*

A seminar in ethics, systematic and historical. Rashdall's *Theory of Good and Evil* (2 vols.) is covered in detail. A printed syllabus (75 pp.), containing lists of readings in the sources, references in recent literature, topics for papers, and questions for self-examination, has been prepared for this seminar.

2. Plato. Mr. Nason. *Second semester.*

An examination of all the major and some of the minor dialogues of Plato in an effort to understand his contributions to ethics, politics, and metaphysics and to appreciate his importance for Western thought. Attention will be paid both to his historical setting and to his significance for contemporary problems. Recommended for students of classics and literature.

3. History of Modern Philosophy. Mr. Nason, Mr. Brandt. *Both semesters.*

The development of modern thought from Bacon and Descartes to Kant. If the group so desires, it may, with the approval of the instructor, exchange a study of certain of the pre-Kantian philosophers for a study of more recent philosophical movements. This seminar may appropriately be combined with work in any of the three divisions.

4. Classic Problems in Philosophy. Mr. Blanshard. *Both semesters.*

The first half of the study is devoted to the theory of knowledge; Montague's *Ways of Knowing* is used as a common basis and is supplemented by readings in contemporary philosophy. In the second half of the semester, selected problems in metaphysics are taken for discussion, including usually the mind-body problem, the issue between the mechanist and the vitalist, the nature of the self, the problem of freedom and the relation between philosophy and religion. Limited to Seniors except for Juniors with special permission.

5. Aesthetics. Mr. Mandelbaum. *First semester.*

A study, partly historical, partly systematic, of the philosophies of beauty and of art, including theories of tragedy and comedy, of the sublime, and of standards of criticism. Readings in the sources, ancient and modern; occasional visits to the art collections of Philadelphia. Recommended for students of literature and the fine arts.

6. Philosophy of Science. Mr. Brandt. *As required.*

A consideration of the nature and scope of science and scientific method; and of the logical foundations of science, including the theories of induction and meaning, and the relation of epistemology to the interpretation of science. Examination of the concepts of space, time, causality, mechanism, vitalism, explanation, and other scientific concepts of importance for the student of philosophy.

7. Social Philosophy. Mr. Blanshard. *Both semesters.*

A study of the ethical basis of the state, and of rights and duties within it; of the current conflict between Fascist, Marxist, and democratic views of the state; of the ideas of equality, liberty, law, property, and justice. Recommended for students in the social sciences.

8. Concepts of Social Science. Mr. Mandelbaum. *First semester.*

A critical analysis of the organic and atomistic views of society, the idea of a group mind, of law and custom, of theories of progress, of the Hegelian and Marxian views of social change, and other cardinal notions of social theory. Recommended for students of the social sciences.

9. The Philosophy of Religion. Mr. Healey. *Second semester.*

The psychology and interpretation of religious experience; the adjustment of scientific and religious outlooks; the problem of religious knowledge; naturalism, theism, and pantheism; the validity and the difficulties of the Christian theology and ethic.

10. Thesis.

A thesis may be substituted by majors in the department for one of the honors subjects, upon application by the student and at the discretion of the department.

PHYSICAL EDUCATION FOR MEN

CARL K. DELLMUTH, *Director of*

Physical Education and Athletics

ASSISTANT PROFESSOR : ROBERT H. DUNN, *Assistant Director*

INSTRUCTORS: AVERY F. BLAKE

E. J. FAULKNER

LEWIS H. ELVERSON

ASSISTANTS: ALBERT M. BARRON

SAMUEL ECKERD

WILLIS J. STETSON

JAMES J. McADOO

HENRY FORD

FRANK C. PIERSON

PAUL STOFKO

ALFRED D. COX, JR.

RICARD P. WEST

TOWNSEND SCUDDER, III

COLLEGE PHYSICIAN FOR MEN: DR. PAUL STRONG

Sports Education.

This course is required of all first- and second-year men.

The minimum requirement is one hour of sports participation on each of two days per week, with at least one team sport each week.

It is the aim of the department to offer every student an opportunity to participate in a variety of activities regularly; to broaden his social contacts with other students and receive the valuable benefits of sports, such as training in leadership, self-discipline, morale, unselfishness, and health habits; and to develop carry-over sports that he will continue to enjoy after he leaves college.

A student who has not satisfied his requirement in Physical Education will be refused admission to the senior class. Juniors and seniors who have fulfilled freshman and sophomore requirements may elect to continue participation in the Sports Education program.

FALL ACTIVITIES

Opening of College to Thanksgiving Recess

Badminton	*Football	Handball	Tennis
*Cross-Country	Golf	*Soccer	Touch Football

Hygiene (Required of all Freshmen).

WINTER ACTIVITIES

Thanksgiving Recess to Spring Recess

Badminton	Lacrosse	*Tennis
*Basketball	Life Saving	*Track
Boxing	Paddle Tennis	Volley Ball
*Fencing	Squash	Wrestling
Golf	*Soccer	
Handball	*Swimming and Diving	

*Intercollegiate varsity and freshman schedules are played in these sports.

SPRING ACTIVITIES

Spring Recess to May 15

*Baseball

*Lacrosse

*Tennis

*Golf

Softball

*Track

Corrective Physical Education: A student who is unable to follow the regular program in physical education because of a physical handicap will be given special activities to meet his needs.

*Intercollegiate varsity and freshman schedules are played in these sports.

PHYSICAL EDUCATION FOR WOMEN

ASSISTANT PROFESSOR: VIRGINIA RATH, *Chairman*

INSTRUCTORS: ALICE GATES

MAY E. PARRY

ASSISTANTS: GRETCHEN WATSON

DOROTHY MACY

BETTY WALKER STRONG

COLLEGE PHYSICIAN FOR WOMEN: DR. DOROTHY ASHTON

REQUIREMENTS

A wide experience in recreational, rhythmic and developmental activities is an important factor in human well-being and happiness. Therefore this department aims to provide opportunities for instruction and participation in sports and dancing; to encourage appreciation of rhythm and design, of sportsmanship, of good coordination and poise and of outdoor activity; and finally to lay the foundations of a program that can be continued after graduation.

Classes are kept small to insure individual attention, and students are grouped according to ability. Ample opportunities are given for intramural and intercollegiate competition, as well as for public performances and demonstrations.

Freshmen, sophomores and juniors take three periods of activity each week. These may be elected from the list below, with the exception that freshmen are required to take one period of swimming in the fall. Seniors may take two hours of any activity each week without signing up for instruction classes. All seniors are required to pass a safety test in swimming before graduation.

Regulation costumes should be ordered before college opens. Blanks for this purpose will be sent out from the Office of the Dean to all incoming students.

SPORTS

1. Hockey. Miss Parry, Miss Rath. *Fall term.*
Class and Varsity.
2. Archery. Miss Rath. *Fall and Spring.*
Class and Varsity.
3. Tennis. Miss Parry, Miss Rath, Miss Gates, Mr. Faulkner. *Fall, Winter and Spring.*
Class and Varsity. Spring.
4. Golf Miss Watson. *Fall and Spring.*
Class and Varsity.
5. Swimming. Miss Rath, Miss Gates, Miss Parry. *Fall, Winter and Spring.*
Required of all Freshmen in the fall term. Seniors are required to pass a standard swimming test before graduation. Sophomores and Juniors may pass this test in advance.
Beginner, intermediate and advanced classes in strokes, safety, diving and Red Cross Life Saving, senior and Instructors' tests.
Class and Varsity.
6. Horseback Riding. Mrs. Strong. *Fall, Winter and Spring.*
Class and Club.
7. Basketball. Miss Parry, Miss Rath. *Winter.*
Class and Varsity.
8. Fencing. Miss Macy. *Fall, Winter and Spring.*
Class and Varsity.
9. Badminton. Miss Rath, Miss Parry, Miss Gates. *Winter and Spring.*
Class and Varsity.

RHYTHMIC ACTIVITIES

Miss Gates.

10. Dancing. *Fall, Winter and Spring.*
Class and Club.
11. Tap Dancing. *Winter.*
12. Folk Dancing. *Fall, Winter and Spring.*

DEVELOPMENTAL AND HEALTH ACTIVITIES

14. Tumbling. Miss Rath. *Winter.*
15. Individual Gymnastics. Miss Rath. *Winter.*
For those students who need special exercises because of incorrect posture or minor orthopedic defects.
16. Body Mechanics. Miss Rath. *Winter.*
Required of all first-year students.

PHYSICS

PROFESSOR: WINTHROP R. WRIGHT

ASSOCIATE PROFESSOR: MILAN W. GARRETT

ASSISTANT PROFESSOR: WILLIAM C. ELMORE

1. General Physics. Messrs. Wright, Garrett and Elmore.

Full course.

Three lectures and one laboratory period weekly together with such conferences as prove desirable. This course is a prerequisite for all other work in physics whether in course or in honors. It is also required for students majoring in engineering and for students expecting to study medicine.

2. Advanced General Physics. Mr. Elmore.

Full course.

Three conferences and one laboratory period weekly. The material for this course is drawn from the fields of mechanics, hydrodynamics, the kinetic theory, thermodynamics, and modern physics. It is recommended for physics majors and should also meet the needs of students in course who are majoring in the engineering and the science divisions.

HONORS WORK

The following seminars prepare for examinations for a degree with Honors:

1. Physical Optics. Mr. Wright.

Second semester.

Based on Robertson's *Introduction to Physical Optics*. The laboratory work includes the measurement of thin and thick lenses, the intercomparison of wave lengths by prism, grating, and interference spectrographs both visually and photographically, the computation of series constants, and the measurement of various interference and diffraction patterns.

2. Electricity and Magnetism. Mr. Garrett.

First semester.

Based principally on Page and Adams' *Principles of Electricity*. It covers electrostatics, magnetism, electro-magnetic phenomena, electronics and some applications. It is accompanied by laboratory measurements involving direct, alternating, and electronic currents, static charges and permanent magnets. Prerequisite—Mathematics seminars in advanced calculus and differential equations.

3. Atomic Physics. Messrs. Wright, Garrett, and Elmore. *Second semester.*

Readings in the fields of gaseous conduction, photoelectricity, thermionic emission, X-rays, radioactivity and atomic structure with accompanying quantitative experiments. This seminar must be preceded by the one in electricity and magnetism.

4. Theoretical Physics. Mr. Elmore.

Selected readings and problems from the texts on theoretical physics by Page and by Slater and Frank. This seminar is not usually given.

Prerequisites: The following courses or their equivalent are prerequisite to honors work in physics, whether major or minor:

General Physics 1

Calculus 11, 12

Freshman Mathematics 1, 2

German 1, 2

Students majoring in physics are expected to take Advanced Physics 2 and General Chemistry 1. Major students in general read for honors, but in special circumstances they may work toward a degree in course.

POLITICAL SCIENCE

ASSOCIATE PROFESSOR: J. ROLAND PENNOCK, *Chairman*

ASSISTANT PROFESSOR: VERNON A. O'ROURKE

ASSISTANT PROFESSOR (PART-TIME): BRYCE WOOD

INSTRUCTORS: *FRANCES REINHOLD FUSSELL

ARNAUD B. LEAVELLE

Political Science 1 is open to all students and is prerequisite to all other courses offered by the Department. Other courses are open to all students who have had Political Science 1 unless otherwise indicated.

1. Introduction to Political Science. Messrs. Pennock, O'Rourke, and Leavelle.
Full course.

The foundations of politics—sociological, psychological, and economic; nature and development of political institutions; types of government. An examination of government and politics in the principal countries of Europe, followed by a more detailed study of the national government of the United States.

2. American Political Parties. Mr. O'Rourke. *Half course, first semester.*

Structure, motivations, and techniques of political parties at the national, state, and local levels. Problems of political sectionalism, party leadership, party responsibility, and the impact of pressure groups on the formation of public policy.

- 3a. American Federal Government. Mr. O'Rourke. *Half course, first semester.*

A study of the present structure, functions, and operation of American Government, with special emphasis upon the national government, and upon recent developments in the field.

- 3b. American State and Local Government. Mr. O'Rourke. *Half course, second semester.*

State and local government agencies, practices, and problems. Constitutions and charters, governors and city executives, legislatures and councils, problems of state and local administrative organization, and political parties. Modern aspects of state-local relations.

4. American Constitutional Law. Mr. Leavelle. *Half course, second semester.*

The Constitution as developed by the Court; and the Court as seen through the cases. Stressing (a) the extent of national power, (b) constitutional limitations upon state legislation, (c) the Supreme Court and the New Deal, and (d) the nature of the judicial process.

5. Public Administration. Mr. Leavelle. *Half course, first semester.*

An analysis of the principles of administrative organization in modern governments with illustrative material drawn chiefly from the national government of the United States and with particular references to the implication of recent changes. Problems to be dealt with include: delegation of power, administrative integration, conduct of regulatory and managerial activities, personnel, administrative legislation and adjudication.

Open to Juniors and Seniors, only.

*Absent on leave.

6. History of Political Theory. Mr. Leavelle. *Half course, second semester.*

A study of theories of the state from Plato to the present day. Readings in the works of the classical political philosophers.

7. Political Problems of Today. Mr. Pennock. *Half course, second semester.*

Reconsideration of the bases of representative government in the light of changed economic and social conditions in the modern State; examination of such alternative principles as those offered by Communism and Fascism; investigation of the possibilities of "planning" in a democracy; and an appraisal of present tendencies in political development.

8. International Relations, Law, and Organization. Mr. Leavelle.

Half course, first semester.

