

Periodical Dept.

BULLETIN OF SWARTHMORE COLLEGE

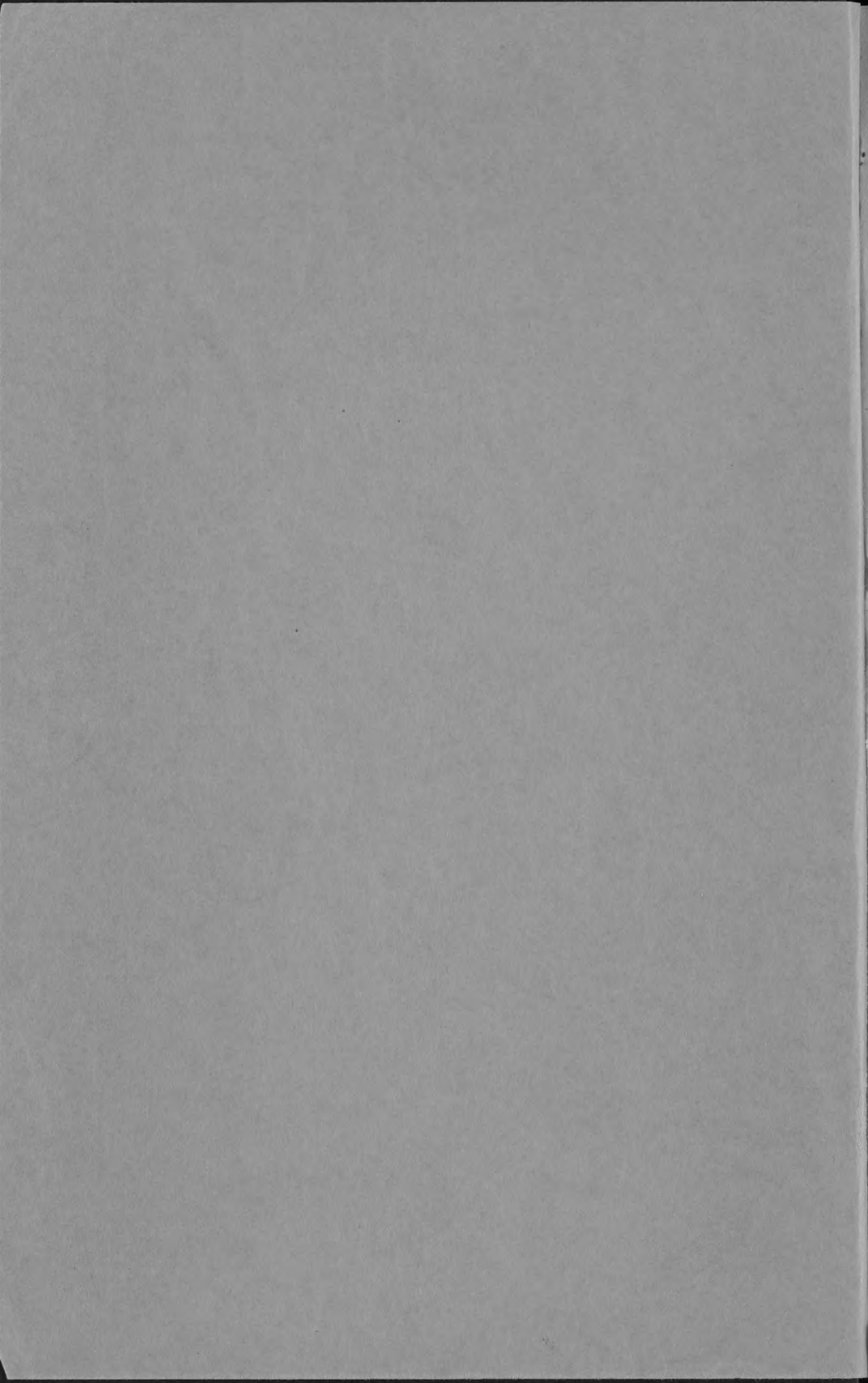
CATALOGUE
OF
SWARTHMORE
COLLEGE
1934



SWARTHMORE, PA.

VOLUME XXXII, No. 2

TENTH MONTH, 1934



SWARTHMORE COLLEGE BULLETIN

CATALOGUE NUMBER
SIXTY-SIXTH YEAR
1934-1935

SWARTHMORE, PENNSYLVANIA

Volume XXXII

Number 2

Tenth Month, 1934

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Swarthmore

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1934/37

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NOVEMBER

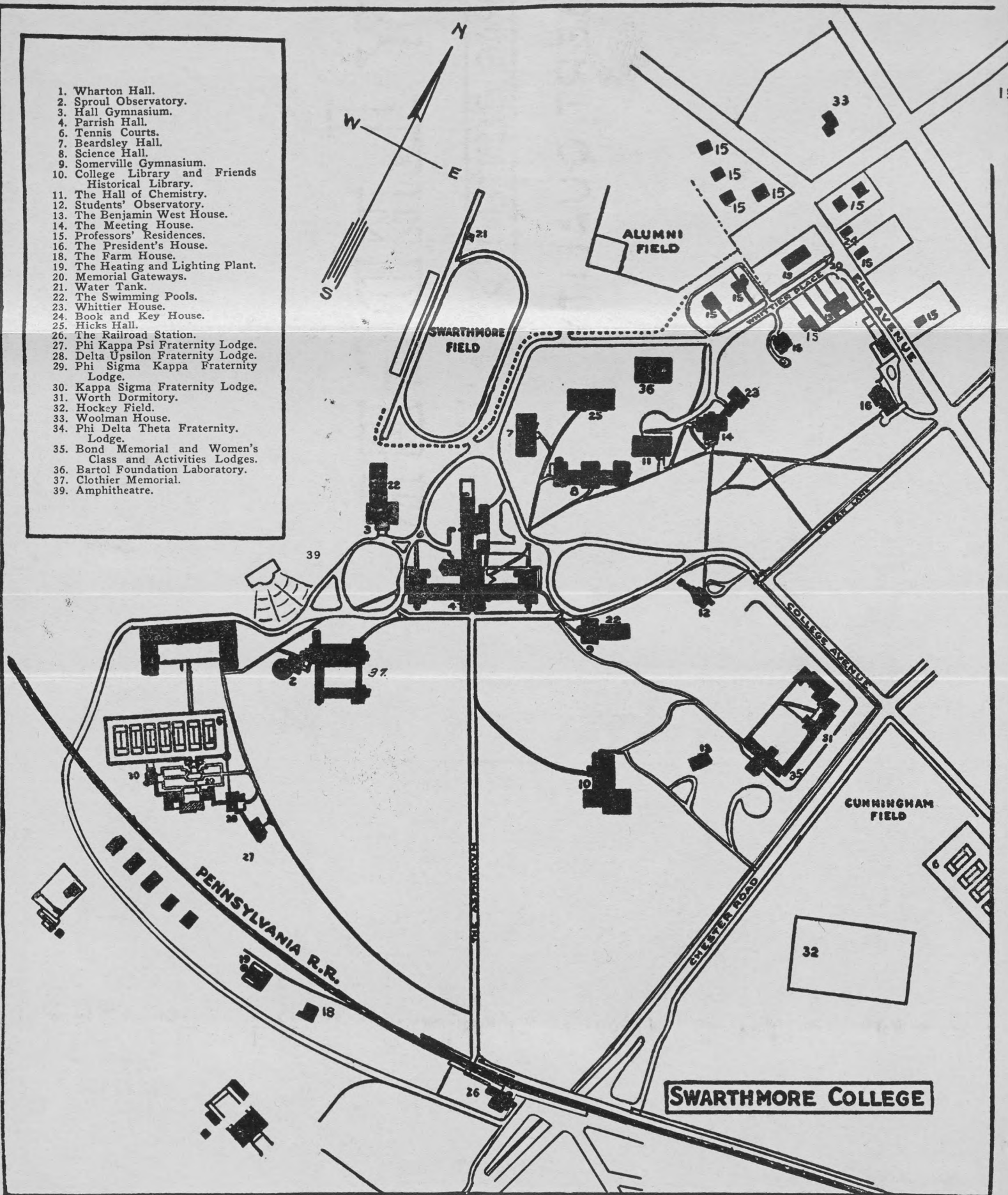
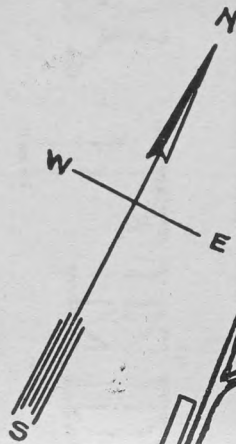
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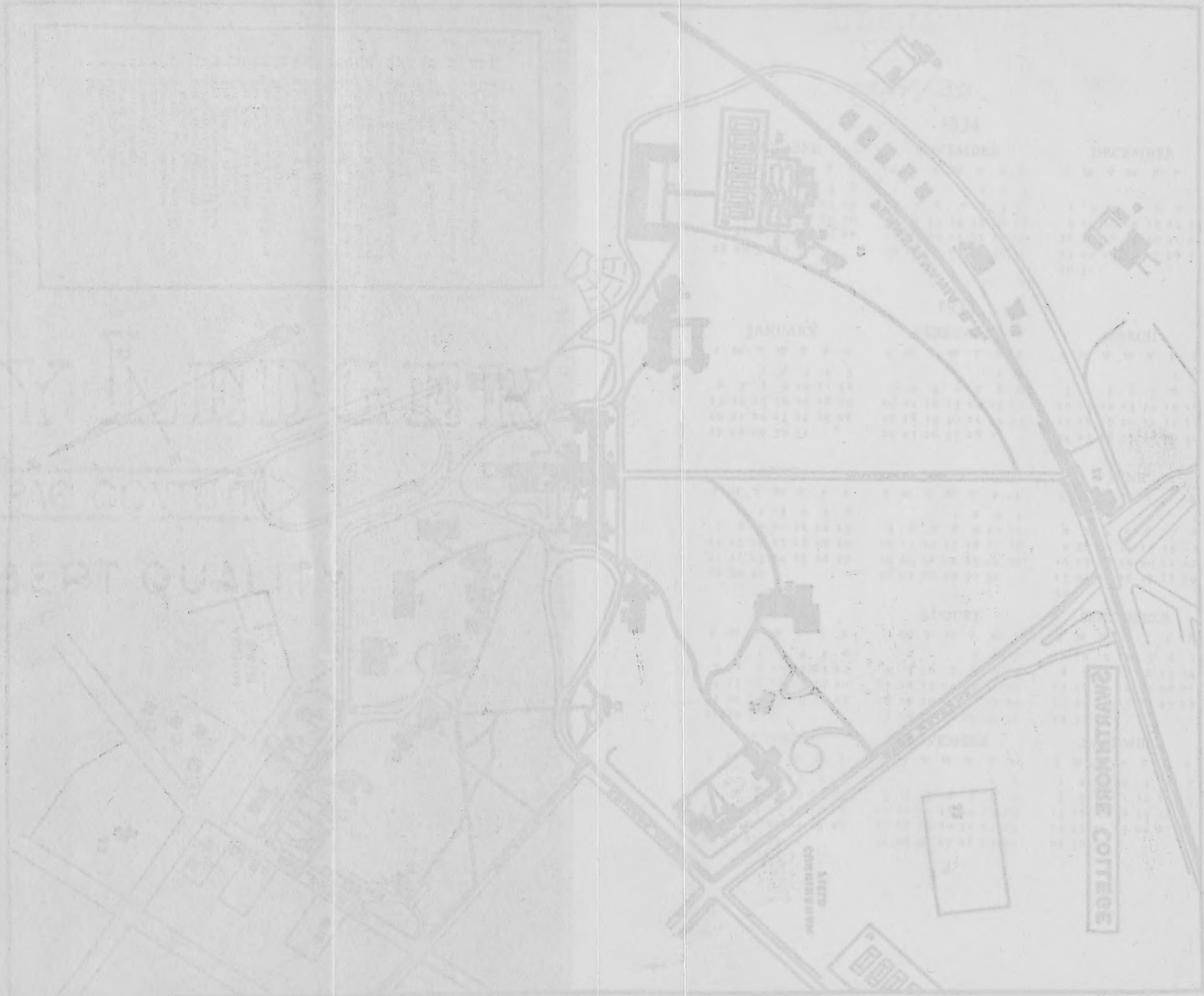
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1. Wharton Hall.
2. Sproul Observatory.
3. Hall Gymnasium.
4. Parrish Hall.
6. Tennis Courts.
7. Beardsley Hall.
8. Science Hall.
9. Somerville Gymnasium.
10. College Library and Friends Historical Library.
11. The Hall of Chemistry.
12. Students' Observatory.
13. The Benjamin West House.
14. The Meeting House.
15. Professors' Residences.
16. The President's House.
18. The Farm House.
19. The Heating and Lighting Plant.
20. Memorial Gateways.
21. Water Tank.
22. The Swimming Pools.
23. Whittier House.
24. Book and Key House.
25. Hicks Hall.
26. The Railroad Station.
27. Phi Kappa Psi Fraternity Lodge.
28. Delta Upsilon Fraternity Lodge.
29. Phi Sigma Kappa Fraternity Lodge.
30. Kappa Sigma Fraternity Lodge.
31. Worth Dormitory.
32. Hockey Field.
33. Woolman House.
34. Phi Delta Theta Fraternity Lodge.
35. Bond Memorial and Women's Class and Activities Lodges.
36. Bartol Foundation Laboratory.
37. Clothier Memorial.
39. Amphitheatre.





EXPERT QUALITY

SWARTHMORE COLLEGE

JANUARY

FIELD

COLLEGE CALENDAR

1934-35

- Ninth Month 21, 22, 23, 24. Freshman Placement Days
- Ninth Month 25. Registration and Enrollment in Classes, 2:00 P. M.
- Ninth Month 26. Classes begin at 8:00 A. M.
- Ninth Month 27. Opening of Honors Work
- Tenth Month 2. Meeting of the Board of Managers
- Eleventh Month 29. Holiday: Thanksgiving
- Twelfth Month 4. Annual Meeting of the Corporation
- Twelfth Month 15. Christmas Recess begins at noon.