An introduction to the principles and problems of international relations, including: the historic bases of the national state system, nationalism in the twentieth century, diplomacy and foreign policies of the major world powers, the development and nature of international law and organization, and their reconsideration in the light of contemporary international practices.

9. Latin American Relations. Mrs. Fussell.

Half course, first semester. (Omitted in 1941-42.)

Political, historical, cultural, commercial relationships between the United States and Mexico, Central America, the Caribbean area, and South America. Discussions of Pan-Americanism, the Monroe Doctrine, boundary disputes, trade agreements, the Good Neighbor Policy. American diplomatic history as seen by Latin America.

(*History 13, The History and Problems of Latin America, may be credited as Political Science.*)

10. Special Topics in Political Science. Members of the staff.

Half course, second semester.

Supervised reading and preparation of reports designed to fit the needs of Senior majors in rounding out and integrating their work in the field.

HONORS WORK

Prerequisite: Political Science 1. The following seminars prepare for examinations for a degree with Honors:

1. Political Theory. Mr. Pennock.

Each semester.

The nature of the state, the basis of political obligation, sovereignty and the nature of law, problems of freedom and authority, theoretical analysis of forms of government, theories of revolution—all in the light of the theories set forth by writers on these subjects from Plato to the present.

2. Federal, State, and Local Politics. Mr. O'Rourke.

Each semester.

Federal-state and state-local relations under modern conditions. State, municipal, and rural government. The various forces and factors which impinge upon the legislative process: inter- and intra-party politics, rural-urban cleavages, pressure groups, public opinion, the chief executive, and administrative agencies. Comparisons between state and federal politics.

3. Problems in Government and Administration. Mr. Pennock and Mr. Leavelle.

A detailed study of major problems of government, particularly on the administrative side, and especially as they manifest themselves in the national government of the United States. Topics studied include: public budgeting and financial control, administrative legislation and adjudication, governmental reorganization, administrative areas, governmental corporations, and problems of public service personnel administration.

4. International Relations and Organization. Mr. Wood. *First semester.*

Basic factors of interstate relations—geography, resources, races, trade—considered in relation to nationalism, imperialism, and war. Also a study of efforts to restrain international rivalries and to avoid war.

5. American Foreign Policy. Mr. Wood. *Second semester.*

A study of the economic, political, and strategic factors in American foreign policy since 1890, with special attention to Pan-American affairs.

6. Latin American Relations. Mrs. Fussell.

Second semester. (Omitted in 1941-42.)

Political, historical, cultural, commercial relationships between the United States and Mexico, Central America, the Caribbean Area, and South America. Discussions of Pan-Americanism, the Monroe Doctrine, boundary disputes, trade agreements, The Good Neighbor Policy. American diplomatic history as seen by Latin-America.

7. Contemporary Democracies and Dictatorships. *(Omitted in 1941-42.)*

A detailed study of the principal forms of government of each type, the theories on which they rest and the economic and social conditions that form their background.

8. Thesis.

All members of the department.

Approval of the instructor immediately concerned must be secured early in the student's junior year.

PSYCHOLOGY AND EDUCATION

ASSOCIATE PROFESSOR: ROBERT B. MACLEOD, *Chairman*

**PROFESSOR: WOLFGANG KÖHLER

*ASSISTANT PROFESSOR: EDWIN B. NEWMAN

INSTRUCTORS: RICHARD S. CRUTCHFIELD
HELEN M. CAMPBELL

RESEARCH ASSOCIATES: HANS WALLACH
W. DOUANE NEFF
J. C. R. LICKLIDER

PSYCHOLOGY

1. Introduction to Psychology. Mr. MacLeod, Mr. Newman. *Full course.*
A study of the structure and organization of the mental life of the normal, human adult. Open to all students.
2. Experimental Psychology. Mr. Köhler, Mr. Newman. *Half course, each semester.*
A laboratory course on problems in human psychology.
Prerequisite, Course 1.
3. Human Motivation. Mr. Crutchfield. *Half course, first semester.*
A study of the directive and the regulative aspects of human behavior.
Prerequisite, Course 1.
4. Social Psychology. Mr. Crutchfield. *Half course, second semester.*
Psychological analysis of the behavior of the individual as a member of social groups.
5. Child Psychology. Miss Campbell. *Half course, second semester.*
Intellectual, social and emotional development from birth through adolescence.
Prerequisite, Course 1.
6. Animal Behavior. Mr. Newman. *Half course, first semester.*
A presentation of those facts in animal psychology which contribute to our present knowledge of general psychology.
Prerequisite, Course 1.
7. Systematic Psychology. Mr. Köhler. *Half course, second semester.*
Observations and problems in different fields of modern psychology treated as parts of a developing system, with a consideration of the basic principles inherent in this development.
Prerequisite, Course 1.
8. Educational Psychology. Miss Campbell. *Half course, first semester, alternate years.*
Psychology of individual differences, learning, motivation, and personality adjustment; special problems related to teaching.
Prerequisite, Course 1.

*Absent on leave, first semester.
**Absent on leave, second semester.

9. Psychological Tests and Measurements. Miss Campbell.

Half course, first semester, alternate years.

Construction, administration and interpretation of tests, with special emphasis on clinical techniques.

Prerequisite, Course 1.

10. Advanced Experimental Psychology. The staff.

Half course, each semester.

Special investigation of selected problems under the direction of a member of the department. Open only to seniors.

Prerequisite, Courses 1 and 2.

11. Psychological Tutorial. The Staff.

Half course, second semester.

Supervised reading in fields that have not been adequately covered in courses. Open only to seniors majoring in psychology.

12. Elementary Statistics. Mr. Crutchfield.

Half course, first semester.

Study of the elements of statistical method, comprising treatment of certain principles in the organization and analysis of statistical data; application of these principles to data of the social sciences.

EDUCATION

1. Introduction to Education. Miss Campbell.

Half course, first semester.

A survey of the aims, organization and procedures of education; the opportunities and requirements in education as a profession.

2. History of Education. Miss Campbell.

Half course, second semester, alternate years.

An historical survey of educational procedures from the period of the Greeks to the present, including a comparison of present-day systems in Europe and America.

3. Philosophy of Education. Miss Campbell.

Half course, second semester, alternate years.

A study of the fundamental principles of education viewed in dynamic relation with our culture; special emphasis on the rôle of education in a democratic society.

REQUIREMENTS FOR MAJOR AND MINOR IN COURSE

Students intending to elect psychology as major subject are advised to take a course in philosophy and a course in biological or physical science, preferably during the freshman year, and to acquire a reading knowledge of German. Major students in course are expected to take Courses 1, 2 and 11, and the equivalent of two further courses in psychology. Minor students are expected to take Course 1 and the equivalent of two further full courses in psychology. Courses in education will not be credited toward a major or minor in psychology.

Education alone may not be elected as a major or minor subject, and not more than two full courses in education will be accepted for credit toward the bachelor's degree. The Pennsylvania requirements for the certification of secondary school teachers include 21 hours of psychology and education. With

the exception of 6 hours of practice teaching, which must be taken elsewhere, Swarthmore students may fulfill these requirements by taking Courses 1 and 8 in Psychology and Courses 1, 2 and 3 in Education.

HONORS WORK

Prerequisites: Introduction to Psychology (1) is the normal prerequisite for all honors work. This may be waived, however, in cases of candidates who have done advanced work in zoölogy and physiology, and who propose to concentrate in the field of physiological psychology. All major students are advised to take introductory work in zoölogy or physics and in philosophy, and to acquire a reading knowledge of German.

Seminars: The following seminars prepare for examinations for a degree with Honors:

1. Systematic Psychology. Mr. Köhler. *First semester.*
A short historical survey of empirical psychology, followed by a discussion of (1) basic questions of methodology and (2) such psychological observations as tend to unite themselves into systematically related groups of facts. Particular attention is paid to the relations between psychology and other fields of knowledge. Major students are expected to take this seminar during the first semester of the junior year.
2. Perception. Mr. Köhler, Mr. MacLeod. *Second semester, alternate years.*
Deals systematically and experimentally with problems in the field of perception, no attempt being made to cover the whole field in any one semester; open to all qualified honors students, but especially recommended for students of the natural sciences and of philosophy.
3. Learning. Mr. Köhler, Mr. Newman. *Second semester, alternate years.*
The experimental study of memory and learning, with a view to finding optimal conditions of motivation, the nature and arrangement of material, temporal relations and the like, as well as formulating hypotheses about the nature of the learning process; open to all qualified honors students.
4. Human Development. Mr. Newman. *Second semester.*
The growth and development of psychological processes; the nature of learning and of intelligence; the world of the child contrasted with that of the adult. Open to all qualified honors students, but may not be combined with Learning.
5. Motivation. Mr. MacLeod, Mr. Crutchfield. *First semester.*
A systematic and experimental approach to the dynamics of behavior, based on material drawn both from the laboratory and from the clinic; open to all qualified honors students, but of particular interest to students of ethics and of the social sciences.
6. The Individual in Society. Mr. MacLeod, Mr. Crutchfield. *Second semester.*
The relationship between man and his society, approached from the points of view of social psychology, sociology and cultural anthropology; open to all qualified honors students, but especially designed for students of the social sciences.

7. Language and Thinking. Mr. MacLeod.

Second semester.

The psychological bases of communication, with special reference to the origin and development of language, the nature of linguistic symbolism, the disorders of linguistic behavior, creative imagination, and rational and irrational thinking; open to all qualified honors students, but especially designed for students of literature, and recommended in conjunction with the seminar on Linguistics.

8. Animal Behavior. Mr. Newman.

A comparative study of animal behavior, with laboratory work. Recommended for students with a background in biology.

9. Psychophysiology. Mr. Newman.

An introductory study, roughly parallel to Psychology 1, designed for selected students in the natural sciences who have been unable to take the regular course. With permission, this seminar may be offered as a fourth seminar in zoölogy.

10. Thesis.

May be presented as a substitute for one seminar, provided the student is doing major work in psychology with four seminars, and provided some member of the department is willing to undertake the direction of the thesis

ROMANCE LANGUAGES

PROFESSOR: EDITH PHILIPS, *Chairman*
ASSOCIATE PROFESSORS : LEON WENCELIUS
HAROLD MARCH
ASSISTANT PROFESSOR : JAMES D. SORBER
INSTRUCTORS: MERCEDES C. IRIBAS
MARION MONACO

FRENCH

1. Elementary French. Miss Philips. *Full course.*
For students who begin French in college. Equivalent of two years' secondary school preparation.
- 2a. Reading, Grammar and Composition. Members of the department. *Half course, each semester.*
Prerequisite, French 1 or two years' secondary school preparation and a placement test.
- 2b. Reading, Grammar and Composition. Continued. Members of the department. *Half course, each semester.*
Prerequisite, French 2a or three years' secondary school preparation and a placement test.
- 3a. Introduction to French Literature. Members of the department. *Half course, each semester.*
Prerequisite, French 2b or four years' secondary school preparation and a placement test.
Representative texts of modern French prose writers. Conducted in French with frequent written work in French.
- 3b. Introduction to French Literature. Members of the department. *Half course, each semester.*
Prerequisite, French 3a.
Representative texts from French literature from the classical period through the nineteenth century.
10. Le roman avant 1800. Mr. March. *Half course, first semester.*
11. Le roman du dix-neuvième siècle. Mr. March. *Half course, second semester.*
12. Prosateurs et moralistes de la Renaissance et de la Réforme. Mr. Wencelius. *Half course, first semester.*
13. La prose classique. Mr. Wencelius. *Half course, second semester.*
14. Les origines philosophiques de la révolution. Miss Philips. *Half course, first semester.*
15. Mouvement des idées au dix-neuvième siècle. Mr. Wencelius. *Half course, second semester.*

16. La poésie lyrique jusqu'à l'époque classique. Mr. March.
Half course, first semester.
17. La poésie lyrique moderne. Miss Philips. *Half course, second semester.*
18. Origines et développement du théâtre classique. Miss Monaco.
Half course, first semester.
19. Le théâtre moderne. Miss Monaco. *Half course, second semester.*
20. Histoire de la littérature française. Miss Philips. *Full course.*
21. Advanced Composition. Miss Philips. *Half course, second semester.*

SPANISH

1. Elementary Spanish. Miss Iribas, Mr. Sorber. *Full course.*
For students who begin Spanish in college. Equivalent of two years' secondary school preparation.
2. Reading, Grammar and Composition. Miss Iribas, Mr. Sorber. *Full course.*
Prerequisite, Spanish 1 or two years' secondary school preparation and a placement test.
3. Introduction to Spanish Literature. Mr. Sorber. *Full course.*
Prerequisite, Spanish 2, or four years' preparation in secondary school and a placement text.
Representative texts of modern Spanish writers. Conducted in Spanish with frequent written work in Spanish.
10. La novela española del siglo XIX. Miss Iribas. *Half course, first semester.*
For Honors Work in Spanish, see p. 107.

ITALIAN

1. Elementary Italian. *Full course.*
A course aimed to give the student ability to read ordinary Italian with ease, and to write and speak simple Italian.
2. Second year Italian. *Full course.*
Grammar review and composition. Readings from Dante's Inferno.
3. Introduction to Modern Italian Literature. *Full course.*
Representative texts of Modern Italian writers.

All students offering French or Spanish for entrance take a placement test. The results of this test, taken into consideration with the number of years of preparation, determine the student's assignment to Course 2 or Course 3.

The department does not offer a major in Spanish or Italian.

HONORS WORK

French may be offered as a major or minor subject in the division of the Humanities.

Prerequisites for majors: French 3, Latin 1, or its equivalent, History of Europe or History of France, History of Philosophy or Introduction to Philosophy.

Majors are expected to speak French with sufficient fluency to conduct a discussion in French with the examiner in the oral examination. Some indulgence is shown by the examiners to minors in respect to their spoken French, although all seminars are conducted in French.

The following seminars prepare for examinations for a degree with Honors:

1. La renaissance en France. Mr. Wencelius.
Rabelais, Calvin, Montaigne, Ronsard.
2. Le théâtre classique. Miss Monaco.
Corneille, Racine, Molière.
4. La pensée française au dix-huitième siècle. Miss Philips.
Montesquieu, Voltaire, Diderot, Rousseau.
5. La poésie lyrique au dix-neuvième siècle. Miss Philips.
The Romantic, Parnassian and Symbolist movements. Modern tendencies.
6. Quatre romanciers modernes. Mr. March and Miss Phillips.
Balzac, Stendhal, Flaubert, Proust.
7. Le mouvement des idées depuis Taine. Mr. March.
8. Littérature médiévale. Mr. March.
Chansons de geste et romans.
9. Le développement des idées politiques au dix-neuvième siècle. Mr. Wencelius.

The seminars in French are planned with reference to the choices of the students and the convenience of the department, and the semester in which they are given varies from year to year. Majors are urged to elect four seminars which cover the four modern centuries.

Beginning with the academic year 1941-42 a minor in Spanish will be offered in Honors work. Prerequisite, Spanish 3. The following seminars will be given:

1. La novela hispano-americana. Mr. Sorber.
2. La novela picaresca. Mr. Sorber.

ZOOLOGY

PROFESSOR: LAURENCE IRVING, *Chairman*

ASSOCIATE PROFESSOR: †ROBERT K. ENDERS

ASSISTANT PROFESSORS: FRANK R. KILLE
WALTER J. SCOTT

INSTRUCTORS: RUTH McCLUNG JONES
C. BROOKE WORTH

RESEARCH ASSOCIATES: *GEORGE A. EDWARDS
**PER F. SCHOLANDER

ASSISTANTS: HENRIETTA SAFFORD
SUSAN IRVING

GENERAL COURSES

1. Biology. Mr. Livingston, Mr. Jones, Mr. Kille, Mrs. Jones, Mr. Scott.

Full Course

This introductory course is designed to present the fundamental aspects of biology. Wherever possible, principles will be illustrated by both plants and animals with particular reference to their interdependence and interrelationships. The topics for consideration during the first semester (Mr. Livingston, Mr. Jones) include: protoplasm, the cell, structure and function in the higher plants, genetics; and a brief survey of the plant kingdom. The topics in the second semester (Mr. Kille, Mrs. Jones, Mr. Scott) include: principles of vertebrate structure and physiology, embryology, a comparative study of a few invertebrate phyla, ecology and evolution. The course is a prerequisite for advanced courses in botany and zoology.

Three lectures or conferences and one laboratory period per week.

2. Comparative Vertebrate Anatomy. Mr. Enders.

A course of lectures, laboratory conferences and dissection presented from the comparative viewpoint. Dissection of several vertebrate types is undertaken.

Two lectures, two laboratory periods per week with occasional conferences. Prerequisite, 1.

Two lectures or conferences and two laboratory periods per week. Prerequisite, 1.

3. Elementary Physiology. Mr. Scott.

Half course, first semester.

A consideration of the physiology of muscle, nerve, circulation, respiration, central nervous system, special senses, and digestion; the treatment is designed to give a broad understanding of the mechanism of the vertebrate body. In the laboratory standard experiments on living tissue are performed.

Two lectures, one conference, and one laboratory period per week. Prerequisite, 1.

4. Embryology. Mr. Kille, Mr. Worth.

Half course, first semester.

A study of the developmental processes in vertebrates. Laboratory periods are devoted to the developmental anatomy of amphioxus, frog, chick, and pig. Experimental analysis of development is introduced in the lectures and conferences.

*On a grant from the Rockefeller Foundation.

**On a grant from the Rockefeller Foundation until Nov. 1, 1941.

†Part-time leave of absence.

5. Invertebrate Zoölogy. Mr. Kille.

Half course, first semester in alternate years.

A comparative study of the invertebrates exclusive of protozoa and insects. Special attention is given to the topics of regeneration, analysis of development, and invertebrate hormones. The living material used in the laboratory is collected by the class during field studies of marine, fresh water and land habitats.

One laboratory period and one three-hour discussion period per week with additional field trips. Prerequisite, 1.

6a. Microscopic Anatomy. Mrs. Jones.

Half course, second semester.

This course is concerned with the microscopic structure of vertebrates and invertebrate animals. Whenever possible the tissues are examined in the living condition. The student makes enough preparations to familiarize himself with the principal methods of modern microtechnique.

Two lectures and two laboratory periods per week. Prerequisite, 1.

6b. Advanced Microscopic Anatomy. Mrs. Jones.

Half course, second semester.

A continuation of 6a. Methods of research are stressed, including bibliographic practice. Conferences generally replace lectures.

Prerequisite, 6a.

7. Mammalian Physiology. Mr. Scott.

Half course, second semester, every year.

A laboratory course of experiments illustrating the more important features of the circulatory, respiratory and nervous systems.

One lecture, one conference, and one laboratory period per week. Prerequisites, 1, 2, 3.

8. Special Topics. The staff.

For advanced students. Open only to those who have secured the consent of the department.

9. Biology of the Vertebrates. Mr. Worth.

Half course, second semester.

A course designed to integrate the students' knowledge in abstract sciences with living animals, both captive and wild. Field work is especially stressed during the warmer months.

Open to Zoölogy senior majors only.

10. Neurology. Mr. Scott.

Half course, first semester in alternate years (Offered in 1941-42.)

After a brief review of the evolution of the nervous system phylogenetically an intensive study is made of the anatomy of the central nervous system in man with occasional reference to corresponding systems in lower mammals and in other vertebrates.

Prerequisites, 1, 2, 3, and 4.

REQUIREMENTS FOR MAJOR AND MINOR IN COURSE

Students in general course must complete during their four years the following: Two courses in chemistry, one course in mathematics, one course in physics, two courses in German (or their equivalent), four courses in zoölogy. Genetics (Botany Department) or botany may be offered as one advanced zoölogy course. With permission of the department a second

course in physics, a second course in mathematics or a third course in chemistry may be substituted for the fourth course in zoölogy providing such a course is not being offered as part of the minor requirement.

The departmental requirements of two courses in chemistry and one in physics constitute a minor for zoölogy majors.

HONORS WORK

Prerequisites: for a major: one and one-half courses in zoölogy (1, 2), one and one-half courses in chemistry (1), one course in mathematics (1, 2), one course in physics (1), two courses in German (1, 2) or their equivalent.

For a minor, Zoölogy 1. In addition seminars in Physiology require one course in physics and two courses in chemistry.

Additional preparation in chemistry is desirable (2, 6). Further work in mathematics is recommended for those who have ability in the subject (11, 12). The additional courses in chemistry and mathematics are necessary for taking seminars in those departments.

Honors students usually select four seminars in zoölogy and four seminars divided between two other subjects within the Division. Genetics or Psychology for pre-medical students may be offered in place of one seminar in zoölogy.

Seminars: The following seminars prepare for examinations for a degree with Honors:

Embryology. Mr. Kille.

Second semester.

The nature of the germ cells, experimental analysis of development and reproduction, and the developmental anatomy of vertebrates with laboratory emphasis on the chick and the pig.

Microscopic Anatomy. Mrs. Jones.

First semester.

A study of the minute structure of animals by the examination of living cells and tissues, and by the analysis of prepared slides; most of these slides are prepared by the student who thus acquires a working knowledge of microscopical technique.

Neurology. Mr. Scott.

First semester.

A preliminary consideration of the evolution of the nervous system is followed by a detailed study of the anatomy of the human brain with special emphasis upon the internal structure and its physiological implications. Frequent reference is made to corresponding features of the brains of lower vertebrates.

Physiology 1. Mr. Irving.

First semester.

General and comparative physiology, considering the action of muscles and nerves, the penetration and distribution of dissolved substances through the animal and the composition of animals.

Physiology II. Mr. Irving.

Second semester.

Respiration, considering the utilization of oxygen and the production of carbon dioxide, their transport and exchange with the atmosphere.

Physiology of Reproduction. Mr. Enders.

Second semester.

Sex and internal secretions in vertebrate animals.

Work at summer biological stations may be substituted for certain seminars and courses, permitting more choice in the student's college program.

The attention of the student preparing for the medical profession is directed to the admission requirements of the medical school which he plans to attend.

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

1941-42

Pennsylvania	215
New York	173
New Jersey	62
Illinois	33
District of Columbia	30
Massachusetts	28
Ohio	27
Maryland	22
Connecticut	20
Indiana	17
Delaware	13
Michigan	12
California	7
Virginia	6
Iowa	5
Missouri	5
North Carolina	5
Florida	4
Minnesota	4
Wisconsin	4
Kentucky	3
China	2
England	2
Georgia	2
Mississippi	2
Nebraska	2
Rhode Island	2
Texas	2
West Virginia	2
Argentina	1
India	1
Louisiana	1
Martinique	1
New Hampshire	1
Oklahoma	1
Oregon	1
South Carolina	1
Tennessee	1
Territory Hawaii	1
Thailand	1
Uruguay	1
Total	723

STUDENTS, 1941-42

- Ace, Dorothy Ellen, '45, Lima, Pa.
- Achtermann, Gerald Ernest, '44,
47 Forrest Rd., Springfield, Pa. *Engineering*
- Ackerman, Robert Allen, '43, 404 Yale Ave., Morton, Pa. *Engineering*
- Adams, Arthur Kinney, '42, 231 Little Falls St., Falls Church, Va. . . . *Zoology*
- Adamson, J. Fuller, '45, 810 W. 21st St., Wilmington, Del.
- Adler, John Craige, '43, 245 E. Highland Ave., Chestnut Hill, Pa. . . *Botany*
- Akutowicz, Frank, '45, 580 Poquonock Ave., Windsor, Conn.
- Alburger, David E., '42, 350 Meadow Lane, Merion, Pa. *Physics*
- Alden, Jacqueline, '44, 333 E. 43rd St., New York, N. Y. *English*
- Alford, Frances Lydia, '44, 314 S. Homewood Ave., Pittsburgh, Pa.
- Allen, John Alexander, '43, 5914 Cedar Pky., Chevy Chase, Md. . . . *English*
- Anderson, Joan Leslie, '45,
18 Fairview Ave., Port Washington, N. Y. *English*
- Anderson, Rose V., '44, 17 Oak Ave., Rehoboth Beach, Del.
- Ando, Ryuichi, Special,
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- Atkinson, Edward Haviland, '43,
210 S. Washington Ave., Moorestown, N. J. *Economics*
- Axelbank, Lucy, '45, 80 VanCortlandt Park, S. New York, N. Y. . . *Economics*
- Ayer, Frank Root, '44, 7112 Curtis St., Chevy Chase, Md. *Engineering*
- Bainton, Olive Mae, '43, Amity Rd., Woodbridge, Conn. *Psychology*
- Bair, Barbara Rose, '44, 3 Park Ave. Terrace, Bronxville, N. Y. . . . *English*
- Baldwin, DeWitt Clair, Jr., '43, 207 E. 58th St., New York, N. Y. . . *Economics*
- Barbano, Doris Estelle, '42, 229 Edgewood Terr., S. Orange, N. J. . . *French*
- Barbour, Ian Graeme, '44, 340 Thrall St., Cincinnati, Ohio.
- Barnard, Norris Clements, Jr., '45,
146 Berryman Dr., Snyder, N. Y. *Engineering*
- Barnes, Richard Freeman, '44,
1309 Yellowstone Rd., Cleveland Heights, O. *Engineering*
- Barney, John Maynard, '45, Sparks, Md.
- Baron, Stanley, '43, 1735—71st St., Brooklyn, N. Y. *Psychology*
- Bartleson, Janet Marie, '43,
105 North Rd., Lindamere, Wilmington, Del. *English*
- Barton, Rosetta Claire, '43, R. D. 2, Phoenixville, Pa. *Chemistry*
- Barus, Jane Ellen, '45, 75 Llewellyn Rd., Montclair, N. J.
- Bassett, Edward Morris, Jr., '43,
315 N. Chester Rd., Swarthmore, Pa. *Engineering*
- Bassett, Marjorie Ann, '43, 3000 Sheridan Rd., Chicago, Ill. *Economics*
- Beard, Stuart Menteth, III, '45, Sheffield Inn, Sheffield, Mass.
- Beatty Royce Edwards, '43, 701 Saxer Ave., Springfield, Pa. . . *Engineering*
- Bebie, Margaret Lillian, '43, 4207 Magnolia Ave., St. Louis, Mo. . . . *English*
- Beck, C. Wendell, '42, Mountain Lakes, N. J. *Engineering*
- Beck, Robert Juel, '45, Mountain Lakes, N. J. *Engineering*
- Beers, Stephen Lee, '43, 50 Woodland Rd., Bloomfield, N. J. *History*
- Belcher, Margaret Louise, '43, 405 St. Marks Ave., Westfield, N. J. . *English*
- Beldecos, Nicholas Andrew, '44, 311 Pennell St., Chester, Pa. . . *Engineering*