1935

- First Month 3. Christmas Recess ends at 8:00 A. M.
- First Month 24. Registration and Enrollment in Classes for the
Second Semester, 10:30 A. M. to noon.
- First Month 24. Mid-Year Examinations begin at 2:00 P. M.
- First Month 25. Second Semester begins for Honors Seminars
- First Month 31. Mid-Year Examinations end.
- Second Month 4. Second Semester begins at 8:00 A. M.
- Second Month 22. Holiday: Washington's Birthday
- Third Month 5. Meeting of the Board of Managers
- Third Month 23. Spring Recess begins at noon
- Fourth Month 2. Spring Recess ends at 8:00 A. M.
- Fourth Month 13. Somerville Day
- Fifth Month 8. Seminars for Senior Honors Students end
- Fifth Month 10. Enrollment in Classes for the First Semester, 1935-

36

- Fifth Month 11. Courses for Seniors end
- Fifth Month 15. Honors Examinations begin
- Fifth Month 20. Senior Comprehensive Examinations begin
- Fifth Month 22. Final Examinations begin
- Fifth Month 25. Honors Oral Examinations
- Fifth Month 29. Final Examinations end
- Fifth Month 31. Meeting of the Board of Managers
- Fifth Month 31. Class Day
- Sixth Month 1. Alumni Day
- Sixth Month 2. Baccalaureate Day
- Sixth Month 3. Commencement Day

1935-36

- Ninth Month 19, 20, 21, 22,
23. Freshman Placement Days
- Ninth Month 24. Registration and Enrollment in Classes, 2:00-4:00
P. M.
- Ninth Month 25. Classes begin at 8:00 A. M.
- Ninth Month 26. Opening of Honors Work
- Tenth Month 1. Meeting of the Board of Managers
- Eleventh Month 28. Holiday: Thanksgiving
- Twelfth Month 3. Annual Meeting of the Corporation
- Twelfth Month 19. Christmas Recess begins at noon

1936

- First Month 7. Christmas Recess ends at 8:00 A. M.
- First Month 23. Registration and Enrollment in Classes for the
Second Semester, 10:30 A. M. to noon
- First Month 23. Mid-Year Examinations begin at 2:00 P. M.
- First Month 24. Second Semester begins for Honors Seminars
- First Month 30. Mid-Year Examinations end
- Second Month 3. Second Semester begins at 8:00 A. M.

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† Absent on leave second semester, 1934-35.

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- BEATRICE BEACH, A.B., M.F.A., *Assistant in English* 314 North Chester Road
- RANDOLPH S. DRIVER, A.B., *Assistant in Psychology*
24 West Ward Avenue, Ridley Park
- D. OWEN STEPHENS, *Assistant in Fine Arts* Rose Valley, Pa.
- ARTURO C. F. MATHIEU, A.B., *Assistant in Italian* Wharton Hall
- MARY WENTWORTH MCCONAUGHY, M.A., Ed.D., *Lecturer in Psychology and
Education* Alden Park Manor, Germantown, Pa.
- EDITH M. EVERETT, M.A., *Lecturer in Education*
White-Williams Foundation, 21st Street at Parkway
- LOUIS N. ROBINSON, Ph.D., *Lecturer in Economics* 411 College Avenue
- JOSEPHINE ADAMS, A.B., *Lecturer in Fine Arts*
. 3715 Chestnut Street, Philadelphia
- LEICESTER B. HOLLAND, Ph.D., *Lecturer in Fine Arts*
. 3715 Chestnut Street, Philadelphia
- WILLIAM N. LOUCKS, Ph.D., *Lecturer in Economics* Avon Apts., Merion
- ALFRED H. WILLIAMS, Ph.D., *Lecturer in Engineering* Ogden Avenue
- DOROTHY L. ASHTON, A.B., M.D., *Physician for Women and Lecturer in
Hygiene* 502 Cedar Lane
- FRANKLIN S. GILLESPIE, A.B., M.D., *Physician for Men and Lecturer in
Hygiene* 139 Rutgers Avenue

DIVISIONS AND DEPARTMENTS

I Division of the Humanities—ETHEL H. BREWSTER, *Chairman.*Classics, ETHEL H. BREWSTER, *Chairman.*English, HAROLD C. GODDARD, *Chairman.*Fine Arts, ALFRED M. BROOKS, *Chairman.*German, CLARA P. NEWPORT, *Chairman.*History, FREDERICK J. MANNING, *Chairman.*Music, ALFRED J. SWANN, *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—ROBERT C. BROOKS, *Chairman.*Economics, CLAIR WILCOX, *Acting Chairman.*History, FREDERICK J. MANNING, *Chairman.*Philosophy and Religion, BRAND BLANSHARD, *Chairman.*Political Science, ROBERT C. BROOKS, *Chairman.*Psychology and Education, ROBERT MACLEOD, *Chairman.*III Division of Mathematics and the Natural Sciences —H. JERMAIN CREIGHTON, *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.*Zoology, WALTER J. SCOTT, *Chairman.*IV Division of Engineering, CHARLES G. THATCHER, *Chairman.*Civil Engineering, SCOTT B. LILLY, *Chairman.*Electrical Engineering, LEWIS FUSSELL, *Chairman.*Mechanical Engineering, CHARLES G. THATCHER, *Chairman.*

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ABSENCE

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ALUMNI

Palmer, *Chairman*; Booth, Fussell, Hayes, Lukens, Newport, Pennock, Pitman, Roberts, Thatcher.

ATHLETICS

J. A. Miller, *Chairman*; Anderson, B. Blanshard, Dunn, Matthews, Charles C. Miller, Palmer, Pittenger, Simpson, Thatcher.

COLLECTION AND MEETING ATTENDANCE

Holmes, *Chairman*; Fussell, Hayes, Hull, Shero, Wright.

COLLEGE LIBRARY

Spiller, *Chairman*; Albertson, Brinkmann, Enders, MacLeod, Reuning, Shaw, Shero, Torrey.

COMMENCEMENT

Wright, *Chairman*; Baer, Lilly, Pittenger, Roberts, Shero, Simpson, Stilz.

COOPER FOUNDATION

Hunt, *Chairman*; Brewster, Cox, Hicks, Howard Cooper Johnson, Malin.

FELLOWSHIPS

Brewster, *Chairman*; Creighton, Manning, Pennock, Philips, Scudder.

FOUNDERS' DAY

Jenkins, *Chairman*; Fussell, Hayes, Palmer, Pittenger, Simpson, Stilz.

FRIENDS HISTORICAL LIBRARY

Hull, *Chairman*; Fussell, Hayes, Holmes, Palmer.

INSTRUCTION

Aydelotte, *Chairman*; Anderson, F. Blanshard, Brewster, R. C. Brooks, Creighton, Speight, Spiller, Thatcher.

PRESCRIBED AND EXTRA WORK

Creighton, *Chairman*; Baer, Garrett, Lilly, Marriott, Pennock, Speight.

STUDENT AFFAIRS

Speight, *Chairman*; F. Blanshard, Nason, Pitman, E. Wright.

STUDENT DRAMATICS AND MUSICAL ACTIVITIES

Newport, *Chairman*; Beach, Booth, Hicks, Swann, Watts.

STUDENT PUBLICATIONS

Scudder, *Chairman*; Albertson, Jenkins, Philips, Speight, Spiller.

TEACHERS' APPOINTMENT

McConaughy, *Chairman*; Goddard, MacNeille.

TRAVEL ALLOWANCE

Wright, *Chairman*; B. Blanshard, Foster, Fussell, Goddard.

SECRETARY OF THE FACULTY Brewster

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 FRANCES B. BLANSHARD, M.A., *Dean of Women*.
 HAROLD E. B. SPEIGHT, M.A., *Dean of Men*.
 CHARLES B. SHAW, M.A., *Librarian*.
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 JOHN C. WISTER, *Director of Arthur Hoyt Scott Horticultural Foundation*.
 NICHOLAS O. PITTENGER, A.B., *Comptroller*.
 ANDREW SIMPSON, M.S., *Superintendent*.
 CHESTER ROBERTS, *Purchasing Agent*.
 ETHEL STILZ, M.A., *House Director*.
 CAROLINE AUGUSTA LUKENS, L.B., *Alumni Recorder*.
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 FRANCES WILLS SLAUGH, A.B., *Secretary to the Dean of Men*.
 MARY B. TEMPLE, A.B., *Secretary to the Comptroller*.
 ANN SULLIVAN, *Secretary to the Superintendent*.
 CLARA L. SIGMAN KIRSCH, A.B., *Secretary to the Librarian*.
 ELSA PALMER JENKINS, A.B., *Stenographic Bureau*.

* Absent on leave, 1934-35.

- WILHELMYNA M. POOLE, *Stenographic Bureau.*
 ELIZABETH R. HIRST, *Bookkeeper.*
 GRACE E. REDHEFFER, *Assistant Bookkeeper.*
 EDNA B. CORSON, *Assistant Bookkeeper.*
 MARTHA BAER, *Assistant Matron of Parrish Hall.*
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 JOHN M. WATTS, M.A., *Proctor in Wharton Hall.*
 ARTURO C. F. MATHIEU, A.B., *Proctor in Wharton Hall.*
 ELLIS B. RIDGWAY, A.B., *Proctor in Wharton Hall.*
 HENRY L. PARRISH, A.B., *Proctor in Woolman House.*

HONORARY CURATORS OF THE BIDDLE
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- CHARLES F. JENKINS, *Chairman* 232 South Seventh Street, Philadelphia
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 AMELIA MOTT GUMMERE Haverford, Pa.
 LOUIS N. ROBINSON 411 College Avenue, Swarthmore
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SWARTHMORE COLLEGE

Swarthmore College is situated in the Borough of Swarthmore, eleven miles southwest of Philadelphia on the Octoraro branch of the Pennsylvania Railroad. Two hundred and thirty-seven acres are contained in the College property, including a large tract of woodland and the valley of Crum Creek.

The College was founded in 1864 through the efforts of members of the Religious Society of Friends, for the purpose of securing to the youth of the Society an opportunity for higher educational training under the guarded supervision and care of those of their own religious faith. According to its first charter, membership on the Board of Managers of the College was limited to persons belonging to the Society of Friends. The purpose of this restriction was not to establish sectarian control, but to prevent forever the possibility of such control by any sectarian element which might otherwise have come to be represented on the Board. This restriction is now believed to be no longer needed and is omitted from the revised charter. The intention of the founders was to make the promotion of Christian character the first consideration, and to provide opportunities for liberal culture while maintaining a high standard of scholarship. These aims have been followed in the administration of the institution.

The enrollment of the College is limited to approximately five hundred students. The endowment is six and a half million dollars.

BUILDINGS AND GROUNDS

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.

Parrish Hall is the main building of the College. Administrative offices, class-rooms, reception rooms, and the College dining-hall

occupy the ground floor. The upper floors in the central section contain a social hall, class-rooms, offices, and a laboratory; in the wings, dormitory rooms for Freshman, Sophomore, and Junior women, and an infirmary.

Worth Hall, the dormitory for Senior women, consists of six cottages contiguous in design but each with its own entrance and staircase. The building was the gift of William P. Worth, 1876, and J. Sharpless Worth, ex 1873, as a memorial to their parents.

Wharton Hall, named in honor of its donor, Joseph Wharton, at one time President of the Board of Managers, provides rooms for two hundred men and an infirmary.

Woolman House, at Elm Avenue and Walnut Lane, is a smaller dormitory for men students. The house and grounds were given to the College by Emma C. Bancroft, for many years Chairman of the Household Committee of the Board of Managers.

Science Hall, devoted chiefly to the departments of Physics and Biology, contains physical and biological laboratories, and notably a biological laboratory named in honor of the late Professor Spencer Trotter, commemorating the thirtieth anniversary of the graduation of the class of 1890.

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

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 adequate for advanced research. The department has also a Students' Astronomical Observatory, housed in a separate building.

The *Library*, in part the gift of Andrew Carnegie, contains reading rooms, offices, and a collection of 90,000 volumes. One wing of the Library was given by Clement M. Biddle, 1896, in memory of his father, Clement M. Biddle, to house the Friends Historical Library. The nucleus of this collection of books on Quaker history, religion and social reform was a gift in 1871 by a member of the Society of Friends, Anson Lapham. The Library includes also a museum of old furniture, costumes, etc., of Friendly interest. Of especial importance is the collection of manuscript records of Friends Meetings.

Hicks Hall, the headquarters of the Division of Engineering, 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 mechanical and electrical laboratories, class-rooms, offices, a library, and an auditorium.

Beardsley Hall is the engineering shop building with forge and foundry, machine shop and wood working department.

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

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

Connected with each gymnasium is a swimming pool presented to the College by Philip M. Sharples of the Board of Managers.

Swarthmore Field and *Alumni Field* for men afford football, baseball, and lacrosse grounds and a quarter-mile cinder track. A permanent grandstand, seating eighteen hundred persons, was the gift of Morris L. Clothier, 1890. Additional playing fields for lacrosse and soccer and tennis courts are on the front campus.

Cunningham Field for women, was given by students, alumnæ, 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 *Arthur Hoyt Scott Horticultural Foundation*, the gift of Mrs. Arthur Hoyt Scott, 1896, and Owen and Margaret Moon, is now in process of development.

Bond Memorial Hall and the women's activities lodges for class and other activities form with Worth Hall part of a Women's Quadrangle. The Bond Memorial, named in honor of Elizabeth Powell Bond, for many years Dean of the College, is a social center for all women students.

The *Cloisters* is the group of lodges for the men's fraternities. These lodges are used not as dormitories, but solely as social gathering places.

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.

Other buildings of interest upon the campus are the Meeting House of the Swarthmore Monthly Meeting of the Society of Friends and the Benjamin West House, the birthplace of Benjamin West, P.R.A.

The College provides twenty-two houses for the President and members of the faculty.

Buildings in Prospect:

A new observatory is now being planned, part of the funds for which have already been raised.

The *Edward Martin Biological Laboratory* for undergraduate instruction and for reasearch, given by Fred M. Kirby of Wilkes Barre, Pennsylvania, in honor of Dr. Edward Martin of the Board of Managers, will be erected in the near future.