- Bender, Harriet Joan, '45, 1016 Oak Lane, Philadelphia, Pa.
- Benjamin, Craig Lyon, '43, 1070 Eggert Rd., Eggertsville, N. Y. *Zoology*
- Bennett, Isabel Bradshaw, '42, 397 Ridge Ave., Kingston, Pa. *History*
- Beury, Frank Gould, '42, 120 Taplow Rd., Baltimore, Md. *Philosophy*
- Beye, Helen, '44, 422 E. Brown St., Iowa City, Ia. *English*
- Beyer, Morten Sternoff, '43, McLean, Va. *Economics*
- Blackburn, Edith Elizabeth, '44, 2112 S. Broad St., Philadelphia, Pa. *French*
- Blanchard, Jean Prichard, '45, 17 N. Chatsworth Ave., Larchmont, N. Y.
- Blankenhorn, Mary M., '43, 6 Rural Lane, Cincinnati, Ohio. *English*
- Blanshard, Rufus A., '43, 131 Willow St., Brooklyn, N. Y. *English*
- Boak, Winifred Peters, '45, 513 Onondaga St., Ann Arbor, Mich.
- Board, Francis Armstrong, '43,
4836 Conduit Rd. N. W., Washington, D. C. *Zoology*
- Boardman, Harry Cuthbert, '45, 102 High St., Mt. Penn, Pa.
- Boggs, Mildred Virginia, '42, Woodstock, N. Y. *French*
- Boileau, Mary Orbison, '42, 617 Zollinger Way, Merion, Pa. *French*
- Bond, George Cline, '42,
27 College Ave., Upper Montclair, N. J. *Economics*
- Booth, Charles Jenkins, '45, 400 Delaware St., New Castle, Del.
- Bowen, Betty Morgan, '42,
3558 Albemarle St., N. W., Washington, D. C. *English*
- Bower, Edward Seymour, '42,
6011 Nevada Ave., Washington, D. C. *Economics*
- Bowman, L. Barbara, '42, 6432 Kimbark Ave., Chicago, Ill. *Psychology*
- Boyajian, Aram Herbert, '44,
55 Stratford Ave., Pittsfield, Mass. *Chemistry*
- Braaten, Theodore Eddy, '44, 17 Youngs Rd., Dedham, Mass.
- Bradfield, Jennie Dixon, '42,
1855 Meridian Ave., Miami Beach, Fla. *Economics*
- Bradshaw, Mary Helen, '44, 1304 Cambridge Rd., Ann Arbor, Mich.
- Bragdon, Lillian Elizabeth, '42,
45 Christopher St., New York, N. Y. *English*
- Braider, Donald Townley, '44, Cooperstown, N. Y. *English*
- Brandstetter, Hugo Engene, '44, 638½ Arlington Pl., Chicago, Ill.
- Bredin, Stephen Price, '44, New Hope, Pa. *Pol. Science*
- Brennan, Natalie, '42, 70 E. 270 St., Cleveland, Ohio. *French*
- Brewster, Athena Beatrice, '43,
223 Dickinson Ave., Swarthmore, Pa. *Psychology*
- Brewster, Mary Cornelia, '44,
Mountain Rd., Farmington, Conn. *Psychology*
- Brinton, Lydia Shipley, '44, Pendle Hill, Wallingford, Pa. *English*
- Britt, Sarah, '44, Nonguitt, Mass. *English*
- Brokaw, Richard S., '44,
Parsonage Hill Rd., Short Hills, N. J. *Chemistry*
- Brooks, Beverly, '45, 18 E. Hickory St., Hinsdale, Ill.
- Brooks, Edith Herrick, '45, 1793 Canton Ave., Milton, Mass.
- Broomell, Arthur Williams, Jr., '43,
1338 Park Ridge Pl., Cincinnati, Ohio. *Economics*
- Broomell, Hannah T., '44, 429 W. Stafford St., Philadelphia, Pa.
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- Brown, Tracy William, '45, 2284 LaMothe, Detroit, Mich.

- Brown, Virginia S., '42,
148 Dickerman Rd., Newton Highlands, Mass. *English*
- Brownell, Ruth Michael, '43,
2 Jordan Rd., Kowtoon, Hong Kong, China *English*
- Burdett, Agnes Elizabeth, '44, 1868 Columbia Rd., Washington, D. C.
- Burt, Barbara Anne, '44, 808 Ohio St., Urbana, Ill.
- Busing, William Richard, '44, 4 Sage Terrace, Scarsdale, N. Y. *Chemistry*
- Butler, John Ben, III, '45, 305 West 246th St., New York, N. Y. *Chemistry*
- Butler, Scot, '44, 3312 Rowland Place, Washington, D. C. *History*
- Cadwallader Laura Parry, '45, Fairfield Terr., Yardley, Pa.
- Cammack, Winifred Jean, '43, Mount Vernon, N. Y. *Psychology*
- Campbell, Malcolm, '45, 1624 Hartranft Dr., Norristown, Pa.
- Canedy, Walton F., '44, 7110 Oxford Rd., Baltimore, Md.
- Capehart, Mary Townsend, '42,
37 W. Washington Sq., New York, N. Y. *English*
- Capron, William Mosher, '42,
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- Carpenter, Janet, '42, Two Mile House, R. D. 5, Carlisle, Pa. *Engineering*
- Carpenter, Nancy, '45, 635—41st Street, Des Moines, Iowa.
- Carr, Richard Ashton, '42, 304 Taplow Rd., Baltimore, Md. *History*
- Carrell, Jephth Jefferson, '45, 1908 Shunk St., Philadelphia, Pa. *Economics*
- Carson, William Gilmour, '45,
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- Carter, William John, '44, 323 Melbourne Rd., Great Neck, N. Y.
- Carver, Anne, '45, 115 Penfield Road, Rochester, N. Y.
- Cavin, George Huntzinger, '44,
1628—21st St., Washington, D. C. *Engineering*
- Chapman, John William, Jr., '43,
12 Glen Rd., Wellesley Hills, Mass. *Economics*
- Chase, Gretchen, '45, 1706 Crescent Dr., St. Joseph, Mo.
- Cheskis, Josephine Vita, '44, 22 Evans Way, Boston, Mass. *Psychology*
- Cheyney, Julia, '42, R. F. D. 3, Media, Pa. *Botany*
- Cibelius, Charles Anthony, '44,
831 Overlook Rd., Rockford, Ill. *Engineering*
- Clappier, Harry, '44, Westwoods, Minersville, Pa.
- Clark, Ruth Fontaine, '43,
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- Clymer, Howard Young, '42, 2179 Franklin Ave., Morton, Pa. *Chemistry*
- Coates, John Christopher, '44,
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- Coe, Conway Peyton, Jr., '45,
10 E. Kirke St., Chevy Chase, Md. *Engineering*
- Coerr, Frederica, '43, Wormsloe, Savannah, Ga. *Economics*
- Colegrove, Marian Louise, '45, 721 Foster St., Evanston, Ill. *History*
- Colegrove, Reed Leighton, '43,
22 Homesdale Rd., Bronxville, N. Y. *Economics*
- Coleman, Robert Ellsworth, '43, 416 S. Cook Ave., Trenton, N. J. *Botany*
- Collett, Joan Mary, '43, Chateau Lorraine, Scarsdale, N. Y. *French*
- Condit, Anna Ryckman, '45, 139 Fitz Randolph Rd., Princeton, N. J.

- Connors, Helen Marie, '43,
129 Meadbrook Rd., Garden City, N. Y..... Pol. Science
- Cook, Elizabeth, '42, 242 Culver Rd., Rochester, N. Y..... Psychology
- Cooley, Edward Hanes, '44,
110 Columbia Ave., Swarthmore, Pa..... Engineering
- Cope, Dallas Thurman, '45, Route 2, Winchester, Ind.
- Cope, Stanton E., '42, Route 2, Winchester, Ind..... Zoology
- Corey, June Louise, '43,
22276 Parnell Rd., Shaker Heights, Ohio..... English
- Cornfeld, Helen E., '42, 2109 N. 33rd St., Philadelphia, Pa. Mathematics
- Cornog, Phoebe H., '45, 2612 Prescott Rd., Upper Darby, Pa.
- Corse, John Montgomery, '44,
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- Cotten, Patricia, '44, 76 Remsen St., Brooklyn, N. Y.
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- Councill, James Paul, Jr., '44, Franklin, Va.
- Counts, Martha Louise, '45, New Hope, Pa.
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273 Highland Ave., Lansdowne, Pa..... Engineering
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219 Holroyd Pl., Woodbury, N. J..... French
- Curtin, David Yarrow, '43, Webster Springs, W. Va..... Chemistry
- Curtin, Philip DeArmond, '45, Webster Springs, W. Va..... History
- Curtis, Jeanne Hathaway, '42, 8 Franklin Place, Summit, N. J. Pol. Science
- Dannenbergh, Arthur Milton, Jr., '45
135 S. 17th St., Philadelphia, Pa..... Zoology
- Darbishire, Elizabeth St. John, '43, Beech Point, Stamford, Ky..... French
- Darlington, Charles LeRoy, '42,
422 Chambers Ave., Camden, N. J..... Chemistry
- Darlington, Robert Palmer, '45, 422 Chambers Ave., Camden, N. J.
- Davis, Edwin, '43, 312 N. 54th St., Omaha, Nebr..... Zoology
- Davison, Atala Jane S., '44, Duke Hospital, Durham, N. Car.
- Deane, James G., '44, 1615 Kenyon St., N. W., Washington, D. C.
- Decker, Lois Patricia G., '42,
748 Vallamont Dr., Williamsport, Pa..... English
- Decker, Robert Ladd, '43, 110 Manor Ave., Cranford, N. J..... Economics
- DeLaney, George Frederick, '43, 601 W. Lockhart St., Sayre, Pa. English
- Demond, William Bradford, '43, 58 Riddell St., Greenfield, Mass. Botany
- DeNiord, Elizabeth, '44, 212 Linwood Ave., Buffalo, N. Y..... Psychology
- Denton, Mary Louise, '44, 520 W. 3rd St., Elmira, N. Y..... English
- Detreux, Kathryn Louise, '44, 219 Valley Rd., Merion, Pa..... French
- Dewald, Paul Adolph, '42,
418 Central Park W., New York, N. Y..... Psychology

- Dickeson, Anna Elizabeth, '42, 171—7th St., Salem, N. J. French
- Dickinson, Kenneth Scott, Jr., '45, 741 Front St., Appleton, Wis.
- Dietz, Rowland Ernest, '42,
Amberley Village, Cincinnati, Ohio Pol. Science
- Dietz, William Harry, '42,
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- Dikeman, Roswell Coleman, '44, 224 Main St., Goshen, N. Y. Economics
- Dixon, Adam Coit, '45, Rolling Hills, Calif. Chemistry
- Doane, Catherine Florence, '44,
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- Dodge, Diana, '43, 355 Riverside Dr., New York, N. Y. English
- Dodson, Margery F., '45, 7429 Parkdale Ave., Clayton, Mo.
- Donahue, Walter Richard, '44,
1607 Shade Ave., Pittsburgh, Pa. Engineering
- Donnelly, Orville Wright, '44,
219 Tunbridge Rd., Baltimore, Md. Chemistry
- Douglas, Gordon Whipple, '45,
600 N. Chester Rd., Swarthmore, Pa. Engineering
- Drury, Philip Morgan, '44,
5025 Wisconsin Ave., Washington, D. C. Economics
- Dudley, George, Jr., '45, Old Wyomissing Rd., Wyomissing, Pa.
- Dugan, John Leslie, Jr., '43,
8355 Cadwalader Ave., Elkins Park, Pa. Engineering
- DuMond, Priscilla Hilton, '44, Ulster Park, N. Y.
- Duncan, Roderick Martin, '43,
2871 Audubon Terr., N. W., Washington, D. C. Economics
- Dunn, Robert Stafford, '43, 702 Broadway, Normal, Ill. Pol. Science
- Durkee, Eleanor Elizabeth, '43,
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- Ebersole, Byron Stauffer, '44, 328 W. Magnetic St., Marquette, Mich.
- Edwards, Stephen Worcester, '45, 1332 Harlem Blvd., Rockford Ill.
- Ehrmann, Robert Lincoln, '44, 14 Irving St., Brookline, Mass. Zoology
- Elias, Barbara, '42, 44 Gramercy Park, New York, N. Y. Philosophy
- Elias, Peter, '44, 44 Gramercy Park, New York, N. Y. Economics
- Eliot, Johan Wijnbladh, '43, 768 Foxdale Ave., Winnetka, Ill. Zoology
- Ely, Patricia Rose, '44, 43 Beechwood Ave., Manhasset, N. Y. English
- Englehart, Harry B., '44, 31 W. Ridge Rd., Gary, Ind.
- Erdman, William J., '43, 417 W. Cheltenham Ave., Philadelphia, Pa. Economics
- Ernst, Dorothy Jessie, '42, 102—71 St., Brooklyn, N. Y. English
- Errera, Muriel, '44, 145 E. 74th St., New York, N. Y.
- Estrin, Anne Eugenie, '43,
65 Central Park W., New York, N. Y. Psychology
- Evans, Thomas Passmore, '42,
S. Pennsylvania Ave., Avondale, Pa. Engineering
- Evans, William Taylor, '45, 170 N. Mountain Ave., Montclair, N. J.
- Ewell, Matson Glenn, '44, Lake Rd., Webster, N. Y. Engineering
- Faesch, Nancy White, '45,
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- Fairbanks, Austen Crocker, '44, Harvard, Mass. Zoology

- Farley, Ethel Shoemaker, '44,
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- Farnum, Helen Louise, '45, 618 N. Summerlin St., Orlando, Fla.
- Farrell, John Raymond, '44, 161 W. Louthen St., Carlisle, Pa.
- Fay, Jacqueline, '45, 19 Follen St., Cambridge, Mass. French
- Felix, Jane, '44, 50 W. Plumstead Ave., Lansdowne, Pa.
- Felton, John Biddle, '43,
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Student Health Service, Univ. of Penna. Chemistry
- Finley, William Graham, '43,
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- Fishback, Julia Loraine, '45,
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- Flint, Katherine Frances, '44,
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- Forman, Kenneth J., '44, State Hospital, Trenton, N. J.
- Forster, Jean Haire, '44, 815 Ridge Terr., Evanston, Ill.
- Forwood, Suzanne, '45, 117 Waverly Pl., New York, N. Y.
- Foust, William Orbison, '43,
46 W. Tulpehocken St., Philadelphia, Pa. Economics
- Frank, Hans Richard, '43, 48 John St., Iilon, N. Y. Chemistry
- Frank, Thomas, '44, 66 Park Ave., New York, N. Y.
- Fraser, Herbert Ward, '43, Wallingford, Pa. History
- Freed, Dean W., '44, 204-20 42nd Ave., Bayside, N. Y. Engineering
- Freeman, Lois Walton, '44, R. D. 4, Coatesville, Pa. English
- Freifeld, George Robert, '44, 249 E. 6th Ave., Roselle, N. J.
- Friend, Sidney, Jr., '43, 681 W. 231st St., New York, N. Y. Economics
- Frorer, Janet Ann, '43, Weldin Rd., Wilmington, Del. English
- Frost, Roger Alan, '42, 33 Mass. Blvd., Bellerose, N. Y. Economics
- Fuchs, Martha, '45, 640 Vassar Ave., University City, Mo.
- Fudakowski, George C., '43,
Indian Chase Dr., Greenwich, Conn. Engineering
- Fudakowski, Thomas I., '42,
Indian Chase Dr., Greenwich, Conn. English
- Fussell, William Barker, '45, Paoli Rd., Newtown Square, Pa. . . Engineering
- Gaines, Eleanor-Yellott, '44, 130 N. 3rd St., Easton, Pa.
- Gale, David, '44, Yorktown Heights, N. Y. Physics
- Galloway, Alice Louise, '44,
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- Ganister, Daniel Joseph, '43, 64 Forest Rd., Springfield, Pa. . . . Economics
- Gary, Joseph S., '45, 300 Yale Ave., Swarthmore, Pa. Engineering
- Gauger, Marcia C., '45, Baum Blvd., State College, Pa.
- Gawthrop, Betty Ann, '43, Sharpley School Rd., Wilmington, Del. . English
- Geddes, Ann Townsend, '45, Manor Shores, Chestertown, Md.
- Gephart, Fredonia Fulton, '44,
46 Castle Shannon Blvd., Pittsburgh, Pa. French

- Gibson, Elizabeth Davies, '44, 1262 E. 32 St., Brooklyn, N. Y. *Psychology*
- Gibson, Muscoe Minor, '45, 1427 Powell St., Norristown, Pa.
- Gilchrist, David Ives, '45, 6 Hedgerow Lane, Strafford, Pa.
- Gilkey, Robert McCall, Jr., '45, 3 Shady Ave., Greenville, Pa. *Chemistry*
- Gillam, Clifford Riggs, Jr., '45, Buck Hill Falls, Pa.
- Githens, John Horace, Jr., '43,
6507 Germantown Ave., Philadelphia, Pa. *Zoology*
- Glenn, Elizabeth Bowman, '43,
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- Goldstein, Vivian Rose, '43,
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- Goldwater, Daniel Leon, '43,
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- Goodman, Lester, '42, 31 S. Main St., Shenandoah, Pa. *Pol. Science*
- Goodman, Theodore W., '43, 124 W. 6th Ave., Roselle, N. J. *Pol. Science*
- Goodrich, Janet Carter, '43,
448 Riverside Dr., New York, N. Y. *Economics*
- Graef, Edith Ann, '44, 650 E. 164th St., New York, N. Y. *Chemistry*
- Grant, Isabella Horton, '44,
5521 Amestoy Ave., Encino, Calif. *History*
- Graves, Russell Briggs, '45, 3741 Woodland Ave., Drexel Hill, Pa.
- Grawols, Martha Ellen, '43, 2312 Ewing Ave., Evanston, Ill. *English*
- Gray, Mary Jane, '45, 754 Bellerive Blvd., St. Louis, Mo.
- Green, Amy, '45, Tuxedo Park, N. Y.
- Green, Eleanor Mayo, '42,
407 New Broadway, Brooklawn, N. J. *Zoology*
- Green, Lois Angell, '43,
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- Greenfield, Edna Ruth, '43,
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- Scott, Thomas Russell, '45, 1519 Lincoln Ave., Prospect Park, Pa. . *Chemistry*
- Sears, Frances Grigsby, '43,
 1927 Potomac Drive, Toledo, Ohio. *Mathematics*
- Seiler, Norma Jean, '44,
 3342 Stephenson Place, N. W., Washington, D. C. *English*
- Selby, Fred Crothers, '45,
 140 W. Baltimore Ave., Lansdowne, Pa. *English*
- Selligman, Lucy, '42, 1416 Willow Ave., Louisville, Ky. *Pol. Science*
- Seybold, Gertrude B., Special, Swarthmore, Pa.
- Shaw, Charles Richard, '45, 5 Whittier Place, Swarthmore, Pa.
- Shaw, Edward Burns, Jr., '45, 5818 N. 13th Street, Philadelphia, Pa.
- Shepard, Ruth Hoyt, '44, 151 Oxford Rd., New Rochelle, N. Y. . . . *English*
- Shields, Kathryn Ann, '44, 11 Cherry Ave., Larchmont, N. Y. . . *Engineering*
- Shoemaker, Margaret Jack, '42,
 510 Riverview Rd., Swarthmore, Pa. *English*
- Shor, Dorothy Hathaway, '43, 451 W. 21st St., New York, N. Y. . *Chemistry*
- Sieck, William Charles, '45,
 4010 Round Top Rd., Baltimore, Md. *Economics*
- Siegle, John George, '45, 317 Orchard Rd., Springfield, Pa.
- Sills, Mary Louise, '42,
 107 Kensington Rd., Bronxville, N. Y. *Pol. Science*
- Simons, Frederick Myerle, '44, 13 Park Ave., Swarthmore, Pa. . *Engineering*
- Simpson, Robert Edward, '45, 717 Jeffrey St., Chester, Pa.
- Sisk, Harriet Balleine, '45, 41 Fuller Drive, Madison, Wis.
- Skallerup, Walter T., Jr., '42,
 1820 Church St., Philadelphia, Pa. *Pol. Science*
- Skodzus, Alice V., '44, 1243 Vine Street, Philadelphia, Pa. *English*
- Slocum, William Wakton, Jr., '43, Farmington, Mich. *Economics*
- Smith, Carter Thomas, '45, Baltimore Pike, Swarthmore, Pa. . . . *Economics*
- Smith, Dorothy Fry, '43, 122 W. Franklin St., Ephrata, Pa. *History*
- Smith, Ellsworth Church, '43,
 82-16 Lefferts Blvd., Kew Gardens, N. Y. *Mathematics*
- Smith, Emilie Kellogg, '44, Montebello Rd., Suffern, N. Y. *History*
- Smith, Ernest Ketcham, Jr., '44,
 2 Shu Pu Hutung, Peking West, China *Physics*
- Smith, Gene Roberts, '42, Baltimore Pike, Swarthmore, Pa. *English*
- Smith, Harold Lesley, '44,

- 41 Central Park West, New York, N. Y. Pol. Science
- Smith, Mary Mead, '43,
3635 Ingomar Pl., N. W., Washington, D. C. Psychology
- Smith, Rogers J., '42, 4712 N. Capitol Ave., Indianapolis, Ind. Zoology
- Snyder, Kenneth Moore, '45,
S. Oakwood Terrace, New Paltz, N. Y. Chemistry
- Sobol, Bruce Joseph, '45, 4680 Fieldston Rd., New York, N. Y.
- Sonnenschein, Ralph Robert, '44, 5132 Ellis Ave., Chicago, Ill. Zoology
- Southgate, Betty Harriet, '44, R. D. 2, Phelps, N. Y. Psychology
- Spackman, John Worth, '45, Hill Farm, Coatesville, Pa.
- Spafford, John Kennedy, Jr., '44, 447 W. 5th Street, Erie, Pa.
- Spangler, Ruth, '43, 71 Brewster Road, Scarsdale, N. Y. Psychology
- Sparks, Ruth Matthews, '43, Bolton, Mass. Philosophy
- Spence, David Barclay, '44, Box 209, Pacific Grove, Calif. Economics
- Spencer, Helen M., '42, R. D. 2, Columbus, Ohio. Pol. Science
- Spencer, Robert White, '42, Wallingford, Pa. Chemistry
- Spink, Lilian Constance, '43, 468 Gerhard St., Philadelphia, Pa. English
- Spitzer, Charles Fredrick, '42,
30 Chiswick Rd., Brighton, Mass. Engineering
- Sprague, B. Sheldon, '42, Tampa, Fla. Chemistry
- Stanley, Mary Janet, '45, 531 Hawthorn Rd., New Castle, Ind.
- Stauffer, Robert Nichols, '45,
390 Larchlea Drive, Birmingham, Mich. Engineering
- Stearns, Whitney Kneeland, '45,
254 Arlington Ave., Brooklyn, N. Y. Engineering
- Stecher, William Nelson, '45, 1510 Darby Rd., Upper Darby, Pa.
- Steer, John Wilmer, '42, 140 S. Lansdowne Ave., Lansdowne, Pa. English
- Steeves, Mary, '42 207 Shore Rd., Old Greenwich, Conn. Economics
- Stenstrom, Margaret L. '45, 1517 E. River Rd., Minneapolis, Minn.
- Stern, Betty Eising, '43, 114 E. 84 Street, New York, N. Y. Economics
- Stern, Jane Helen, '44, Westover Rd., Stamford, Conn. Mathematics
- Stern, Richard Stephen, '42, Rose Tree Road, Media, Pa. Psychology
- Stetson, John B., '42, 1002 Prospect Ave., Melrose Park, Pa. Economics
- Stevens, Anne Louise, '44,
475 Fifth Avenue, New Kensington, Pa. Psychology
- Stewart, Ann, '45, 54 Tisdale Road, Scarsdale, N. Y.
- Stewart, Bruce Cameron, '45, 154 Woodland Ave., Lansdowne, Pa.
- Stewart, Dora Faye, '44, Rangsee Kasem Rd., Nan, Thailand. Zoology
- Stewart, Mary, '45, 350 Grand St., Newburgh, N. Y. Chemistry
- Stewart, Mary, '43, 178 Pleasant Ave., Hamburg, N. Y. English
- Stratton, Roland P., Jr., '45, 284 S. Church St., Moorestown, N. J.
- Strauss, George Joseph, '44,
220 Prospect Avenue, Staten Island, N. Y. Economics
- Streit, Pierre, '44, The Ontario, Washington, D. C.
- Sutherland, John Hale, '45, 1106 Highland Ave., Bethlehem, Pa.
- Swartley, Cynthia Moyer, '42,
916 E. Rittenhouse St., Philadelphia, Pa. Zoology
- Swift, Hewson Hoyt, '42, 99 Claremont Ave., New York, N. Y. Zoology
- Szekely, Gustav, '44, 31 Park Terrace W., New York, N. Y. Chemistry

- Tachau, Charles B., '43, R. R. 6, Louisville, Ky. *Zoology*
- Tait, Phyllis Ann, '42, 5415 Overbrook Ave., Philadelphia, Pa. *English*
- Talcott, Elmer A., '45, 4020 Rosemont Ave., Drexel Hill, Pa.
- Tappan, David Stanton, Jr., '44, 1385 N. Michigan Ave., Pasadena, Calif.
- Tarbox, Frank Kolbe, '44, 5025 Schuyler St., Philadelphia, Pa. *Chemistry*
- Tarr, Martha Madeleine, '42, 7 Evelyn Place, Princeton, N. J. *English*
- Taylor, Barbara, '45, 51 Laconia Rd., Worcester, Mass.
- Taylor, Catharine Rebecca, '44, 457 Lancaster Ave., Haverford, Pa. . . *English*
- Taylor, Thomas Osgood, '43,
3905 Jocelyn St., N. W., Washington, D. C. *Economics*
- Temple, William Arthur, '44, 88 Northumberland Rd., Pittsfield, Mass.
- Ten Broeck, Jane, '44, 94 Battle Rd., Princeton, N. J. *Zoology*
- Terrell, D. Burnham, '44, 20 W. Stewart Ave., Lansdowne, Pa. . . . *Chemistry*
- Teutsch, Erika Elisabeth, '44,
1515 Windsor Rd., W. Englewood, N. J. *Psychology*
- Thatcher, David Audoun, '44,
213 W. Brow Oval, Lookout Mt., Tenn. *Pol. Science*
- Thomas, Alan Butler, Jr., '45,
31 Howard Ave., Staten Island, N. Y. *Chemistry*
- Thomas, Armstrong, Special, 224 Cornell Ave., Swarthmore, Pa. *Astronomy*
- Thomas, John Neilson, '44,
2931 Legation St., N. W., Washington, D. C. *Engineering*
- Thomas, Randal Howard, '43,
301 E. Durham St., Philadelphia, Pa. *Mathematics*
- Thompson, Ellen, '44, Woodbridge, Va. *History*
- Thomson, John Seabury, '43, 99 Claremont Ave., New York, N. Y. . . *History*
- Thorn, Elisabeth Ann, '43, 7822 Spring Ave., Elkins Park, Pa. *History*
- Thorp, Arthur George, II, '43, Westtown, Pa. *Engineering*
- Thurston, Donald Rice, '45, 3425 Edgevale Rd., Toledo, Ohio
- Tillyard, Stephen, '42,
Lower Farm House, Hadstock, Cambridgeshire, England. *French*
- Timmis, Eleanor Patricia, '44,
121 Woodland Drive, Pleasantville, N. Y. *Psychology*
- Tompkins, Howard Edward, '42,
6701 Colonial Road, Brooklyn, N. Y. *Physics*
- Townes, Aurelia Keith, '45, 500 Sumner St., Greenville, S. Car.
- Trainer, Richard Morse, '44, 213 Maple Ave., Chester, Pa. *Engineering*
- Trautman, William Dean, '42,
2584 Fenwick Road, University Heights, Ohio. *Chemistry*
- Treuensfels, Wolfgang, E., '45,
140 Bay Ridge Parkway, Brooklyn, N. Y. *Chemistry*
- Trudel, Allen Robert, '43,
1019 Greenmont Rd., Haddonfield, N. J. *Engineering*
- Turner, Ransom Hudson, Jr., '44, 46-19 260 St., Great Neck, N. Y.
- Twaddell, Elizabeth Spilman, '44, 707 S. Duke St., Durham, N. Car.
- Ullman, David Ulrich, '43, 213 Harvard Ave., Swarthmore, Pa. . *Engineering*
- Van De Mark, Robert Lewis, '42,
1900 South Ave., Rochester, N. Y. *Engineering*