RELIGIOUS EXERCISES

There is a daily assembly of the College at 9:00 A.M. from Monday to Friday, inclusive. The "Collection" on Wednesday is held in the Clothier Memorial; attendance of students is required. This program, which ordinarily lasts fifteen minutes, is devoted to addresses or music, preceded by a period of silence, according to the Friendly tradition. On Monday, Tuesday, Thursday, and Friday voluntary collection is held in the Friends Meeting House on the campus.

Students may attend either Friends Meeting, held every Sunday morning in the Meeting House, or the church of the religious denomination which they prefer. A class to which all students are invited is held on Sunday mornings prior to Meeting for the consideration of religious subjects.

On Sunday evening a Vesper Service consisting of a musical program or an address is held in the Clothier Memorial.

STUDENT ORGANIZATIONS

The following are departmental clubs of undergraduates of the College which hold stated meetings during the academic year: the Cercle Français, the Chemistry Club, the Classical Club, The Engineers Club, the German Club, and the Trotter Biological Society. The programs of these clubs include the presentation of papers and addresses by undergraduates and frequently by visiting scholars and scientists.

Informal "interest groups" of students and members of the Faculty who share interests in contemporary literature, religious and social problems, music, writing, sketching, arts and crafts, meet regularly for work and discussion.

The Somerville Forum is an outgrowth of the Somerville Literary Society, which was established in 1871. All women students are active members. There are five open meetings a year devoted to music,

art, and drama. The final meeting in April, known as Somerville Day, is a gathering of alumnæ and active members.

The Little Theatre Club is an organization designed to promote interest in dramatics and to encourage the production of plays. Membership in the club is based on worthy performance in major rôles of at least two college productions or ability in stage management and lighting.

The Athletic Association is an organization of the men for the maintenance of physical training and athletic sports. The Women's Athletic Association is a similar organization of the women students.

The Swarthmore College Orchestra and Mixed Chorus give musical and dramatic productions in the College and outside. The Swarthmore College Glee Club, a men's chorus, gives concerts in various cities under alumni auspices.

The Debate Board, an undergraduate body including all students who have represented the College in public debate, and the faculty adviser of debating, direct organized discussion and debate. In addition to the intercollegiate debates, usually held on the campus, student speakers appear before various clubs and discussion groups in Philadelphia and vicinity.

Contests conducted by the Debate Board to stimulate interest in public speaking are as follows:

The Delta Upsilon Prize Speaking Contest, for a prize of \$25, the interest on a sum given for this purpose by Owen Moon, Jr., 1894;

The Ella Frances Bunting Extemporaneous Speaking Contests for two prizes of \$25, one open to men and one to women, provided by the gift of E. M. Bunting of New York;

The Potter Prize Contest for a prize of \$25, given originally by the late Justice William P. Potter, and continued as a memorial to him.

The Sophomore-Freshman Debate is open to all members of the two classes. The medals for the members of the winning team are provided by the Potter Fund for the Encouragement of Public Speaking, bequeathed to the College by Jessie Bacon Potter.

The Swarthmore Chapter of Delta Sigma Rho, the national honorary forensic society, elects to membership each spring students who have done outstanding work in debate and other public speaking contests. To be eligible, students must have engaged in forensic activities for two years and must have represented the College in an intercollegiate contest.

No student organization of the College may incur any financial obligation, or make any contract involving a 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.

HONORARY SCHOLARSHIP SOCIETIES

The Swarthmore chapter of Phi Beta Kappa, the national society for the recognition of scholarship, was organized in 1896. Each year students in the senior class having the highest standing are elected to membership.

The Swarthmore chapter of Sigma Tau, the national society standing for scholastic attainment in engineering, was established in 1917. Members are chosen from among senior or junior students majoring in civil, electrical, mechanical, general or chemical engineering.

The Swarthmore chapter of Sigma Xi, the national scientific society for the promotion of research, was granted a charter in 1922. Students may become associate members after two and one-half years in college provided that, in the opinion of the members of the society, they evince promise of ability in research, and may become members after they have produced a piece of research worthy of publication.

THE BENJAMIN WEST SOCIETY

The Benjamin West Society is made up of alumni, students, members of the faculty, and friends of Swarthmore who have a concern for art at Swarthmore.

The name of the Society has special significance because West, himself a distinguished artist, and the founder of American painting, was born on the Swarthmore campus.

It is the double purpose of the Benjamin West Society to form, by gift and purchase, art collections which shall be the permanent possession of the college and, from time to time, to bring to the college art exhibits and distinguished lecturers on art. The Society hopes ultimately to have a building wherein its collections, already considerable in number and good in quality, may be exhibited appropriately.

Officers of the Association for the year 1934 are as follows: Presi-

dent, Frank Aydelotte; Vice-Presidents, Charles F. Jenkins, Alice Sullivan Perkins; Secretary, Ethel H. Brewster; Treasurer, Leonard C. Ashton; Director, Frederic N. Price; Curator, Alfred M. Brooks.

COLLEGE PUBLICATIONS

Three periodicals are published by the students under the supervision of the faculty: The *Swarthmore Phoenix*, a weekly newspaper; *The Manuscript*, a literary quarterly; the *Halcyon*, a year-book edited by the Junior Class.

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

THE COLLEGE LIBRARY

The Swarthmore College Library now numbers approximately 90,000 volumes. Some 5,000 volumes are added annually. 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.

To meet the needs of students reading for honors, the college is enriching its collection as rapidly as possible. As a consequence of this growth the number of books and the number of readers are already exceeding the facilities of the present building. The Board of Managers is now considering plans to provide more ample accommodations. The Library administration is changing from the Dewey decimal to the Library of Congress system of classification to make possible more rapid and adequate classification and cataloguing of new books.

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.

Rules regarding the use of the Library and its books are reduced to the minimum. The few in force are maintained so that the Library's holdings may be of the greatest benefit to all users.

The Librarian and each member of the staff welcome chances to aid students in making full use of the Library's resources. The Library is open on Mondays to Saturdays, inclusive, from 8 A.M. to 10 P.M., and on Sundays from 2 P.M. to 6 P.M. and from 7 P.M. to 10 P.M.

THE FRIENDS HISTORICAL LIBRARY

The Friends Historical Library, founded in 1870 by Anson Lapham, contains a valuable and growing collection of Friends records, books, tracts, and early writings (many very rare), portraits of representative Friends, pictures of old meeting houses, objects and relics of personal and historic interest, and manuscripts relating to the Society and its history. This collection is housed in the Library, a fireproof building of stone and steel, the gift of Clement M. Biddle in memory of his father, Clement M. Biddle, and it is hoped that Friends and others will deem it a secure place in which to deposit books, papers, portraits, and other material in their possession which may be of interest in connection with the history of the Society. Such contributions are solicited, and should be addressed to the Friends Historical Library, Swarthmore, Pa. The library is accessible to all persons interested in the doctrines and history of Friends, and ample arrangements are provided for its use for consultation and for reference.

THE WILLIAM J. COOPER FOUNDATION

The William J. Cooper 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 Cooper Foundation events is without charge.

THE ARTHUR HOYT SCOTT HORTICULTURAL FOUNDATION

The Arthur Hoyt Scott Foundation Endowment Fund was established in 1929 by gift of Mrs. Arthur Hoyt Scott and Owen and

Margaret Moon for the development of an arboretum and botanical garden on the College campus and property, and for the periodic award of a gold medal and \$1,000 cash prize to the individual or organization judged to be outstanding "in creating and developing a wider interest in gardening." The Fund is a memorial to Arthur Hoyt Scott, 1895.

FELLOWSHIPS AND SCHOLARSHIPS

FELLOWSHIPS

THE JOSHUA LIPPINCOTT FELLOWSHIP of \$600, founded by HOWARD W. LIPPINCOTT, of the Class of 1875, in memory of his father is awarded annually by the faculty, on recommendation of the Committee on Fellowships, to a graduate of the College for the pursuit of graduate study under the direction of the faculty or with their approval. Applications for the Joshua Lippincott Fellowship for the year 1935-36 must be received by the committee before March 1, 1935.

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 JOHN LOCKWOOD MEMORIAL FELLOWSHIP of \$600 was founded by the bequest of Lydia A. Lockwood, of 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. It is awarded annually by the faculty, on recommendation of the Committee on Fellowships, to a graduate of the College for the pursuit of graduate studies under the direction of the faculty or with their approval. Applications for this fellowship for 1935-36 must be received by the committee before March 1, 1935.

THE HANNAH A. LEEDOM FELLOWSHIP of \$500 was founded by the bequest of Hannah A. Leedom. It is awarded annually by the faculty, on recommendation of the Committee on Fellowships, to a graduate of the College for the pursuit of graduate studies under the direction of the faculty or with their approval. Applications for this

fellowship for 1935-36 must be received by the committee before March 1, 1935.

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 1935-36. Applications must be received by the Committee of Award not later than February 15, 1935.

SIGMA XI RESEARCH FELLOWSHIP. The Swarthmore Chapter of Sigma Xi founded a fellowship to be known as the Swarthmore Sigma Xi Research Fellowship. The holder of this fellowship will be, in general, an associate of the chapter who has become an advanced graduate student of outstanding ability. The fellowship is expected to carry a stipend of one thousand dollars and is awarded from time to time as funds are available. The first award was made for 1934-35.

SCHOLARSHIPS

1. The WESTBURY QUARTERLY MEETING, N. Y., SCHOLARSHIP is awarded annually by a committee of that Quarterly Meeting.

2. Each of the following funds yields annually about \$250 and is awarded at the discretion of the College to students needing pecuniary aid, whose previous work has demonstrated their earnestness and ability:

- (a) The REBECCA M. ATKINSON SCHOLARSHIP FUND.
- (b) The BARCLAY G. ATKINSON SCHOLARSHIP FUND.
- (c) The THOMAS L. LEEDOM SCHOLARSHIP FUND.
- (d) The MARK E. REEVES SCHOLARSHIP FUND.
- (e) The THOMAS WOODNUT SCHOLARSHIP FUND.
- (f) The SARAH E. LIPPINCOTT SCHOLARSHIP FUND.
- (g) The WILLIAM DORSEY SCHOLARSHIP FUND.
- (h) The JOSEPH T. SULLIVAN SCHOLARSHIP FUND.
- (i) The DEBORAH F. WHARTON SCHOLARSHIP FUND.

3. The ANNIE SHOEMAKER SCHOLARSHIP, a scholarship of \$500 for the first college year, is awarded annually to a young woman graduate of Friends Central School, Philadelphia.

4. 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."

5. 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."

6. The following scholarships are offered for high scholastic standing in the first two years of college. They are of the value of \$200 each for resident, and \$100 each for day students, and are awarded in each instance to that member of each of the respective classes who shall be promoted without conditions, and shall have the best record of scholarship upon the regular work of the year:

- (a) The SAMUEL J. UNDERHILL SCHOLARSHIP will be awarded to a member of the Sophomore Class.
- (b) The ANSON LAPHAM SCHOLARSHIP will be awarded to a member of the Freshman Class.

7. The SAMUEL WILLETS FUND provides several scholarships for resident students needing pecuniary aid, whose previous work has demonstrated their earnestness and ability. They will be awarded at the discretion of the Committee on Trusts. Application should be made to the President of the College.

8. In addition to the above fund, Samuel Willets gave four scholarships in the name of his children, FREDERICK WILLETS, EDWARD WILLETS, WALTER WILLETS, and CAROLINE M. FRAME. These scholarships are awarded by the respective parties, their heirs or assigns, and are of the value of \$250 each.

9. The I. V. WILLIAMSON SCHOLARSHIP FOR PREPARATORY SCHOOLS. Ten scholarships of the value of \$150 each for resident students, and \$75 each for day students, are offered to members of classes graduating in 1935 in the following schools:

1 to Friends Central School (Boys' Department)	Philadelphia.
1 to Friends Central School (Girls' Department)	Philadelphia.
1 to Friends Seminary	New York, N. Y.
1 to Friends School	Baltimore, Md.
1 to Friends School	Wilmington, Del.
1 to Friends High School	Moorestown, N. J.
1 to Friends Academy	Locust Valley, N. Y.
1 to Sidwells Friends	Washington, D. C.
1 to Brooklyn Friends School	Brooklyn, N. Y.
1 to George School (Boys' Department)	George School, Pa.
1 to George School (Girls' Department)	George School, Pa.

These scholarships are awarded under the following conditions:

- (a) The candidates will be required to take the examinations of the College Entrance Examination Board in Senior English, Algebra A and one foreign language. The scholarship will be awarded only to that candidate who makes a passing grade of 60 per cent or above in each subject required for admission and who makes the highest average grade.
- (b) Examinations must be completed before July 1 preceding the year of admission to College. A candidate may take any examination for which his preparation is complete in any year of the College preparatory course.
- (c) No scholarship will be awarded to applicants who fail to be admitted without conditions.
- (d) Every holder of such scholarship must pursue in College the studies leading regularly to the degree of Bachelor of Arts.

Any income not utilized in accordance with these conditions is used for free and working scholarships in accordance with the request of the donor.

10. 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.

11. THE PHEBE ANNA THORNE FUND provides several 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. Application should be made to the President of the College.

12. The Western Swarthmore Club offers in conjunction with the College one scholarship of \$300 for the Freshman year, which will be renewed for the Sophomore year provided the holder maintains a satisfactory record. The scholarship is open for competition to all men graduates of high schools and preparatory schools west of the Allegheny Mountains. Students interested are requested to apply to the President of the Club.

13. 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.

14. The JOSEPH E. GILLINGHAM FUND, with an annual income of \$2,500 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."

15. 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.

16. The T. H. DUDLEY PERKINS MEMORIAL SCHOLARSHIP of \$600 is given for the academic year 1935-36 to the best young man candidate as judged by a committee of the faculty appointed by the President of the College for the purpose. The award will be made and the following points determined by the credentials of the secondary school from which the successful candidate is a graduate. *First.* Qualities of manhood, force of character and leadership, 50 points. *Second.* Literary and scholastic ability and attainments, 30 points. *Third.* Physical vigor as shown by participation in out-of-door sports or in other ways, 20 points.