- Van Kleeck, Martha Louise, '42,
2930 Northern Blvd., Manhasset, N. Y. English
- Van Name, Frederick Warren, '42,
145 E. 35th St., New York, N. Y. Physics
- Van Sickle, Caroline E., '43, 1291 Plumtree Rd., Springfield, Mass. English
- Van Trump, Margery, '45, Silverside, Wilmington, Del.
- Van Valen, Nelson S., '45, Robert Treat Hotel, Newark, N. J.
- Vernon, Virginia Anne, '44, 815—27th Street, Cairo, Ill. English
- Vibbert, Madeleine M., '44,
1710 Hermitage Rd., Ann Arbor, Mich. French
- Viehover, Ellen M., '42, 44 N. Oak St., Mt. Carmel, Pa. German
- Vogt, Jane E., '42, 18 Stratford Place, Binghamton, N. Y. Chemistry
- Votaw, Theresa Marie, '43,
2428 N. Washington Ave., Scranton, Pa. Fine Arts
- Walker, Gordon P., '44, Independence, Ore. Botany
- Walker, Margaret Louise, '45, Westtown, Pa. Zoology
- Wallin, Frances S., '44, 3 Pine Grove, Bristol, Pa. Psychology
- Walton, Marianna Louise, '44, Box 67, Moylan, Pa. German
- Walton, Virginia S., '45, 2416—2nd Ave., Altoona, Pa.
- Wampler, Betty Jean, '43, 230 DeWitt St., Syracuse, N. Y. History
- Warren, Penelope, '45, 108 E. 30th St., New York, N. Y.
- Way, David Spencer, '43, 164 S. Main St., Woodstown, N. J. Engineering
- Way, Marjorie Williams, '45, 164 S. Main St., Woodstown, N. J. English
- Webb, Anne Caroline, '43,
280 Jefferson Ave., Haddonfield, N. J. Pol. Science
- Wedeman, Miles George, '43, 738 Mason Ave., Drexel Hill, Pa. Economics
- Weinberger, Frances Babette, '44,
19 Central Drive, Bronxville, N. Y. English
- Weintraub, Mary C., '42, 113 N. Raleigh Ave., Atlantic City, N. J. English
- Wells, Lois Elizabeth, '45, Dolgelly Apts., Bryn Mawr, Pa.
- Wemyss, Courtney Titus, '44, 27 Washington Ave., Arlington, N. J. Zoology
- Wenar, Charles, '43, Bay St. Louis, Miss. Psychology
- Wheaton, Robert Garth, '43,
1042 S. Linden Ave., Alliance, Ohio Engineering
- Wheeler, Joan, '45, 35 Channing Ave., Providence, R. I.
- Whipple, Barberie T., '43, 320 Westminster Rd., Rochester, N. Y. English
- Whipple, David Collins, '43, 25 Cushman Rd., Scarsdale, N. Y. Engineering
- Whipple, James Rutledge, '44,
171 W. 12th St., New York, N. Y. Pol. Science
- Whitcomb, Arthur William, '44,
7875 N. Club Circle, Milwaukee, Wis. Economics
- White, Allen Kirby, II, '45, Marlborough Hotel, Atlantic City, N. J.
- White, Barclay, Jr., '44, 120 Hilldale Rd., Lansdowne, Pa. Engineering
- White, Benjamin Ward, '42,
4629 Hunt Ave., Chevy Chase, Md. Psychology
- White, Elizabeth Suzanne, '43, 203 Park Place, Brooklyn, N. Y. Pol. Science
- White, Lucinda Hills, '44,
Marlborough Hotel, Atlantic City, N. J. Psychology
- White, Margaret Joan, '44, 416 Sharp Ave., Glenolden, Pa. Mathematics

- Whitford, Ann Elizabeth, '42, 441 Ocean Ave., Brooklyn N. Y. *Psychology*
- Whitney, Anne Marie, '42,
 40 Westminster Rd., W. Hempstead, N. Y. *Mathematics*
- Wightman, Jean Marie, '45, 10 Windsor Lane, Scarsdale, N. Y.
- William, Carey, '42, The Meadows, Mt. Pleasant, Texas. *Economics*
- William, Jean, '43, 880 N. Evans, St., Pottstown, Pa. *English*
- Williams, Ora Louise, '44, Bethlehem, Pa. *English*
- Williams, Robert James, III, '44,
 127 Grays Ave., Glenolden, Pa. *Engineering*
- Willis, Clyde Arnold, '44,
 72 Park Terrace West, New York, N. Y. *Engineering*
- Willis, Jackson D., '45, 100 Tyson Ave., Glenside, Pa. *Pol. Science*
- Windle, Anne Moore, '42, Dellwyn, West Chester, Pa. *Philosophy*
- Winne, David Hollister, '45, Nott Road, Rexford, N. Y. *Engineering*
- Wirth, Anne Pfarr, '43, 195 Overbrook Road, Elyria, Ohio. *English*
- Wolf, Ruth, '42, 47 Sunshine Road, Upper Darby, Pa. *English*
- Wolfe, Lindsay Harper, '42, 410 Walnut Road, Ben Avon, Pa. *Engineering*
- Wolff, Aline Louise, '42, 300 Central Park West, New York, N. Y. *English*
- Wolverton, Ben, '45, 2159 Blake Blvd., Cedar Rapids, Iowa
- Wood, Margaret Ellis, '45, 610 E. Monroe St., Little Falls, N. Y.
- Woodruff, Margaret, '43, 814 Main Street, Manchester, Conn. *English*
- Woodward, J. Donald, Jr., '43, 106 W. Broadway, Salem, N. J. *English*
- Woodward, William Mackey, '43,
 42 E. Madison Ave., Collingswood, N. J. *Zoology*
- Woolford, Gladys, '45, 109 Longwood Rd., Baltimore, Md.
- Woollcott, Polly B., '45, Edon Terrace, Catonsville, Md.
- Wright, Gertrude H., '44,
 74 Hillside Ave., Hastings-on-Hudson, N. Y. *History*
- Wright, Rachel Ann, '45, 8 Shirley Road, Narberth, Pa.
- Wynne, Mildred Elizabeth, '43, 11 Princeton Rd., Cynwyd, Pa. *English*
- Yearsley, Lawrence Ash, '44, 577 E. Lincoln Highway, Coatesville, Pa.
- Yockey, Merle Albert, '44,
 38 Oxford Blvd., Pleasant Ridge, Mich. *Economics*
- Yost, John Roberts, '44,
 235 Virginia Ave., Phoenixville, Pa. *Chemistry*
- Yost, Laura Miller, '44, Menoher Hgwy., Johnstown, Pa. *Zoology*
- Zerbe, Jack Edward, '45, 209 Dartmouth Ave., Swarthmore, Pa.
- Zimmerman, Louise Marsh, '44, 207 State St., Harrisburg, Pa. *English*
- Zimmerman, Mary Jane, '42, 2 Surrey Road, Melrose Park, Pa. *English*
- Zinninger, Jane Moore, '45,
 2532 Observatory Rd., Cincinnati, Ohio. *English*
- Zipfel, Robert Neil, '42, Oradell Manor, Dobbs Ferry, N. Y. *Pol. Science*

FELLOWSHIPS AND SCHOLARSHIPS

FELLOWSHIPS

There are six fellowships offered to graduates of Swarthmore College.

Three fellowships are awarded annually by the Faculty, on recommendation of the Committee on Fellowships, to graduates of the College for the pursuit of advanced work under the direction of the Faculty or with their approval. Applications for these fellowships for 1942-43 must be received by the committee before March 1, 1942.

These fellowships are:

The HANNAH A. LEEDOM FELLOWSHIP of \$500, founded by the bequest of Hannah A. Leedom.

The JOSHUA LIPPINCOTT FELLOWSHIP of \$600, founded by Howard W. Lippincott, of the Class of 1875, in memory of his father.

The JOHN LOCKWOOD MEMORIAL FELLOWSHIP of \$600, founded by the bequest of Lydia A. Lockwood, New York, in memory of her brother, John Lockwood. It was the wish of the donor that the fellowship be awarded to a member of the Society of Friends.

The LUCRETIA MOTT FELLOWSHIP, founded by the Somerville Literary Society and sustained by the contributions of its life members, has yielded an annual income since its foundation of \$525. It is awarded each year by a committee of the faculty (selected by the society), with the concurrence of the life members of the society, to a young woman graduate of that year who is to pursue advanced study at some other institution approved by this committee.

The MARTHA E. TYSON FELLOWSHIP, founded by the Somerville Literary Society in 1913, is sustained by the contributions of life members of the society and yields an income of \$500 or more. It is awarded biennially by a joint committee of the faculty and the society (elected by the society) with the concurrence of the life members of the society to a woman graduate of Swarthmore College, who has taught successfully for two years after her graduation and expects to continue teaching. The recipient of the award is to pursue a course of study fitting her for more efficient work in an institution approved by the Committee of Award. This fellowship will be awarded for 1942-43. Applica-

tions must be received by the Committee of Award not later than February 15, 1942.

SIGMA XI RESEARCH FELLOWSHIP. The Swarthmore Chapter of Sigma XI appoints, from time to time, as funds are available, Fellows with research grants with a maximum value of \$1,000. The holders of this fellowship are usually associates of the chapter who have shown conspicuous ability in graduate studies. The purpose of the chapter in awarding these fellowships is to relieve worthy students from teaching and other distracting duties so that they may concentrate as much as possible upon their research. Applications for these fellowships should be made to the secretary of the chapter not later than the middle of March. Appointments will be announced about the middle of April.

SCHOLARSHIPS

The **ALUMNÆ SCHOLARSHIP**, established by the Philadelphia and New York Alumnae Clubs, is awarded on the same basis as the Open Scholarships (p. 135). It is awarded for one year and is valued at \$500.

ALUMNI SCHOLARSHIPS. Occasional scholarships are provided for men by Alumni clubs in cooperation with the College, on a regional basis. Applications should be addressed to the Dean of Men.

The **CHI OMEGA SCHOLARSHIP** was established by members and friends of the Chi Omega Fraternity. The income provides an award of approximately \$225 annually to a member of the freshman class who is in definite need of financial aid. Preference is given to daughters or sons of members of the fraternity, but if in any year such a candidate does not apply, the committee will select a freshman woman to receive the award. Applications should be sent to the Office of the Deans before January 1st of the year in which the award is to be made. A member designated by the Fraternity serves on the Committee of Award.

CLASS SCHOLARSHIPS. Two scholarships are offered to the highest ranking student in the freshman and in the sophomore Classes: the *Anson Lapham* and the *Samuel J. Underhill Scholarships*. Each has the value of \$200, if won by a resident student; of \$100, if won by a day student.

The SARAH KAIGHN COOPER SCHOLARSHIP, founded by Sallie K. Johnson in memory of her grandparents, Sarah Kaighn and Sarah Cooper, is awarded to a man in the Junior Class who is judged by the faculty to have had, since entering College, the best record for scholarship, character, and influence. The value of this scholarship is approximately \$225 annually.

The JOSEPH E. GILLINGHAM FUND, with an annual income of approximately \$2,250, was bequeathed to the College in 1907 with the stipulation, "I request but I do not direct that part of the income of this legacy may be used for free scholarships for meritorious students."

The AARON B. IVINS SCHOLARSHIP is awarded annually to a young man of the graduating class of Friends Central School, Overbrook, Philadelphia. It is awarded under the following conditions: The recipient must have been a student at Friends Central for at least two years, he must have good health, high grades, and must be the best all-around student in his class desirous of entering Swarthmore College. This scholarship, awarded by the faculty of Friends Central School, and subject to the approval of Swarthmore College, has the value of approximately \$450 for a resident student and a maximum of \$400 for a non-resident student.

The GEORGE K. and SALLIE K. JOHNSON FUND provides \$450 a year, to be used, at the discretion of the President of the College, in granting financial aid to young women during their senior year, it being the donor's desire that the President must be satisfied that the applicant is fitted to become a desirable teacher.