These requirements are similar to the conditions of the Rhodes Scholarship. This scholarship is founded in honor of T. H. Dudley Perkins, Swarthmore, 1906, who died in the service of his country in 1918. The qualifications required of the holder of this scholarship are such as Dudley Perkins possessed in a marked degree. The donors of this scholarship are his wife, Alice Sullivan Perkins, '04; his sister, Marion Perkins Jessup, '94; and his brother, E. Russell Perkins, '11.

17. The SARAH KAIGHN COOPER SCHOLARSHIP, founded by Sallie K. Johnson in memory of her grandparents, Sarah Kaighn and Sarah Cooper, is awarded by the faculty to the member of the Junior Class who shall have, since entering College, the best record for scholarship, character, and influence. The value of this scholarship for the year 1935-6 is \$250.

18. SWARTHMORE COLLEGE OPEN SCHOLARSHIPS FOR MEN. Swarthmore College in 1922 established experimentally five annual open competitive scholarships for men, not confined to any particular school, locality, subject of study, or religious denomination. These scholarships, based upon the general plan of the Rhodes Scholarships, are given to candidates who, in the opinion of the Selection Committee, rank highest in scholarship and character.

The regulations under which these scholarships will be awarded in 1935 are as follows:

The stipend of an Open Scholarship is Five Hundred Dollars a year. Each Scholarship is tenable for four consecutive years, subject to the maintenance of a high standing in College. All holders of Open Scholarships must be resident students, living and taking their meals at the College.

A candidate to be eligible must:

- (1) Be more than fifteen and less than twenty years of age on September first of the year for which he is elected.
- (2) Meet the requirements for admission to Swarthmore College as prescribed in the college catalogue.
- (3) Not have attended another college or university.

Each candidate must secure the endorsement of the principal of his preparatory school. Not more than two candidates may be selected to represent any school in the competition for any one year.

The records of all Open Scholars will be reviewed by the Committee each year, the record of the first two years being especially considered as a basis for continuing a scholarship. Open Scholars are

expected to maintain a high standard throughout the College course. In re-awarding Scholarships vacated because of low academic standing or for any other reason, preference will be given to original competitors for the appointment in question, who have since made outstanding records in Swarthmore College.

Scholars will be selected without written examination on the basis of (1) their school record as shown by the material called for in the application blank; (2) a personal interview with the Selection Committee or its representatives. Whenever possible, candidates will come to the College when summoned, for their interviews. It is expected, however, that these interviews can be arranged in various parts of the United States, so as to make it unnecessary that candidates travel any considerable distance. Application blanks duly filled out and accompanied by the material specified must reach the Dean of Men at Swarthmore College before March 31 of the year in which they are awarded. The awards will be announced about June first.

This year there were 100 candidates from 21 states, Turkey and the Virgin Islands. Candidates were interviewed in various parts of the country by representatives of the committee of selection, including Swarthmore Alumni and former Rhodes Scholars. The Committee was composed of President Aydelotte, Dean Harold E. B. Speight, Dean Joseph H. Willits, Wharton School of the University of Pennsylvania, Professor Carl B. Spaeth, School of Law, Temple University, Professor Townsend Scudder of the English Department and Mr. Nicholas O. Pittenger, Comptroller of the College.

19. SWARTHMORE COLLEGE 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 not confined to any particular school, locality, subject of study, or religious denomination. They are based on the general plan of the Rhodes Scholarships, and are given to candidates who show greatest promise in:

- (1) Qualities of womanhood, force of character and leadership.
- (2) Literary and scholastic ability and attainments.

Three scholarships are awarded annually, the stipend of each scholarship being fixed at Five Hundred Dollars (\$500) a year, which covers more than half of a woman's college expenses. Each scholar-

ship is tenable for four consecutive years, subject to the maintenance of high standing in college. A candidate to be eligible must:

(a) Be between the ages of 16 and 21 on September 1st of the year for which she is elected.

(b) Be qualified to enter Swarthmore College with fifteen units of credit as prescribed in the college catalogue.

(c) Not have attended another college or university.

Each candidate must secure the endorsement of the principal of her preparatory school and not more than two candidates may be selected to represent a particular school in the competition for any one year.

The detailed regulations under which these scholarships are awarded, the number of scholarships offered, and the amount of the stipend of each scholarship may be determined by the Board of Managers of the College, in the future, in accordance with the funds available and the conditions which, in the opinion of the Board, would make them most useful.

Scholars will be selected without written examination on the basis of (1) their school record as shown by the material called for in the application blank and (2) a personal interview with some representative of the college. The college makes arrangements primarily to interview candidates whose written records are outstanding. For any candidate who especially desires an interview, one will be arranged at her request either at Swarthmore College or in the vicinity of her own home. Application blanks duly filled out and accompanied by the material specified must reach the Dean of Women of Swarthmore College, on or before November 15, 1934. Awards will be announced about February 1, 1935.

This year there were 141 candidates for the White Open Scholarships for Women, representing 18 states, the District of Columbia and China. The Committee of Award was composed of President Frank Aydelotte, Dean Frances Blanshard, Dean Harold E. B. Speight, Professor Ethel H. Brewster, Lucy Biddle Lewis, of the Board of Managers and three Alumnae, Hannah Clothier Hull, 1891, Alice Smedley Palmer, 1889, and Anna Michener, 1916.

20. The JAMES E. MILLER SCHOLARSHIP. Under the will of Arabella M. Miller, the sum of \$5,986 was awarded to the Cambridge Trust Company, Trustee under the will of James E. Miller, to be applied to scholarships in Swarthmore College. An annual income of approximately \$340 is available and 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) to be selected by the Trustee in consultation with the Superintendent of Schools of Delaware County and of the City of Chester, and approved by Swarthmore College.

21. The SWARTHMORE ALUMNÆ SCHOLARSHIP, established by the Philadelphia and New York Alumnæ Clubs, is awarded on the same basis as the Open Scholarships.

22. The EDWARD CLARKSON WILSON SCHOLARSHIP. A scholarship with a capital fund of \$2,500 has been established at Swarthmore by friends of Edward Clarkson Wilson, '91, formerly Principal of the Baltimore Friends School. The annual value of this scholarship is \$125. 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 (1) high character; (2) high standing in scholarship. The scholarship is open both to Freshmen and to members of the upper classes, both to men and women of all denominations. In any year when there is no outstanding candidate from the students of the Baltimore Friends School, the scholarship will 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.

23. The SALLIE K. JOHNSON FUND provides \$500 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.

24. 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. If the income on the trust exceeds the above stipend, such excess may be used from time to time for any additional scholarship, or if less, the stipends will be reduced proportionally.

25. Additional honorary and "working scholarships" are awarded annually by the College from general funds. Students should apply for these scholarships between April and June of the year before they wish to receive an award. Men should file their applications with the Dean of Men; women, with the Dean of Women. In awarding scholarships, 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, in the Library, or in the Bookstore for the number of hours a week in which they could normally earn half their scholarships. An award of \$100 demands a maximum of four hours of work a week.

MEDALS

The Ivy Medal is placed in the hands of the faculty by Owen Moon, Jr., of the Class of 1894, to be awarded on Commencement Day to a male member of the graduating class. The regulations governing the award are as follows:

(1) The idea behind the Ivy Medal is in general the Rhodes Scholarship qualifications including (a) qualities of manhood, force of character, and leadership; (b) literary and scholastic ability and attainments. This has 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 and is continued in memory of him by his wife, Hazel Davis Rowlands, of the Class of 1907. It 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.

LOANS

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 per cent per annum.

ADMISSION

Admission to Swarthmore College is competitive, the basis of selection being evidences of sound scholarship and character.

In the estimation of scholarship the factors considered are:

- (1) Success in school studies, as shown by the school record. Ranking in the highest quarter of the candidate's class at school is, in general, the minimum for consideration. Good ratings in examinations of the College Entrance Examination Board will be considered as evidence of sound scholarship.
- (2) Outside reading and activity which demonstrate genuine interest in literary or scientific matters.
- (3) The Scholastic Aptitude Test of the College Entrance Examination Board. (See page 37.)

*Candidates for September of a given year are urged to take the Scholastic Aptitude Test in June of the year preceding.**

As to character, the qualities sought are the simplicity, moral earnestness and idealism which have been traditionally associated with the Society of Friends and with Swarthmore College.

Preference is given to candidates who are children of Friends or of Alumni of the College, provided they meet in all respects the standards set by the College for admission. If such candidates do not rank in the highest quarter of their school class, they may be given opportunity to qualify by passing certain examinations of the College Entrance Examination Board, including the Scholastic Aptitude Test.

The size of the Freshman class each year is determined by the resolution of the Board of Managers which limits the total enrollment of the College to approximately 500 students, 250 men and 250 women.

Candidates for admission should make early application. Records of their school work for the first three years, signed by the school Principal, should be submitted one year prior to admission. Application blanks and certificate blanks are furnished by the Deans of the College upon request. Certificates are returned to the school principals in the spring for the Record of the Senior year.

* The application for the Test should be addressed to the College Entrance Examination Board, 431 West 117th Street, New York City.

Applicants whose school records are good are asked to call at Swarthmore College at special times during the year for interviews. Persons living far from Swarthmore may be interviewed by representatives of the College in any part of the United States.

The applications of women applicants must be filed by January 1 and of men applicants by April 15.

The names of men and women applicants accepted for admission are announced as soon as possible after May 15 of the year of admission.

SUBJECT REQUIREMENTS

The subjects required for entrance to Swarthmore College are as follows:

Elementary Algebra	1 1/2	units	} <i>Required subjects, eleven and one half units.</i>
Plane Geometry	1	unit	
English	3	units	
†Foreign Language	5	units	
History	1	unit	
Advanced Algebra	1/2	unit	} <i>Required subjects, eleven and one half units.</i>
*Solid Geometry	1/2	unit	
*Plane Trigonometry	1/2	unit	
Latin	2, 3 or 4	units	
Greek	2, 3 or 4	units	
French	2, 3 or 4	units	
German	2, 3 or 4	units	
Spanish	2, 3 or 4	units	
Ancient History	1	unit	
Medieval and Modern History	1	unit	
Modern History	1	unit	
English History	1	unit	
American History	1	unit	
Civil Government	1/2	unit	
Physics	1	unit	
Chemistry	1	unit	
Botany	1/2 or 1	unit	
Zoology	1/2 or 1	unit	
Physical Geography	1/2 or 1	unit	
Freehand Drawing	1/2 or 1	unit	
Mechanical Drawing	1/2 or 1	unit	
Satisfactory Free Electives	3	units	

† Three units of one language and two of another, one of which must be Latin or German or Greek.

(For the admission of engineering students, two units are acceptable.)

* Required for admission of engineering students.

Definitions of the content requirements in the foregoing subjects are given in a circular of the College Entrance Examination Board referred to in the next section.

COLLEGE ENTRANCE EXAMINATION BOARD

Examinations of June 17-22, 1935

The College Entrance Examination Board will hold examinations in June 1935 at over three hundred points in this country and abroad. A list of these places will be published about March 1, 1935. Requests that the examinations be held at particular points should be transmitted to the Secretary of the College Entrance Examination Board not later than February 1, 1935.

Detailed definitions of the requirements in all examination subjects are given in a circular of information published annually about December 1. Upon request to the Secretary of the College Entrance Examination Board a single copy of this document will be sent to any teacher without charge. In general, there will be a charge of thirty cents, which may be remitted in postage.

All candidates wishing to take these examinations should make application by mail to the Secretary of the College Entrance Examination Board, 431 West 117th Street, New York, N.Y. Blank forms for this purpose will be mailed by the Secretary of the Board to any teacher or candidate upon request by mail.

The applications and fees of all candidates who wish to take the examinations in June 1935 should reach the Secretary of the Board not later than the dates specified in the following schedule:

For examination centers

In the United States east of the Mississippi River or on the Mississippi	May 27, 1935
In the United States west of the Mississippi River or Canada	May 20, 1935
Outside of the United States and Canada, except in Asia	May 6, 1935
In China or elsewhere in the Orient	April 22, 1935

An application which reaches the Secretary later than the scheduled date will be accepted only upon payment of \$5 in addition to the regular examination fee of \$10.

When a candidate has failed to obtain the required blank form of application, the regular examination fee will be accepted if the fee arrive not later than the date specified above and if it be accompanied by a memorandum with the name and address of the candidate, the exact examination center selected, and a list of the subjects in which the candidate is to take the Board examinations.

Candidates who have failed to file applications for examination may be admitted by the supervisor upon payment of a fee of \$5 in addition to the regular examination fee. Such candidates should present themselves at the beginning of the period of registration. They will receive from the supervisor blank forms of application which must be filled out and transmitted to the Secretary of the College Entrance Examination Board.

In order to exhibit their tickets of admission, to present their identification cards, and to obtain seats in the examination room, candidates should report for a morning examination at 8:45 and for an afternoon examination at 1:45. An examination will close for candidates admitted late at the same time as for other candidates. The examinations will be held in accordance with the time (Standard Time or Daylight Saving Time) observed in the local schools.

No candidate will be admitted to the Scholastic Aptitude Test late, that is, after the test has begun.

The Scholastic Aptitude Test, which will be held on the morning of Saturday, June 22, 1935, may be taken upon the completion of the school course or at the end of the third year of secondary school work. Each candidate desiring to take this test, even though he is to take no other examination, must file with the Secretary of the Board the usual application for examination. If the Scholastic Aptitude Test is taken in connection with other examinations, no additional fee is required; if taken alone, the fee is \$10.

A week in advance of the Scholastic Aptitude Test each candidate who is to take the test should receive a booklet containing, with explanations and instructions, a specimen test, the blank spaces of which are to be filled in by the candidate. In order to secure admission to the test, the candidate must present not only his ticket of admission but also this booklet with the spaces filled in as requested.

It is very desirable that candidates who are to take the Scholastic Aptitude Test file their applications with the Secretary. Applications

for the test will be accepted by the supervisor, however, up to the day before the test provided the supervisor's supply of material for the Scholastic Aptitude Test is sufficient.

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. In general, students are not admitted to advanced standing later than the beginning of the Sophomore year.

Applications of women applicants must be filed by January 1st.

REQUIREMENTS FOR GRADUATION

Swarthmore College offers (1) General Courses leading to the degree of Bachelor of Arts and to the degree of Bachelor of Science, and (2) Honors Work leading to these same degrees with honors. Four years of resident study are normally required for the completion of the work leading to any of these degrees. The work of the first two years for all students is in General Courses. During the last two years, qualified students may read for Honors. The subjects of instruction are classified according to departments, and the departments are grouped into four divisions*: The Division of the Humanities, the Division of the Social Sciences, the Division of Mathematics and the Natural Sciences, and the Division of Engineering.

In addition to scholastic requirements for graduation, all students are held for physical training as set forth in the statement of that department (see pp. 90, 92) and for attendance at the Collection exercises of the College (see p. 46).

Beginning in September, 1934, Swarthmore College abandons the hour credit system and measures the student's progress in terms of courses, each of which represents one-fourth of his time for one year.

WORK OF THE FIRST TWO YEARS

The work of the first two years is identical in outline for all students, although the subjects of study vary. (Exceptions in the Division of Engineering are noted on p. 68). Each student takes normally during each of these two years four full courses or their equivalent. Courses are scheduled usually for three class meetings per week, each meeting of one hour's duration. Seminar and laboratory periods of longer duration may be substituted for one or more of these meetings. Courses which are scheduled for one semester are counted as half courses.

The subjects of study during the first two years include: (a) the minimum language requirements, as outlined below, (b) one year's work in each of three Divisions, Humanities, Social Sciences, Natural Sciences, (c) pre-requisites for major and minor work in the Division of the student's choice, and (d) electives, approved by the course adviser.

* For grouping of departments see page 12.

The minimum language requirements are as follows:

1. *English*: Each student is expected at entrance to college to be able to use the English language with accuracy and clarity. Any deficiency must be removed by special work before the beginning of the Sophomore year.

2. *Foreign languages*: Each student will pursue in College one foreign language (French, German, Greek, Latin, or Spanish) to a point equivalent to the completion of Course III or two languages to a point equivalent to the completion of Course II. Admission to Courses II and III will be determined by placement tests given on entrance to college. The standard for admission to Course II is such as might reasonably be expected from a student who has had two years' preparation in the language; the standard for admission to Course III is such as might reasonably be expected from a student who has had four years' preparation. Majors in English may satisfy the requirements with French, German, Latin, or Greek (see p. 72). German is required for majors in mathematics and the natural sciences, Greek, for majors in Latin; Latin, for majors in French. Students who are thus required to begin a new language in college will arrange if possible to do the elementary work prerequisite to admission to Course II outside their regular college work.

WORK OF THE LAST TWO YEARS

The work of the last two years in General Courses must include a major, one related minor, and electives; in Honors, the work consists of a major and two related minors; in both cases majors and minors must fall in the same Division. Regulations for the degree in General Courses and in Honors follow.

GENERAL COURSES

Each student in General 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 satisfactory completion of sixteen full courses, or their equivalent, normally constitutes the course requirement for a degree in General Courses. A student may carry extra work with the approval of his course adviser and of the Committee on Extra and Prescribed Work. In addition to completing his courses, the student must present himself at the end of his Senior year for a comprehensive

examination in his major subject, set by the faculty of the major department.

HONORS WORK

Students who have shown themselves capable of higher than average intellectual achievement are permitted to read for the bachelor's degree with honors during their last two college years. The theory underlying honors work was outlined by President Aydelotte in his inaugural address at Swarthmore College on October 22, 1921, as follows:

"We are educating more students up to a fair average than any other country in the world, but we are wastefully allowing the capacity of the average to prevent us from bringing our best up to the standards they could reach. Our most important task at the present is to check this waste. The method of doing it seems clear: to give to those students who are really interested in the intellectual life harder and more independent work than could profitably be given to those whose devotion to matters of the intellect is less keen, to demand of the former, in the course of their four years' work, a standard of attainment for the A.B. degree distinctly higher than we require of them at present. . . . With these abler students it would be possible to allow them to specialize more because their own alertness of mind would of itself be sufficient to widen their intellectual range and give them that acquaintance with other studies necessary for a liberal point of view. . . . Our examinations should be less frequent and more comprehensive, and the task of the student should be to prepare himself for these tests through his own reading and through the instruction offered by the college."

Honors work is offered in four divisions* and is under the supervision of committees of the departments which compose those divisions. Small groups of students meet their instructors for weekly conferences; in scientific subjects they may spend much additional time in the laboratory. The work is so planned that a student takes not more than two subjects in any one semester. He devotes half the time of his two years of honors work to the subject of his major interest and divides the other half between two related subjects within his division, unless special exceptions are permitted under the rules of his division or are approved by the Instruction Committee of the Faculty.

* See Page 12.

Honors students are excused from ordinary examinations and class requirements and their work is not graded from semester to semester. Instead, they are expected to spend their time in mastering a definitely outlined field of knowledge, and at the end of their senior year to take written and oral examinations given by examiners from other institutions.† Upon the recommendation of these examiners candidates are awarded the bachelor's degree with honors, high honors, or highest honors. In the case of a candidate whose work is not, in the opinion of the examiners, of sufficiently high quality for honors,

† Honors Examiners, May, 1934.

DIVISION OF THE SOCIAL SCIENCES

Economics:

PROFESSOR FRANK WHITSON FETTER, Princeton University
PROFESSOR BROADUS MITCHELL, Johns Hopkins University

Political Science:

PROFESSOR THOMAS I. COOK, Columbia University
DR. FREDERICK S. DUNN, Johns Hopkins University
DR. PAUL LEWINSON, Washington, D.C.

History:

MR. CHARLES P. CURTIS, JR., Boston, Mass.
PROFESSOR WILLIAM E. LINGELBACH, University of Pennsylvania
PROFESSOR CONYERS READ, University of Pennsylvania
PROFESSOR WILLIAM ROY SMITH, Bryn Mawr College

Philosophy:

PROFESSOR CLIFFORD L. BARRETT, Princeton University

DIVISION OF THE HUMANITIES

English:

MR. BERNARD DEVOTO, Lincoln, Mass.
PROFESSOR MARVIN T. HERRICK, Princeton University
PROFESSOR EDWARD S. NOYES, Yale University

History:

MR. CHARLES P. CURTIS, JR., Boston, Mass.
PROFESSOR WILLIAM E. LINGELBACH, University of Pennsylvania
PROFESSOR CONYERS READ, University of Pennsylvania
PROFESSOR WILLIAM ROY SMITH, Bryn Mawr College

Philosophy:

PROFESSOR CLIFFORD L. BARRETT, Princeton University

Fine Arts:

MR. RALPH ADAMS CRAM, Boston, Mass.

Classics:

PROFESSOR SHIRLEY H. WEBER, Princeton University

French:

PROFESSOR PERCY CHAPMAN, Princeton University
PROFESSOR NORMAN TORREY, Pierson College, Yale University

German:

PROFESSOR JOHN WHYTE, Brooklyn College of the College of the City of New York

Psychology:

PROFESSOR HARRY HELSON, Bryn Mawr College

his examination papers shall be returned to the division concerned. The division shall consider the papers as a substitute for the comprehensive examination required for degrees in course and shall determine on the basis of these papers and a supplementary oral examination whether or not the candidate is entitled to the 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 on the recommendation of their division, take examinations set by their instructors and 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 of general courses.

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. Half of the student's time must be devoted to his major subject, the remainder being equally divided between two related subjects within the division.

Honors Examiners, May, 1934. Continued from page 42.

DIVISION OF MATHEMATICS AND THE NATURAL SCIENCES

Mathematics:

PROFESSOR C. R. ADAMS, Brown University

Physics:

PROFESSOR LEIGH PAGE, Yale University

Chemistry:

PROFESSOR LOUIS F. FIESER, Harvard University

PROFESSOR HERBERT S. HARNED, Yale University

Botany:

PROFESSOR EDGAR T. WHERRY, University of Pennsylvania

Zoology:

PROFESSOR HOMER W. SMITH, University of Bellevue Hospital, New York

DIVISION OF ENGINEERING

Civil Engineering:

PROFESSOR H. L. BOWMAN, Drexel Institute

Mechanical Engineering:

PROFESSOR R. C. H. HECH, Rutgers University

Electrical Engineering:

MR. CLIFFORD SWAN, New York City

DR. H. M. TRUEBLOOD, Bell Telephone Laboratories, New York

DIVISION OF THE SOCIAL SCIENCES

Major and minor subjects include Economics, History, Philosophy, Psychology, and Political Science. Students in this division may devote half their time to their major subject, dividing the remainder equally between two related subjects; or they may do an equal amount of work in two departments (one of which is to be designated as the major department) and spend a quarter of their time on another subject.

DIVISION OF MATHEMATICS AND THE NATURAL SCIENCES

Major subjects include Botany, Chemistry, Mathematics, Physics, Zoology; related minor subjects include the subjects listed, Astronomy, Philosophy, and Psychology. 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

Honors work in this division is conducted jointly by the departments of Civil Engineering, Electrical Engineering, and Mechanical Engineering, and leads to the degree of B.S. with honors.

At least half of the student's time will be devoted to his major in Engineering, the remainder to be applied to one or two minors in Engineering, Mathematics, Physics, Chemistry or Economics.

PROCEDURE FOR ADMISSION TO HONORS WORK

A candidate for admission to an honors division must file his application in the spring of his sophomore year with the chairman of his major departments, 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 seeming 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 pro-

gram 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 Instruction Committee of the Faculty for final approval.

COURSE ADVISERS

The course advisers of Freshmen and Sophomores are the Dean of Men and the Dean of Women, in cooperation with the Chairmen of Departments in which the students are majoring. For students in courses in the Junior and Senior classes, the advisers are the Chairmen of their Major Departments; and for Honors students the advisers are the Chairmen of their Honors divisions.

SYSTEM OF GRADES

Instructors report to the Dean's office four times a year upon the work of students in Courses. At mid-semesters the reports are simply in the terms, Satisfactory and Unsatisfactory. 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.

Students whose grades fall below *C* in any considerable part of their work will not be allowed to continue in college; no grades below *C* will be counted in fulfillment of major or minor requirements.

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, but otherwise satisfactory; when he completes it, he will remove his condition.

Reports are sent to parents four times a year, and to students at mid-semesters and at mid-year.

REMOVAL OF CONDITIONS

Members of the graduating class must make up all outstanding conditions and deficiencies by the end of the first semester of the Senior year, and no student whose record is not then clear shall be considered a candidate for graduation in that year.

All conditions must normally be made up in the semester immediately following that in which the work reported as conditioned was

done, and as early in the semester as possible; by special permission of the instructor concerned the time for making up the condition may be extended to the second semester following in case (1) the course for which the condition was imposed was not repeated until said second semester, or (2) it is considered necessary by the instructor that the student should make up part or all of the class or laboratory work involved at the time the course is repeated. Any condition not made up within a year from the time it is imposed shall thereafter have the effect upon the records of an *E*, *i.e.*, complete failure, which cannot be made up.

SUMMER SCHOOL WORK

Students desiring to transfer credit from a university 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.

ATTENDANCE AT CLASSES AND COLLECTION

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

Absence from classes before and after holidays and vacations is not allowed. Violation of this regulation incurs a serious penalty.

Absences from Collection are acted upon by the Collection Committee of the Faculty, which may give excuses for non-attendance by day students under certain conditions. All students are allowed two absences from Collection each semester.

ABSENCES FROM EXAMINATION

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 examinations *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.

INFIRMARY REGULATIONS

1. 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.

2. ABSENCE FROM CLASSES.—*When illness necessitates absence from classes the student should report at once to the nurses or to the college physicians.*

3. Students have the opportunity to select their own physicians. The college physicians are available at their office hours for advice on matters of health. No charge is made for their service during office hours.

REGULATION AGAINST MAINTENANCE 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.

DEGREES

BACHELOR OF ARTS

BACHELOR OF SCIENCE

The degrees of Bachelor of Arts and Bachelor of Science are conferred upon students who have complied with the requirements for graduation as stated on pages 39-44.

MASTER OF ARTS

MASTER OF SCIENCE

1. 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 comparatively few students have been accepted for work for the Master's degree. Terms for admission and for fulfillment of the faculty requirements will be supplied upon application to the Dean.

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 connected with practical engineering work for three 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. After this application is made he will receive an outlined course of study to pursue during the year.
4. The thesis must be submitted for approval, and satisfactory evidence given that the reading requirement has been met 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.

EXPENSES

The charge for tuition is \$400 a year, payable in advance. No reduction or refunding of the tuition charge can be made on account of absence, illness, dismissal during the year, or for any other reason.

The charge for living at college is \$500, of which at least half is payable in advance. The remainder is due on the first of January.

If any student for any reason shall withdraw or be withdrawn from College, no portion of the payment for room-rent shall be refunded or remitted.

In case of absence from the College extending over a continuous period of six weeks or more, there will be a special proportionate reduction in the charge for board provided that written notice be given to the Comptroller at the time of withdrawal. Oral notice will not be sufficient to secure this allowance.

Bills for the first payment are mailed before the opening of the College year and bills for the second payment are mailed before the first of January following. Payments shall be made by check or draft to the order of SWARTHMORE COLLEGE, SWARTHMORE, PA. Every student is responsible for prompt payment.

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.

Students withdrawing or dismissed from College on or before the end of the first semester receive no benefit from scholarships, as scholarships are credited at the beginning of the second semester.

All students except Freshmen choose their rooms in order determined by lot. Freshmen are assigned to rooms in order of date of application for admission.

A deposit of \$50 will be required of each student, payable with the regular September bill, to cover incidental bills including books, laundry, telephone and room breakage. Personal laundry sent to the commercial laundry employed by the College may be charged against the deposit. When this deposit has been exhausted a new deposit will be required immediately. Any unused balance will be returned at the end of each year.

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

Faculty rates for the dining-room are: per college year, \$300; per month, \$40; per week, \$9.50; single breakfast, 30 cents; single lunch, 45 cents; single dinner, 65 cents.

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.