The income of the KAPPA ALPHA THETA SCHOLARSHIP FUND, given by members and friends of the Kappa Alpha Theta Fraternity at Swarthmore, is awarded annually to a woman student. The award amounts to approximately \$125 annually. One or more members of the fraternity who are on the Board of Managers serve on the Committee of Award.

The JAMES E. MILLER SCHOLARSHIP provides an annual income of approximately \$340 which may be applied toward the payment of board and tuition of students of Delaware County (preference to be given to residents of Nether Providence Township). The Chester-Cambridge Trust Company acts as Trustee of this fund and selects the holder of the scholarship, in consultation with the Superintendent of Schools of Delaware

County and of the City of Chester, and subject to the approval of Swarthmore College.

OPEN SCHOLARSHIPS FOR MEN. Swarthmore College awards annually five four-year scholarships of \$500 a year to men entering the Freshman Class. These scholarships, based on the general plan of the Rhodes Scholarships, are given to candidates who, in the opinion of the Committee of Award, rank highest in scholarship, character and personality. All candidates are required to take the Scholastic Aptitude and Achievement Tests given by the College Board in April. Blanks with further information may be obtained from the Admissions office of the College. Applications must be filed with Dean Everett Hunt at Swarthmore College before March first of the year in which they are awarded. The awards will be announced about June first.

OPEN SCHOLARSHIPS FOR WOMEN. Mr. and Mrs. Daniel S. White, of the Class of 1875, on the occasion of the Fiftieth Reunion of that class, established three open competitive scholarships for women, in the names of Howard White, Jr., Serena B. White, and Walter W. Green. These scholarships are given to candidates who, in the opinion of the Committee of Award, rank highest in scholarship, character and personality. Each award normally carries an annual stipend of \$500 and is tenable for four years. All candidates are required to take the Scholastic Aptitude and Achievement Tests given by the College Board in April. Blanks with further information may be obtained from the Admissions office of the College. Applications must be filed with Dean Frances Blanshard at Swarthmore College before March first of the year in which they are awarded. The awards will be announced about May fifteenth.

The **HARRIET W. PAISTE FUND** is limited by the following words from the donor's will: "the interest to be applied annually to the education of female members of our Society of Friends (holding their Yearly Meeting at Fifteenth and Race Streets, Philadelphia) whose limited means would exclude them from enjoying the advantages of an education at the College." The value of this scholarship is approximately \$360 annually.

The **T. H. DUDLEY PERKINS MEMORIAL SCHOLARSHIP** is awarded annually to a young man selected by a committee of the faculty appointed by the President of the College for the purpose. The award will be made on the basis of qualities of manhood, force

of character and leadership; literary and scholastic ability; physical vigor as shown by participation in out-of-doors sports or in other ways.

The WILLIAM PLUMER POTTER FUND FOR THE ENCOURAGEMENT OF PUBLIC SPEAKING provides an income of approximately \$225 to be used for scholarships to upperclass students demonstrating proficiency in the discussion of public affairs. Juniors and Seniors interested in the scholarship should register with Dean Hunt. Competitors submit theses on public questions to a Faculty Committee and also present their main conclusions orally, after which they are cross-examined. Theses are due after spring vacation.

The MARY COATES PRESTON SCHOLARSHIP FUND. A sum of money has been left by will of Elizabeth Coates to Josephine Beistle, of Swarthmore, as trustee, the annual interest of which will be about \$350. This amount is given by the trustee as a scholarship to a young woman student in Swarthmore College, preferably to a relative of the donor.

The WILLIAM G. AND MARY N. SERRILL HONORS SCHOLARSHIP is a competitive Honors Scholarship for Men, awarded to a candidate for admission to the College, based upon the general plan of the Rhodes Scholarships. It is tenable for four years, subject to the maintenance of a high standing in College. The annual stipend is \$375. Preference will be given to men who are residents of Abington Township, including Jenkintown and Glenside, Montgomery County, Pa., but if there is no outstanding candidate from this locality, the scholarship will be open to competition generally.

The ANNIE SHOEMAKER SCHOLARSHIP is granted annually to a young woman of the graduating class of Friends Central School, Overbrook, Philadelphia. The recipient must have been a student at Friends Central for at least two years, she must have good health, high grades, and must be the best all-around student in her class desirous of entering Swarthmore College. This scholarship, awarded by the faculty of Friends Central School, and subject to the approval of Swarthmore College, has the value of \$500 for a resident student and \$400 for a day student.

The HELEN E. W. SQUIER SCHOLARSHIP, originally one of the Anson Lapham Scholarships, is awarded annually by Mrs.

Chester Roberts, of Swarthmore, to a student in need of financial aid.

The JONATHAN K. TAYLOR SCHOLARSHIP, in accordance with the donor's will, is awarded by the Board of Trustees of the Baltimore Monthly Meeting of Friends. This scholarship is first open to descendants of the late Jonathan K. Taylor. Then, while preference is to be given to members of the Baltimore Yearly Meeting of Friends, it is not to be confined to them when suitable persons in membership cannot be found. The value of this scholarship is approximately \$472.50 annually.

The PHEBE ANNA THORNE FUND provides an income of approximately \$2,250 for scholarships for students needing pecuniary assistance whose previous work has demonstrated their earnestness and their ability. This gift includes a clause of preference to those students who are members of the New York Monthly Meeting of Friends. These scholarships are awarded by the College under the regulations fixed by the Board.

The WESTBURY QUARTERLY MEETING, N. Y., SCHOLARSHIP, amounting to \$350, is awarded annually by a committee of that Quarterly Meeting.

The SAMUEL WILLETS FUND yields an income of approximately \$4,500 annually, "to be applied to educate in part or in whole such poor and deserving children as the Committee on Trusts, Endowments and Scholarships of said college may from time to time judge and determine to be entitled thereto."

In addition to the above fund, Samuel Willits gave scholarships in the name of his children, FREDERICK WILLETS, EDWARD WILLETS, WALTER WILLETS, and CAROLINE M. FRAME. These scholarships have the value of \$225 each. They are awarded by the respective parties, their heirs or assigns, or in the event that the heirs do not exercise their right, by the College authorities.

The I. V. WILLIAMSON SCHOLARSHIPS. Ten scholarships of the value of \$150 each for resident students and \$75 for day students are offered to graduates of designated Friends schools, under the following conditions:

Candidates must apply to the Office of the Deans at the College before March first.

Candidates must take the scholarship examinations given by the College Entrance Examination Board in April. The results of these examinations, together with other evidence of achievement and promise, will determine the award.

The scholarships are distributed as follows: two each to graduates of Friends Central and George School, one in the boys' and one in the girls' department; and one each to New York Friends Seminary, Baltimore Friends School, Wilmington Friends School, Moorestown Friends School, Friends Academy at Locust Valley, Sidwells Friends School and Brooklyn Friends School.

Any income not utilized in accordance with these conditions is used for free scholarships in accordance with the will of the donor.

The EDWARD CLARKSON WILSON SCHOLARSHIP. A scholarship with an annual value of \$125 has been established at Swarthmore by friends of Edward Clarkson Wilson, '91, formerly Principal of the Baltimore Friends School. It will be awarded each year to a former student of the Baltimore Friends School, who has been approved by the faculty of the School, on the basis of high character and high standing in scholarship. In any year when there is no outstanding candidate from the students of the Baltimore Friends School, the scholarship may be awarded to another young man or woman who shall meet the required standards and who is approved by the School Faculty and the College.

The MARY WOOD FUND is limited by the following words from the donor's will: "the income thereof to be, by the proper officers thereof, applied to the maintenance and education at said College of one female student therein, one preparing for the avocation of a teacher to be preferred as the beneficiary, but in all other respects the application of the income of said Fund to be in the absolute discretion of the College." The value of this scholarship is approximately \$62.50 annually.

Each of the following funds yields annually about \$225 and is awarded at the discretion of the College to students needing pecuniary aid:

The BARCLAY G. ATKINSON SCHOLARSHIP FUND.

The REBECCA M. ATKINSON SCHOLARSHIP FUND.

The WILLIAM DORSEY SCHOLARSHIP FUND.

THE THOMAS L. LEEDOM SCHOLARSHIP FUND.

The SARAH E. LIPPINCOTT SCHOLARSHIP FUND.

The MARK E. REEVES SCHOLARSHIP FUND.

The JOSEPH T. SULLIVAN SCHOLARSHIP FUND.

The DEBORAH F. WHARTON SCHOLARSHIP FUND.

The THOMAS WOODNUTT SCHOLARSHIP FUND.

Additional honorary and working scholarships are awarded annually by the College from general funds. Students should apply for these scholarships before April 15 of the year before they wish to receive an award. Men should file their applications with Dean Everett Hunt; women, with Dean Frances Blanshard. *In making awards the Committee recognizes both high scholastic standing and definite financial need.*

"Working scholarships" are approximately half earned and half honorary. Recipients are asked to assist in one of the college offices, shops, or laboratories for the number of hours a week in which they could normally earn half their scholarships. An award of \$100 requires about four hours of work a week.

SPECIAL AWARDS

The IVY MEDAL FUND was created by a gift from Owen Moon, '94. The income of the fund is used to purchase a medal which is placed in the hands of the faculty for award on Commencement Day to a male member of the graduating class. The regulations governing the award are as follows:

(1) The qualifications for the Ivy Medal are similar to those for the Rhodes Scholarships and include (a) qualities of manhood, force of character, and leadership; (b) literary and scholastic ability and attainments. These have been phrased by the donor in the words "leadership based upon character and scholarship."

(2) It is the wish of the donor that the medal should not be awarded on a mere basis of averages. Instead, it is desired that the winner should be a man who gives promise of distinction either in character or in intellectual attainments, as opposed to a man who has merely made the most of mediocre abilities.

(3) On the other hand, it is the wish of the donor that the medal should not go to a man who, while showing excellence in some one respect, has fallen seriously below the standard in others.

The OAK LEAF MEDAL was established by David Dwight Rowlands of the Class of 1909. It was later permanently endowed in memory of him by Hazel C. Rowlands, '07, and Caroline A. Lukens, '98. The medal is placed in the hands of the faculty to be awarded each year to the woman member of the Senior Class who is outstanding for loyalty, scholarship and service.

The McCABE ENGINEERING AWARD, founded by Thomas B. McCabe, 1915, is to be presented each year to the outstanding engineering student in the Senior Class. The recipient is chosen by a committee of the faculty of the Division of Engineering.

The CRANE PRIZE, a memorial to Charles E. Crane, Jr., of the Class of 1936, is an award of about \$20, given for the purchase of philosophical books, and presented annually to the Junior who, in the opinion of the department, has done the best work in Philosophy.

The A. EDWARD NEWTON LIBRARY PRIZE, endowed by A. Edward Newton, to make permanent the Library Prize first established by W. W. Thayer, is awarded annually to that undergraduate who, in the opinion of the Committee of Award, shows the best and most intelligently chosen collection of books upon any subject. Particular emphasis is laid in the award, not merely upon the size of the collection but also upon the skill with which the books are selected and upon the owner's knowledge of their subject-matter.

THE KATHERINE B. SICARD PRIZE, endowed by the Delta Gamma Fraternity in memory of Katharine B. Sicard, ex '34, is awarded annually to the Freshman woman who, in the opinion of the department, shows greatest proficiency in English.

PUBLIC SPEAKING CONTESTS. Prizes for annual contests in public speaking are provided by two funds as follows: The ELLA FRANCES BUNTING EXTEMPORARY SPEAKING FUND awards \$45 in six prizes, three for men and three for women, for the best extemporaneous short speeches. The OWEN MOORE FUND provides the Delta Upsilon Speaking Contest prizes totalling \$25 for the best prepared speeches on topics of current interest.

The GEORGE FOX AWARD of \$100 is presented annually by an anonymous friend of the College to the undergraduate who writes the best essay on some phase of the history or testimonies of the Society of Friends.

The ELIZABETH FRY AWARD of \$50, together with an autographed copy of Janet Payne Whitney's biography of Elizabeth Fry, is presented annually by an anonymous friend of the College to the undergraduate who writes the best essay on some aspect of the social attitudes and activities of some Quaker individual or group, preferably of recent times.

THE JOHN RUSSELL HAYES POETRY PRIZES are of a value of approximately \$30 for a first prize, and \$15 for a second prize, offered for the best original poem or for a translation from the Latin or Greek. Manuscripts should be ready by May 1 of each year.

LOANS

Several loan funds are administered by a committee to which application should be made through the Comptroller of the College.

The CLASS OF 1913 LOAN FUND was established by the Class of 1913 at their twenty-fifth reunion. Both principal and income are to be used to provide a loan fund for students in the three upper classes. Individual students may borrow up to \$200 in any one year, the loans to be repayable within five years with interest at four percent.

The JOHN A. MILLER LOAN FUND was established by the Class of 1912 at their twenty-fifth reunion. Both principal and income are to be used to provide a loan fund for students in the three upper classes. Individual students may borrow up to \$200 in any one year, such loans to be repayable within five years with interest at four percent.

The PAUL M. PEARSON LOAN FUND was established by a number of Dr. Pearson's friends as a memorial for perpetuating his life and spirit. Both principal and income may be used for loans to students, repayable not later than five years after graduation, with interest at the rate of four percent.

The SWARTHMORE COLLEGE STUDENT LOAN FUND was established by Mr. Clarence J. Gamble, who, feeling such a fund to be of unusual benefit to worthy students, gave a sum to the College on condition that the Board should set aside an equal amount to be added to the fund. Both principal and income may be used for loans to students, repayable not later than five years after graduation, with interest at the rate of four percent.