Students purchase their own books, stationery and drawing instruments, which may be obtained at the College Bookstore at low rates.

The following fees are charged in laboratory sciences:

General Engineering 1	.....	\$10.00	per semester
Freshman Engineering 5	.....	15.00	per semester
Sophomore Engineering 6	.....	15.00	per semester
Electrical Engineering 9	.....	10.00	per semester
Heat Power Engineering 12	.....	10.00	per semester
Civil Engineering Option 14	.....	5.00	per semester
Electrical Engineering Option 15	..	5.00	per semester
Mechanical Engineering Option 16		5.00	per semester
Administrative Engineering Option			
17	.....	5.00	per semester
Long Survey 19	.....	5.00	per semester
Art Metal, Woodworking 20	.....	5.00	per class hour
Botany	.....	10.00	per semester
Chemistry	.....	15.00	per semester
Physics	.....	10.00	per semester
Zoology	.....	10.00	per semester

Students are charged a fee of \$1 a semester for the use of gymnasium and swimming pools.

The expenses of a student at Swarthmore, beyond the payments made directly to the College, vary according to the individual. Budgets reported by present students show that total expenditures for tuition, board, books, clothing, and recreation range from \$1,100 to \$1,500 for the academic year.

COURSES OF INSTRUCTION

BOTANY

PROFESSOR SAMUEL COPELAND PALMER, *Chairman*

ASSISTANTS: NORRIS JONES

RUTH MCCLUNG JONES

GENERAL COURSES

1. General Botany. Mr. Palmer.

Half course, first semester.

A course designed to give the student a broad view of the general field of botany. Training in the use of the microscope.

2. Plant Physiology. Mr. Palmer.

Half course, second semester.

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

3. Evolution, Genetics, and Eugenics. Mr. Palmer.

Half course, second semester.

The theories of evolution and closely related subjects. The fundamental principles of genetics. The application of the principles of genetics 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. Plant Morphology. Mrs. Jones.

Half course, first semester.

A course open to biology majors to introduce the technique of normal tissue preparation.

6. Scientific Drawing. Mr. Jones.

Full course.

For those who wish to learn the proper methods of graphic presentation of biological studies.

7. Cytology. Mrs. Jones.

Half course, second semester.

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

8. Advanced Scientific Drawing.

Special problems in biological illustrating. Prerequisite Botany 6.

9. Cryptogamic Botany. Mr. Palmer.

Half course, first semester.

A course with laboratory work designed to give the student an insight into the lower forms of plant life.

10. Geology. Mr. Palmer.

Half course, first 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. Special Topics. Mr. Palmer, Mr. and Mrs. Jones.

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 regular courses, or their equivalents, are required for admission to Honors work in Botany: General Botany, General Zoology, General Inorganic Chemistry.

Topics of Final Examinations. Honors seminars are offered preparing students for examination papers in:

1. Botanical History: A study of the development of biology from an historical standpoint with special reference to botany.
2. Organic Evolution: An examination of the most important theories of present and past with a study of types to illustrate.
3. Plant Physiology: A study of the most important of plant functions such as Osmosis, Photosynthesis, transpiration, translocation, digestion, Enzyme action, etc.
4. Genetics: A study of the structure and development of the cell-theories of inheritance, Mendelism, Eugenics, etc.
5. Plant Distribution: Studies involving problems in distribution of plants including soil relations, desert areas, water relations, etc., and their economic importance.
6. Taxonomy: A close study of the classification and distribution of the most important of our plant families with field work. A history of the development of classification systems will be included.
7. Plant Morphology: A detailed study of plant tissues particularly from the cytological point of view.

CHEMISTRY

PROFESSORS: H. JERMAIN CREIGHTON, *Chairman*

EDWARD H. COX

ASSISTANT PROFESSOR DUNCAN G. FOSTER

INSTRUCTOR, WALTER B. KEIGHTON, JR.

GENERAL COURSES

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*; Bray and Latimer, *A Course in General Chemistry*.

1A. General Chemistry. Mr. Creighton and Mr. Keighton.

Full course.

Lectures, demonstrations and individual laboratory practice on general chemistry, designed for those who desire to pursue a course in chemistry as an element of general culture rather than as a part of their professional training, and who desire to gain some knowledge of the spirit of a branch of science on which much of our present-day civilization is based. It is recommended for students of the liberal arts who elect chemistry to meet the college science requirements. Inorganic chemistry is studied until the first of March; the remainder of the year is devoted to an elementary survey of organic chemistry. The course consists of two lectures and one three-hour laboratory period weekly. It is not accepted as a prerequisite for Chemistry 2. Text-books: Findlay, *The Spirit of Chemistry*; Deming, *The Realm of Carbon*.

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*. Reference-book, Fales, *Inorganic Quantitative Analysis*.

One lecture, one recitation or conference and two laboratory periods per week. Prerequisite, Chemistry 1.

3. Introduction to Physical Chemistry. Mr. Creighton.

Half course, second semester.

Lectures and laboratory work. An elementary course primarily for students taking Physiology-Zoology as their major subject. Text-books: Maass and Steacie: *Introduction to Physical Chemistry*. Prerequisite, Chemistry 1.

4. Analytical Chemistry. Mr. Foster.

Full course. Offered every other year alternately with Chemistry 5.

A laboratory course in the principles of gravimetric analysis, organic and gas analysis.

Text-books, Talbot, *Quantitative Chemical Analysis*; Gattermann, *Praxis des Organischen Chemikers*; reference-books, Treadwell-Hall, *Analytical Chemistry* and Fales, *Inorganic Quantitative Analysis*. Nine hours laboratory work with conferences when necessary, to be arranged at the beginning of the course. Given 1935-36.

5. Physical Chemistry. Mr. Keighton.

Full course. Offered alternate years.

Two hours of conference and lectures and one four hour laboratory period weekly. The lectures and conferences include elementary chemical thermo-dynamics; equilibria and chemical kinetics; the physical properties of gases, liquids, and crystals; the properties of solutions; elementary electrochemistry; colloids; and the structure of matter. In the laboratory students determine molecular weights; measure such properties as surface tension, vapor pressure, and viscosity of pure liquids; investigate the rates of chemical reactions; make observations on the behavior of solutions; and acquaint themselves with the use of the refractometer, the polarimeter, and other physical-chemical apparatus. Books recommended: Getman and Daniels, *Outlines of Theoretical Chemistry*; Findlay, *Practical Physical Chemistry*; Daniels, Mathews, and Williams, *Experimental Physical Chemistry*; Mack and France, *Laboratory Manual of Elementary Physical Chemistry*.

Prerequisites, Chemistry 1, and courses in General Physics and Differential Calculus. This course is offered to Juniors and Seniors and alternates with Chemistry 4. Given 1934-35.

6. Organic Chemistry. Mr. Cox.

Full course.

Lectures, demonstrations, written exercises, and laboratory work. Two lectures, one conference, and one four hour laboratory period a week. In the laboratory, students carry out syntheses of various organic compounds, as given in Adams and Johnson, *Laboratory Experiments in Organic Chemistry*; Gilman, *Organic Syntheses*, and current journal articles. The lectures follow texts of the type of Conant, *Organic Chemistry*, supplemented with special chapters in Schmidt-Rule, *Organic Chemistry*, and current journal articles. Prerequisite Chemistry 1.

7. Engineering Chemistry. Mr. Foster.

First semester.

Second year requirement for engineering students. Two hours of class-room work per week covering the subject matter of Leighou's *Chemistry of Engineering Materials*. This course together with its continuation by the Engineering Department in the second semester counts as a *half-course*.

HONORS WORK

The Department offers the following Honors Seminars:

I. Analytical Chemistry. Mr. Foster.

Second 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 eighteen hours a week are spent in the laboratory under the guidance, but not the supervision of the instructor, carrying out examples of gravimetric, organic, combustion and gas analytical methods.

II. 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, chemical kinetics and equilibrium, the theory of solutions, photochemistry, electrochemistry and colloid chemistry. One day per week is spent in the laboratory.

III. Advanced Physical Chemistry. Mr. Creighton.

Second semester.

Weekly seminar and laboratory. The work of the seminar includes the study of recent advances in the theory of valence, the parachor, dipole moments, polarization and overvoltage, thermodynamics, the activity concept and activity coefficients, the Debye-Hückel theory of strong electrolytes, and acid-base catalysis. One day per week is spent in the laboratory.

IV. Organic Chemistry. Mr. Cox.

First semester.

Conferences and laboratory work. A five hour conference and an eight hour laboratory period once a week. The ground work for the conferences is taken from such texts as, Conant, Reid, Schmidt-Rule, and is covered in three months. For the remaining time, students prepare written papers for discussion on reaction mechanisms and advanced topics. In the laboratory, students prepare various organic compounds as given in Adams and Johnson, *Laboratory Experiments in Organic Chemistry*.

V. Organic Chemistry. Mr. Cox.

First semester.

For students of Zoology-Physiology. The conferences and laboratory follow those given in Honors IV except that the biological aspects of organic chemistry are stressed. In addition to organic texts and manuals students consult Mathews, Bordansky, Hawk-Bergheim. Comprehensive papers are prepared on carbohydrates, fats, and proteins.

VI. Advanced Organic Chemistry. Mr. Cox.

Second semester.

A continuation of Honors IV. Students write 15 weekly comprehensive papers on advanced topics. These papers are gathered from Reviews, Monographs and original English, French, and German articles. In the laboratory students prepare more difficult organic compounds. Students are given a short sight reading in scientific French and German.

REQUIREMENTS FOR MAJOR AND MINOR

Students majoring in chemistry follow a course of study leading to the degree of A.B. This degree may be taken either in general courses 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 general courses are required to complete courses 4, 5 and 6 in the department of chemistry and to complete the requirement in their minor subject. For students who have been accepted for Honors work there are offered Honors seminars preparing them for examination papers in: 1. Analytical Chemistry, 2. Physical Chemistry, 3. Advanced Physical Chemistry, 4. Organic Chemistry, 5. Advanced Organic Chemistry. 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, 3 or 5, 6.

CLASSICS

PROFESSORS: ETHEL HAMPSON BREWSTER, *Chairman*
L. R. SHERO

GREEK

GENERAL COURSES

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.

This course and course 2 are provided for those who have not had an opportunity to study Greek in the preparatory school.

2. Intermediate Greek. Miss Brewster.

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 combine part of the work of this course with part of the work of 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.

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.

This course and Latin 9 (The History of Rome) provide a year's work in Ancient History.

6. Greek Drama in English. Mr. Shero.

Half course, second semester. (Omitted in 1934-35.)

A study, in translation, of the extant Greek plays and of some of the Latin adaptations from the Greek, with consideration of the influence of Greek and Latin drama on later literature. No knowledge of Greek or Latin is required.

LATIN

GENERAL COURSES

1. Sub-Freshman Latin.

Full course. (Offered as required.)

A study of grammar and selected readings. Designed for those who begin Latin in college or for those who are not prepared to enter Latin 2.

2. Intermediate Latin. Mr. Shero.

Half course, each semester.

Selections from prose and verse writers. Designed for students who have had three or more years of preparatory Latin and are not prepared to enter Latin 3. This course may be taken for a single semester.

3. Latin Survey. Miss Brewster.

Full course.

A survey of Latin literature with emphasis upon Plautus, Livy, and 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.

Half course, each semester.

Catullus, Virgil's *Eclogues* and *Georgics*, selections from the Letters of Cicero and of Pliny, Tacitus's *Agricola*.

Students planning to read for honors will be permitted to combine part of the work of this course with part of the work of Greek 2 or Greek 3.

5. Roman Drama, Satire, and Epigram. Miss Brewster.

Half course, each semester.

6. Latin Philosophical Writings. Miss Brewster.

Half course, each semester. (Omitted in 1934-35.)

7. Latin Language and Prose Composition. Miss Brewster.

Half course, first semester. (Omitted in 1934-35.)

This course comprises a review of forms and syntax, practice in reading and writing Latin, and the translation of Latin (including mediaeval Latin) at sight.

8. Comprehensive Survey. Miss Brewster.

Half course, second semester. (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, who may substitute this work for part of either course 5 or course 6.

9. The History of Rome. Miss Brewster.

Half course, second semester.

A study is made, through lectures, reading, and reports, of the history of Rome from the earliest times to the accession of Marcus Aurelius. The course stresses the Roman genius for organization and administration.

This course and Greek 5 (The History of Greece) provide a year's work in Ancient History.

The department will recommend as teachers of Latin only those who have completed at least Courses 3, 4 and 7, or, in the case of Honors students, those who have completed Courses 3 and 7.

HONORS WORK

Prerequisites. The following regular courses are required for admission to Honors work—for a major in Classics or Latin: Greek Courses 1 and 2, Latin Courses 3 and 4; for a major in Greek: Greek Courses 1 and 2, Latin Course 3; for a minor in Greek or Latin: Greek Courses 1 and 2, or Latin Courses 3 and 4 respectively.

Students are advised to take also The History of Europe and Introduction to Philosophy.

Topics of Final Examinations. Honors seminars are offered preparing students for examination papers as follows:

Required for a major in Classics:

1. History of Ancient Greek and Roman Civilization, a survey concentrating upon political institutions, art, and religion.
2. Intensive Study of a Special Period of Greek or Roman History (e.g. Solon to the end of the Peloponnesian War, the Gracchi to Nero).
3. Greek Philosophy. (See p. 88)
4. Greek or Latin Prose Composition and Sight Reading.
5. Prose Authors: Greek (Thucydides, Plato, the Attic orators), or Latin, with emphasis upon Cicero and the historians.
6. Poets: Greek, with emphasis upon Epic and Tragedy; Latin, with emphasis upon Epic (including Lucretius) and Satire.

By special arrangement, students may substitute for one of the above a paper on one of the following topics:

7. An additional group of selected authors, Greek or Latin.
8. Greek and Roman Archaeology.
9. Greek and Roman Literary Theory.
10. Greek and Roman Political Thought.

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

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

ECONOMICS

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

VISITING PROFESSOR: GILBERT H. BARNES

ASSISTANT PROFESSOR: PATRICK MURPHY MALIN

LECTURERS: LOUIS N. ROBINSON
 WILLIAM N. LOUCKS

PART-TIME INSTRUCTORS: J. WELDON HOOT
 RICHARD W. SLOCUM

GENERAL COURSES

INTRODUCTORY COURSES

1. Introduction to Economics. Messrs. Barnes, Malin, Loucks and Hoot.

Full course.

A description of the way in which goods are produced, marketed and consumed. The principles of value and distribution. An outline of the various forms of economic activity; the nature of the institutions and associations through which this activity takes place. Incidental consideration to specific problems such as corporation finance, money and banking, taxation, trade unionism, the tariff, etc. Prerequisite to all other courses in Economics except Economics 2.

2. Methods of Economic Analysis (Engineering 2). Messrs. Johnson and Jenkins.

Full course.

This is a course intended to familiarize the student with the tools which must be used in rigorous economic study. It is an introduction to the logic and methods of quantitative investigation in the field of applied economics. One semester deals with the theory of corporate accountancy; the terminology, the functions, and the interpretations of financial statements including credit analysis and financial and operating ratios. The other semester will be a study and application of fundamental statistical methods which can be used in an analysis of business conditions, and changes which aid in a clearer understanding of economic data.

Required of all Economics majors, in course or honors, during the Freshman or Sophomore year.

COURSES INCLUDED IN MAJOR COMPREHENSIVE EXAMINATION

3. Money and Banking. Mr. Malin.

Full course.

Money, credit, commercial banking. The banking system of the United States, with special reference to experience since the war. Questions of theory and control (such as price), with particular attention to recent American experiments.

Prerequisite, Junior standing.

Required of all economics majors in course.

* On part-time 1934-35.

** Absent on leave 1934-35.

4. Corporation Finance. Mr. Malin.

Half course, second semester.

A survey of (1) the users of long-term credit, with special reference to the corporation; (2) the sources of such credit, including trust and insurance companies; (3) the marketing of such credit, with particular attention to investment banking and the security exchanges.

Prerequisite, first semester of Economics 3.

5. International Economics. Mr. Fraser.

Half course, second semester. (Offered in alternate years. Offered next in 1935-36.)

The economic aspects of foreign trade. Analysis of the theory of international trade; the practical problems: financing, marketing, transportation, etc. The relation of governments to trade, protective tariffs, reparations, inter-ally debts and economic imperialism.

Prerequisite, first semester of Economics 3.

6. Business cycles. Mr. Barnes.

Half course, second semester. (Offered in alternate years. Offered 1934-35.)

A study of industrial fluctuations with special emphasis on the development of booms and depressions. Business cycle theory will be studied with particular reference to the part played by money and credit.

Prerequisite, first semester of Economics 3.

7. Government and Business. Mr. Wilcox.

Half course, first semester. (Offered in alternate years. Offered next in 1935-36.)

A study of federal anti-trust policy, railroad regulation, public utility regulation and the National Recovery Administration.

8. Public Finance. Mr. Wilcox.

Half course, second semester. (Offered in alternate years. Offered next in 1935-36.)

A study of government expenditures, revenues and indebtedness, with particular emphasis upon the economics of taxation.

9. Social Economics. Mr. Wilcox.

Full course. (Offered in alternate years. Offered next in 1936-37.)

An examination of the extent, consequences and causes of economic inequality. An appraisal of the institutions of modern capitalism and of possible methods of economic reform.

10. Labor. Mr. Malin.

Half course, first semester.

Brief analysis of the special problems of industrial wage-earners. More detailed survey of the labor movement, "welfare capitalism," and labor legislation.

11. Economic Theory. Mr. Barnes.

Half course, first semester.

An advanced course dealing with the neo-classical theory of value and distribution. Primarily a study of the pricing process with special emphasis on the work of Marshall.

More recent work in the writings of Cassel, J. M. Clark, and Robbins will be dealt with as time permits.

Prerequisite, senior standing,
Required of all economics majors in course.

COURSES NOT INCLUDED IN THE MAJOR COMPREHENSIVE EXAMINATION
Criminology. Mr. Robinson.

Half course, second semester.

The causes of crime, criminal law and procedure, penology, prison reform and the repression of crime.

Business Law. Mr. Slocum.

Full course.

Principles of law and practical problems, primarily for the guidance of business men and women: contracts, negotiable instruments, sales of real estate and personal property, bailments, bankruptcy, decedents' estates, partnerships, corporations. Not open to students intending to enter law school.

Prerequisite, Junior standing.

HONORS WORK

1. Money and Banking. Mr. Malin.

Each semester.

The subject matter is identical with that of the course in Money and Banking (Economics 3). The method consists of systematic seminar discussion and tutorial conferences on the basis of directed readings; several short essays and one longer paper.

2. International Economics. Mr. Barnes.

Second semester.

The subject matter is identical with that of the course in International Economics, (Economics 5) but the topics are considered at much greater length. The method of directed reading is used, supplemented by systematic seminar discussion. Each student is expected to write papers on four topics.

3. Government and Business. Mr. Wilcox.

First semester.

Government regulation of corporate financial practices, investment banking, the security exchanges, railroads and public utilities. Federal anti-trust policy, the National Recovery Administration and the Agricultural Adjustment Administration. Public finance and taxation. Each student is required to engage in independent research and report to the seminar twice during the semester.

4. Social Economics. Mr. Wilcox.

Second semester.

An appraisal of the institutions of modern capitalism. An examination of the extent, consequences and causes of economic inequality. A study of economic reform, with particular reference to social insurance, socialism, the labor movement and the social use

of the taxing power. Independent reading under guidance in an extensive bibliography. No written reports.

5. Economic Theory. Mr. Barnes.

First semester.

A careful study of the development of the neo-classical theory of value and distribution, supplemented by post-Marshallian contributions. A survey of recent business cycle theory. Main object an understanding of the pricing process and its significance for current problems. Directed reading and systematic seminar discussion. Each student required to write four expository and critical essays.

6. Thesis.

A specially qualified major in Economics may, with the permission of the department, submit a thesis in place of one of the honors examinations.

ENGINEERING

ASSOCIATE PROFESSOR CHARLES THATCHER, *Chairman*

PROFESSORS: LEWIS FUSSELL

SCOTT B. LILLY

ASSISTANT PROFESSORS: HOWARD M. JENKINS

JOHN J. MATTHEWS

INSTRUCTOR, GEORGE A. BOURDELAIS

INSTRUCTOR, PART-TIME, S. W. JOHNSON

LECTURER: A. H. WILLIAMS

GENERAL COURSES

1. General Engineering (for non-engineers). Mr. Thatcher and Mr. Matthews.
Full course.

Study of materials, fuels, steam, internal combustion, water power, electrical engineering, calculating instruments, surveying, municipal engineering.

Prerequisite, High School or College algebra, trigonometry, physics. Chemistry desirable.

- *2. Methods of Economic Analysis. Mr. Johnson and Mr. Jenkins.
Full course.

This is a course intended to familiarize the student with the tools which must be used in rigorous economic study and is an introduction to the logic and methods of quantitative investigation in the field of applied economics. One semester deals with the theory of corporate accountancy; the terminology, the functions, and the interpretations of financial statements including credit analysis and financial and operating ratios. The other semester will be a study and application 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.

- *3. Industry and Management. Mr. Williams and Mr. Jenkins.
Full course.

This course will cover two topics; each associated with those general problems of administrative control arising in major industries and in individual industrial enterprises. One semester will deal with the major industries; their size, location, importance, mechanical technology, and the effects of developments and changing conditions on those industries as a whole. The other semester will deal with the individual plants; being a survey of industrial organization, scientific management, physical facilities, standardization, personnel management, and administrative control of the enterprise. The formal work of both semesters will be supplemented by reference reading in the daily papers, informal discussions, and inspection trips to nearby industrial plants.

4. Advanced Accounting. Mr. Johnson.
Half course, second semester.

Prerequisite: the "accounting" semester of Course 2.

* May be taken for one semester only.

This course is intended to supplement "Methods of Economic Analysis" for those requiring a more complete course in accounting. It includes: theory of the balance sheet, the functions of the income and expense account, interpretation of financial statements, valuation, depreciation, consolidated statements, and the significance of balance sheet changes. It will include sufficient bookkeeping to illustrate the principles involved.

5. Freshman Engineering. Mr. Bourdelais and Mr. Matthews.

Full course.

Surveying instruments and their adjustment. Practice in taping, levelling, running traverses, taking topography, stadia work, preparation of profiles and maps from field notes. Modern shop and drawing room practice.

Elements of descriptive geometry, isometric drawing and practical problems for the development of visualization and imagination.

6. Sophomore Engineering. Mr. Bourdelais and Mr. Matthews.

Full course.

Prerequisite, Engineering 5.

Study of the physical properties, structures and methods of manufacture of the various materials used in engineering construction. Trips to nearby industrial plants. Modern shop and drawing room practice.

7. Introductory Electrodynamics. Mr. Jenkins.

Half course, second semester.

An introductory theory course for both large-power and small-power electrical engineering. It includes the study of fundamental electrical quantities and the solution of typical problems of electrodynamics and simple electrical apparatus. The engineering implications of the physical theory will be stressed.

8. Mechanics of Solid Bodies. Mr. Lilly.

Full course.

This course is devoted to the study of the behavior of solid bodies when acted upon by forces. The first part of the course assumes that the bodies do not change under such action; the second part treats of velocities and accelerations without considering the forces causing such effects; and the third part treats of the internal stresses and changes of form which always occur when forces act upon solid bodies. This theory is supplemented by the practical application of the principles discussed.

9. Electrical Engineering. Mr. Fussell and Mr. Jenkins.

Full course.

A study of elementary circuits and of the laws and principles fundamental to large-power electrical machinery; direct-current and alternating-current. The laboratory work will consist of two parts: (a) laboratory testing of typical apparatus and the preparation of adequate reports, (b) a computation period to be devoted to practice in attacking problems of fundamental nature, or certain phases of the laboratory testing which, solved jointly, will remove some of the more routine labor in the preparation of the laboratory reports.

10. Mechanics of Fluids. Mr. Thatcher and Mr. Lilly.

Full course.

Prerequisites, Calculus, General Physics.

Basic studies underlying fluid flow. Hydraulics: hydrostatic pressures; flow from orifices and tubes, through pipes and flumes, over weirs, in channels and rivers. Dynamic

pressures; water wheels, turbines. Aerodynamics: introductory study of aerodynamic theory and experimental methods. Thermodynamics: elementary thermodynamics of steam and gas engines. Properties of the working substances.

11. Industrial Engineering. Mr. Johnson and Mr. Jenkins.

Full course.

This course is to present a survey of the principles and methods of executive control; accounting, industrial management, and engineering economy. It is designed to associate engineering methods of thought and work with the less factual and more personal problems of administrative control. To this end, the course will include a survey course in accounting and industrial management. (For the year 1934-35 a student will take one semester each of courses 2 and 3.)

*12. Heat Power Engineering. Mr. Thatcher.

Half course, first semester.

Prerequisite, Engineering 10.

Theoretical and practical consideration of steam plants and internal combustion engines. Laboratory work and written reports, on calibration of instruments, test of engines, boilers, pumps and hydraulic equipment, testing of fuels and lubricants.

13. Thesis.

Half course, second semester.

14. Civil Engineering Option. Mr. Lilly.

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 general the option will be in one of the following divisions; however it may include work in two closely related fields.

- | | |
|---------------------------|--------------------------|
| 1. Structural engineering | 5. Municipal engineering |
| 2. Reinforced concrete | 6. Hydraulic motors |
| 3. Highways | 7. Thesis |
| 4. Railroads | |

15. Electrical Engineering Option. Mr. Fussell.

Full course.

This option is intended for those primarily interested in some fundamental phase of electrical engineering. From the topics listed below, or 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.

1. Principles of electrical engineering
2. Electric circuits—networks—transient phenomena
3. Electrical energy—production, transmission, distribution

* May be taken for one semester only.

4. Thermionic theory and applications
5. Electrical measurements
6. Illumination and photometry
7. Economic and industrial aspects of electrical engineering.

It is expected that the prescribed "Thesis" will be along the same lines as this option.

16. Mechanical Engineering Option. Mr. Thatcher and Mr. Matthews.

Full course.

Prerequisite, Engineering 6, 10.

To fit the needs of the student, studies of Machine Design, Internal Combustion Engines, Refrigeration, Heating and Ventilation, Fuels and Lubricants, Metallography.

17. Administrative Engineering Option. Mr. Jenkins.

Full course.

The object of this option is to provide a further training, of a broad nature, for those who have the qualities requisite to a successful executive in an industrial enterprise. No attempt will be made to provide specialized training; it is a supplementary study to aid those who already have the highest potential capacity for industrial leadership. Students intending to take this option should, through their earlier college years, have chosen a carefully considered program of logically associated electives. They are strongly urged to secure summer employment as workmen in industrial enterprises and in every way secure experience that will provide a helpful background. Depending on the interests and capacity of the student, various phases of administrative control will be investigated. Some appropriate phase, or phases, of the following topics could be selected: Personnel management and problems associated with the task of building up a loyal and efficient working force; production control and shop management; industrial policies; industrial economic problems; business and financial forecasting; and engineering economy.

18. Contemporary Engineering Topics. Mr. Lilly.

First semester. One hour weekly.

Supplementary to Engineering 14, 15, 16 or 17.

This course, which is required for seniors majoring in engineering, includes the preparation of at least three carefully written papers on contemporary engineering topics. These papers are due twenty-four hours before the meeting of the group, at which time the student makes an oral presentation of his subject from notes, but he is not permitted to read his paper. This program is varied with extemporaneous speeches and with outside speakers. All engineering students are invited to attend and to participate in the discussion which follows each paper.

19. Long Survey. Mr. Matthews.

One week during the summer following the freshman year.

Supplementary to Engineering 5.

Prerequisite, Engineering 5.

One week of continuous work in surveying and mapping, including running of levels and of a topographical survey by the stadia method. Required of all engineering students.

20. Art Metal and Woodworking. Mr. Bourdelais.

One or two laboratory periods per week.

A course designed to give non-engineering students an opportunity to learn to work with their hands. Metal and woodworking considered as forms of art.