The ELLIS D. WILLIAMS FUND. By the will of Ellis D. Williams, a legacy of \$25,000 was left to the College, the income from which is to be used for loans to students, repayable not later than five years after graduation, with interest at the rate of four percent.

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Department of Education in the State of
Alabama during the year 1917.
The Department of Education is a
department of the State Government
and is located in the State Capitol
Building at Montgomery, Alabama.
The Department is organized into
several divisions and is headed
by the Commissioner of Education.
The Department is responsible for
the supervision of the public
schools of the State and for
the promotion of the general
education of the people of the
State.

Division of Schools
The Division of Schools is the
largest of the divisions of the
Department and is responsible for
the supervision of the public
schools of the State. It is
headed by the State Superintendent
of Schools and is organized into
several districts. The Division
is responsible for the
inspection of the schools, the
distribution of the State
funds, and the promotion of
the general education of the
people of the State.

Division of Technical Education
The Division of Technical Education
is responsible for the supervision
of the technical schools of the
State. It is headed by the
State Superintendent of Technical
Education and is organized into
several districts. The Division
is responsible for the
inspection of the schools, the
distribution of the State
funds, and the promotion of
the general education of the
people of the State.

Division of Vocational Education
The Division of Vocational Education
is responsible for the supervision
of the vocational schools of the
State. It is headed by the
State Superintendent of Vocational
Education and is organized into
several districts. The Division
is responsible for the
inspection of the schools, the
distribution of the State
funds, and the promotion of
the general education of the
people of the State.

Division of Special Education
The Division of Special Education
is responsible for the supervision
of the special schools of the
State. It is headed by the
State Superintendent of Special
Education and is organized into
several districts. The Division
is responsible for the
inspection of the schools, the
distribution of the State
funds, and the promotion of
the general education of the
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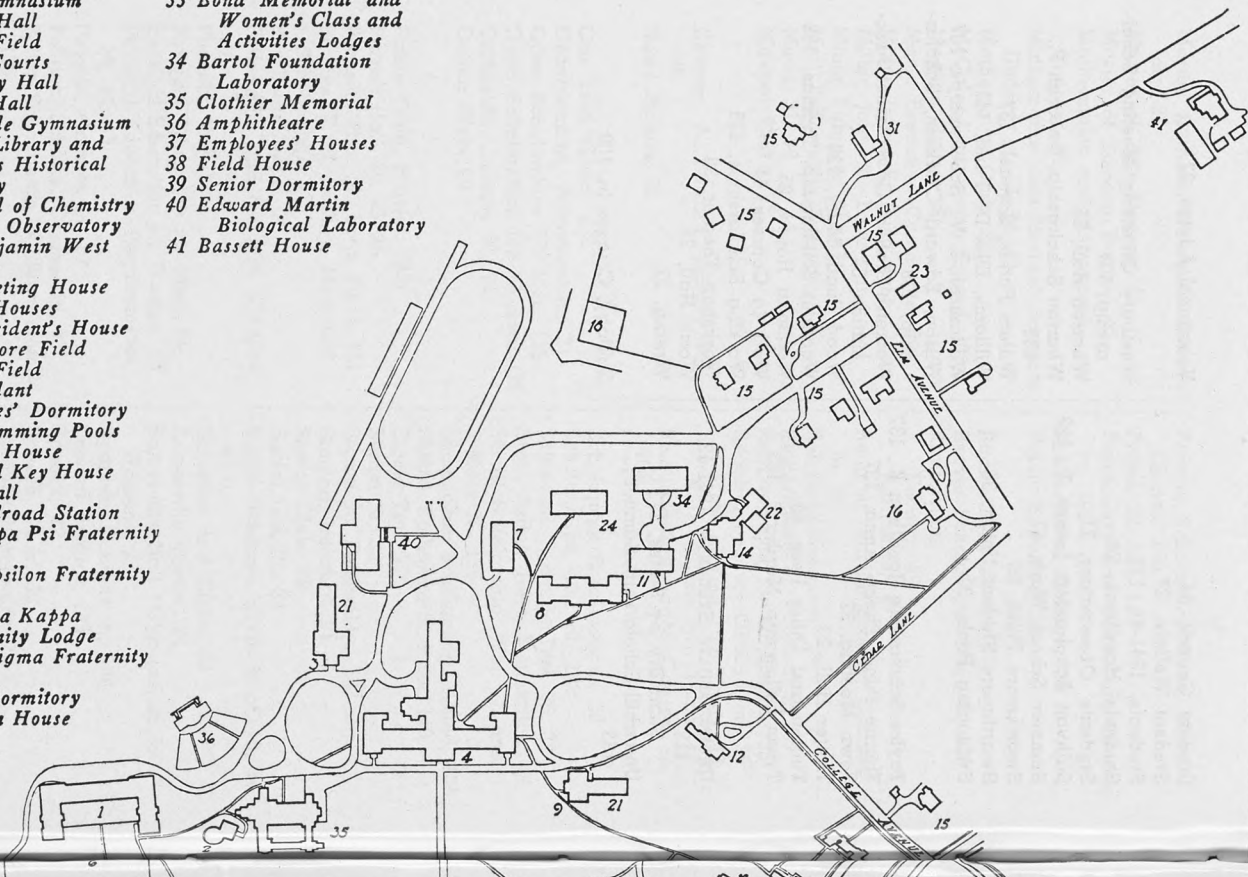
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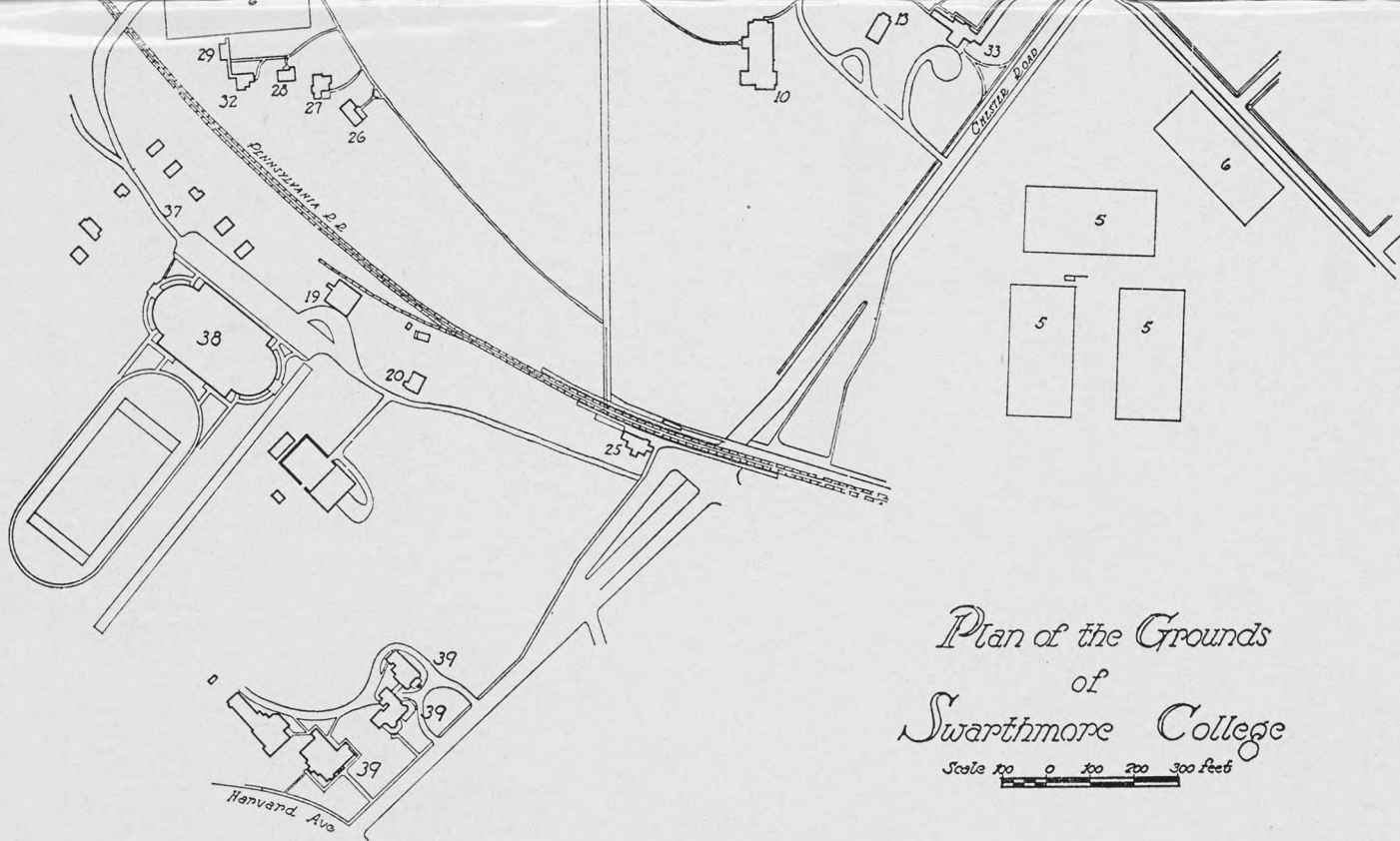
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| 15 Faculty Houses | |
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| 18 Alumni Field | |
| 19 Power Plant | |
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| 21 The Swimming Pools | |
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| 23 Book and Key House | |
| 24 Hicks Hall | |
| 25 The Railroad Station | |
| 26 Phi Kappa Psi Fraternity Lodge | |
| 27 Delta Upsilon Fraternity Lodge | |
| 28 Phi Sigma Kappa Fraternity Lodge | |
| 29 Kappa Sigma Fraternity Lodge | |
| 30 Worth Dormitory | |
| 31 Woolman House | |

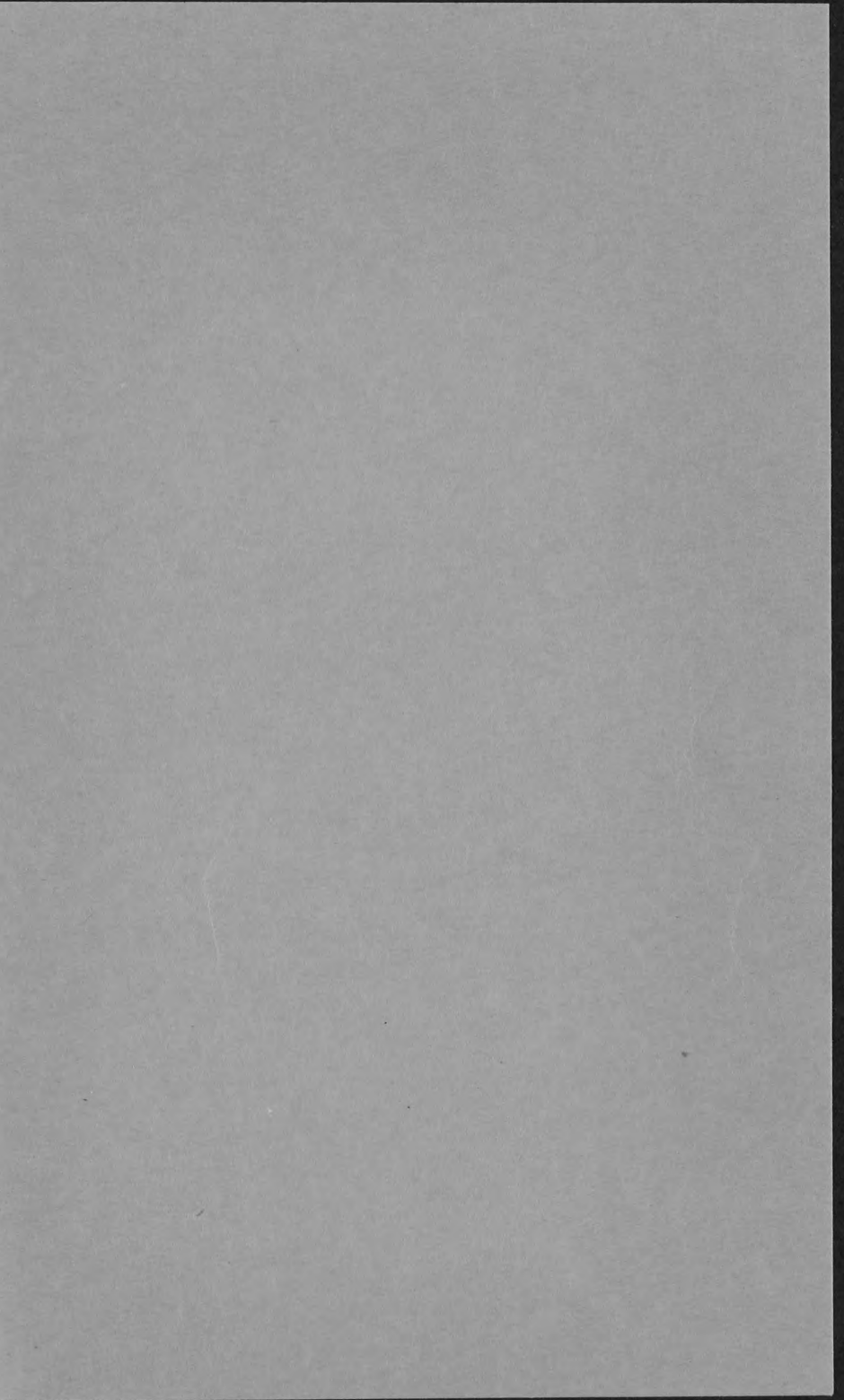




*Plan of the Grounds
of
Swarthmore College*

Scale 100 0 100 200 300 feet





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