COURSE IN ENGINEERING

Freshman Year—4 courses

- a. Humanities or Social Science Elective
- b. Mathematics
- c. Chemistry 1
- d. Engineering 5
Long Survey (see 19 above)

Sophomore Year—4½ courses

- a. Humanities or Social Science Elective
- b. Mathematics
- c. Physics
- d. Engineering 6
- e. (½ course)—

}	First semester—Engineering Chemistry
}	Second semester—Introduction to Electrodynamics

Junior Year—4 courses

- a. Humanities, Social Science Elective or Mathematics and Natural Science Elective
- b. Mechanics of Solids
- c. Electrical Engineering
- d. Mechanics of Fluids

Senior Year—4 courses

- a. Humanities, Social Science Elective or Mathematics and Natural Science Elective
- b. Industrial Engineering
- c.

}	Heat Power—½ course, first semester
}	Thesis or Elective—½ course, second semester
- d. Senior Option: Engineering 14
Engineering 15
Engineering 16
Engineering 17
Contemporary Engineering topics (see 18 above)

The Division of Engineering includes the three Departments of Civil, Electrical and Mechanical Engineering, and offers the degree of Bachelor of Science in Engineering.

It is imperative that each student have a well-conceived, closely knit, unified plan fitted to his capabilities and his interests. If his capacity lies in the direction of administrative, civil, electrical or mechanical engineering, his program will be pointed toward such a professional career. If, on the other hand, his abilities can be classified functionally as leading to engineering developments, or research, or management, or construction, or education, it is possible that all pertinent engineering and non-technical subjects can be fitted to his individual needs. The plan provides for liberality in courses and con-

centration of effort where needed, and in any case will give thorough training of a fundamental nature.

All candidates are required to pass the prescribed courses shown on page 68 and to complete 16 courses, at least two of which are in the Divisions of the Humanities and Social Sciences. The normal expectations is that the student will take four or five courses in these divisions unless he shows marked ability in mathematics and the physical sciences, in which case a limited election in the Division of Mathematics and the Natural Sciences will be encouraged.

Engineering students may elect but are not required to take courses in foreign languages.

HONORS WORK

Prerequisites. For admission to Honors work in Engineering the freshman and sophomore courses listed on page 68 are required.

Topics of Final Examinations:

- | | |
|---------------------------|-----------------------------------|
| 1. Mechanics of Solids | 8. Steam Power |
| 2. Mechanics of Fluids | 9. Internal Combustion Engines |
| 3. Electrical Machinery | 10. Machine Design |
| 4. Structural Engineering | 11. Electrical Circuits |
| 5. Reinforced Concrete | 12. Electronics |
| 6. Railroads and Highways | 13. Transmission and Distribution |
| 7. Hydraulic Engineering | 14. Thesis |

ENGLISH

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

ASSISTANT PROFESSOR, TOWNSEND SCUDDER, 3RD

INSTRUCTORS: FREDRIC S. KLEES
 ELIZABETH COX WRIGHT

ASSISTANT, BEATRICE BEACH

GENERAL COURSES

1. Representative Writers.

Full Course, made up of two of the following:

The Renaissance. Mr. Klees. *Half Course, each semester.*

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

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

Victorian Literature. Mr. Hunt and Mr. Spiller. *Half Course, each semester.*

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

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

2. Chaucer. Mr. Scudder.

Full course.

3. Shakespeare. Mr. Goddard.

Full course.

4. Spenser-Milton. Mr. Hunt.

Half course, first semester.

5. English Poetry. Mrs. Wright.

Full course.

A study of a selected period or aspect of English poetry. In 1934-35: Nineteenth Century Poetry.

6. The English Novel. Mr. Hicks.

Full course.

7. The English Drama. Mr. Klees.

Full course. (Offered in 1934-35, omitted in 1935-36.)

8. English Prose. Mr. Spiller.

Full course. (Omitted in 1934-35, offered in 1935-36.)

9. Modern Literature. Mr. Goddard.

Full course.

A study of modern comparative literature.

10. World Literature. Mr. Goddard.

Full course. (Omitted in 1934-35.)

11. American Literature. Mr. Spiller.

Full course.

A study of a selected period. In 1934-35: Early American literature; second semester, from 1870 to the present.

12. Poetry. Mr. Goddard.

Half course. (Omitted in 1934-35.)

13. Criticism. Mr. Hunt.

Half course, second semester.

14. Seminar in Drama. Mr. Hicks.

Full course. (Omitted in 1934-35.)

15. Mediaeval Poetry and Romance. Mrs. Wright.

Full course. (Omitted in 1934-35.)

16. Elizabethan Poetry and Prose. Mr. Klees.

Full course.

Greek Drama in English. (Greek 6) Mr. Shero.

Half course, second semester. (Omitted in 1934-35.)

A study, in translation, of the extant Greek plays and of some of the Latin adaptations from the Greek, with consideration of the influence of Greek and Latin Drama on later literature. No knowledge of Greek or Latin is required.

Dante. Mr. Brooks.

Full course. (Omitted in 1934-35.)

Study of the Divine Comedy. Special attention is given to the life and art of the thirteenth century.

Writing and Speaking. Students who are reported by any member of the College faculty as deficient in written English are given tutorial guidance for the removal of the deficiency. Written work in courses and in honors seminars takes the place of advanced courses in composition. Student organizations and informal groups for practice in creative writing, acting drama, extempore speaking, and debating meet with members of the English faculty.

HONORS WORK

Prerequisites. For admission to Honors work with a major in English, the requirements are at least one half course in the "Representative Writers" group; and Chaucer. Students are advised to take also *The History of Europe or The History of England*. Those who plan to include American literature in their Honors work should prepare themselves in that field.

For admission with a minor in English, the requirement is one year in English, including at least one half course in the "Representative Writers" group.

Topics of Final Examination:

1. Shakespeare.
2. Poetry, Prose, the Drama, the Novel, or Spenser-Milton.
3. Modern Literature, American Literature, Literary Criticism, or Problems of Literary Study.

Candidates for honors with a major in English will write one paper on the first topic and at least two papers from the second group of topics. The fourth paper may be written on any of the other topics. Candidates for honors with a minor in English may write on any two or three of the above topics upon the recommendation of their major department. Major courses in the Department are arranged to parallel honors seminars in the topics, and honors students are urged to attend the series of lectures which are given in connection with most of these courses.

REQUIREMENTS FOR MAJOR AND MINOR

Major: The work of the major in General Courses normally consists of at least four full courses: Representative Writers, Chaucer, Shakespeare, 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 Spenser-Milton, Modern Literature, American Literature, Literary Criticism, and Problems of Literary Study, 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 the "Representative Writers" group.

THESIS

A thesis may be substituted for the fourth paper in either the honors or comprehensive examination on application of the student and at the discretion of the Department.

DEPARTMENTAL LANGUAGE REQUIREMENTS

The language requirements may be fulfilled by French; French and German; or French or German and 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

*PROFESSOR ALFRED M. BROOKS, *Chairman*
 INSTRUCTOR, ETHEL STILZ
 LECTURERS: LEICESTER B. HOLLAND
 JOSEPHINE ADAMS

GENERAL COURSES

2. Art Survey. Miss Adams.

Full course.

A general course on the significance and history of art, covering architecture, sculpture, painting, and the allied arts.

3. Greek and Roman Architecture. Mr. Brooks.

Half course, first semester. (Omitted in 1934-35.)

Their history and development down to the fall of the Empire.

4. Mediaeval and Renaissance Architecture. Mr. Brooks.

Half course, second semester. (Omitted in 1934-35.)

Their history and development continuing to the present time.

5. Dante. Mr. Brooks.

Full course. (Omitted in 1934-35.)

Study of the Divine Comedy. Special attention is given to the life and art of the thirteenth century.

6. Interior Decoration. Miss Stilz.

Full course.

Principles of color and design as applied to the planning and furnishing of houses, with lectures on the historic development of domestic architecture.

HONORS WORK

Prerequisite. Course 2, Art Survey, or its equivalent, is required.

Topics of Final Examinations. Honors seminars are offered preparing students for final examinations in:

1. French Gothic Architecture. Mr. Holland.
2. Mediaeval English Architecture from the Conqueror to the Death of Henry V. Mr. Holland.

* Absent on leave, 1934-35.

GERMAN LANGUAGE AND LITERATURE

PROFESSOR CLARA PRICE NEWPORT, *Chairman*

ASSISTANT PROFESSORS: KARL REUNING

LYDIA BAER

ACTING ASSISTANT PROFESSOR: DETLEV SCHUMANN

1. Elementary German. Mr. Reuning, Miss Baer, and Mr. Schumann.

Full course.

Training in grammar, composition, conversation, and expressive reading. Evans and Röseler, *College German*; Diamond and Reinsch, *Nachlese*; Thiess, *Abschied vom Paradies*.

2. German Prose and Poetry, Grammar and Composition. Mrs. Newport, Mr. Reuning and Miss Baer.

Full course.

Reading of recent short stories, of representative modern plays, of lyrics and ballads, and other suitable material. Review of grammar, practice in composition, conversation, and expressive reading. Chiles, *German Composition and Conversation*; Schnitzler, *Stories and Plays*; Lessing, *Minna vom Barnhelm*; and other texts.

Prerequisite, Course 1 or equivalent.

2. (b) German Composition and Conversation. Mr. Reuning.

Half course.

The emphasis in the second semester is on vocabulary, word-building, idiomatic use of the language, and increased power of reading.

Prerequisite: Course 2a or equivalent.

3. Introduction to German Classicism, Romanticism and Realism. Miss Baer and Mr. Schumann.

Full course.

A study of the three most important movements in German literature, with reading of representative texts. The object of this course is to give an understanding of Germany's contribution to the literature and thought of the world.

Prerequisite, Course 2 or equivalent.

4. The Romantic Movement in Germany. Miss Baer.

Full course.

A study of the origin, aims and development of the movement and its implications for the entire range of art and human life, with extensive reading of representative authors.

Prerequisite, Course 3 or equivalent.

5. German Literature in the Eighteenth Century. Mrs. Newport.

Full course.

A study of the important movements in German literature, thought, and history during this period, with especial emphasis on the work of Lessing, Herder and Schiller.

Prerequisite, Course 3 or equivalent.

6. Goethe. Mrs. Newport.

Full course. Offered 1935-36.

A careful study of Goethe's life and works. Goethe's *Werke*, *Goldene Klassiker-Bibliothek*.

Prerequisite, Course 3 or equivalent.

7. German Lyric Poetry. Mr. Reuning.

Half course.

A survey of lyric poetry from the beginning with special emphasis on nineteenth century poetry.

Prerequisite, Course 3 or equivalent.

8. The German Novel and Novelle. Miss Baer.

Half course.

The characteristic German prose forms as developed in the nineteenth century by such writers as Keller, Storm, Meyer and carried on to the present day by Werfel, Thomas Mann and others.

Prerequisite, Course 3 or equivalent.

9. German Drama in the Nineteenth and Twentieth Centuries. Mrs. Newport.

Full course. Offered 1935-36.

The development of the drama in Germany since the plays of Goethe and Schiller, with special attention to Kleist, Grillparzer, Hebbel, Ludwig, Anzengruber, Hauptmann, Hofmannsthal, Wedekind, Schnitzler, and the Expressionists. Campbell, *German Plays of the Nineteenth Century*.

Prerequisite, Course 3 or equivalent.

10. Outline Course in German Literature. Mrs. Newport.

Full course.

A survey of the literature of Germany from the earliest times, with readings from the most important authors.

Prerequisite, Course 3 or equivalent.

Conversation. One hour a week throughout the year.

(a) Advanced group: Discussion of various topics of mutual interest, mainly concerning modern Germany. Correct pronunciation, building of an active vocabulary, and idiomatic use of the language are emphasized. Mr. Reuning.

Prerequisite, Course 2.

(b) Elementary group: Practice in speaking German on a more elementary basis than (a). Open to students of the first two years of German. Mr. Schumann.

The objective in Courses 1 and 2 is an ability to read German of moderate difficulty. To attain this end it is necessary to have a thorough knowledge of grammar and to be able to speak and write simple German. The more advanced courses are intended to add knowledge and appreciation of literature, and a command of the written and spoken idiom. The history and achievements of German civilization are also studied. Majors and Honors students are encouraged to spend some time in Germany. Practically all courses are conducted in German.

HONORS WORK

Prerequisites. For admission to Honors work in German, one course in college beyond Course 2 is required.

Topics of Final Examinations. Honors seminars are offered preparing students for examination papers in:

1. Middle High German Literature and Philology.
2. Eighteenth Century Classicism.
3. Romanticism 1795-1850.
4. Realism, Naturalism and the Later Schools, 1830-1930.

HISTORY AND INTERNATIONAL RELATIONS

PROFESSORS: FREDERICK J. MANNING, *Chairman*
WILLIAM ISAAC HULL

ASSISTANT PROFESSORS: MARY ALBERTSON
TROYER S. ANDERSON

GENERAL COURSES

1. The History of Europe. Miss Albertson, Mr. Anderson and Mr. Manning.
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 in European or English history, and to any Honors work in history.

2. The History of England. Mr. Anderson.
Half course.

Lectures, reading, and reports on the history of Great Britain, with the main emphasis on the period since 1450. After History 1.

3. The History of the United States. Mr. Manning.
Half course.

Lectures, reading and reports on the political, economic and social history of the American people, from the seventeenth century to the present time.
Not open to Freshmen.

4. Greek 5. The History of Greece. 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. Latin 9. The History of Rome. Miss Brewster (Department of Classics).
Half course, second semester.

The history of Rome from the earliest times to the accession of Marcus Aurelius. The course stresses the Roman genius for organization and administration.

6. The Italian Renaissance. Miss Albertson.
Half course.

Lectures, reading, and reports on the history of the Italian Renaissance. After History 1.

7. The History of France. Miss Albertson.
Half course.

Lectures, reading, and reports on the history of France from Roman times to the present day. After History 1, or with the instructor's consent.

8. The Protestant Revolution. Mr. Hull.
Half course.

Lectures, prescribed readings, and special reports on the history of the Protestant Revolution in England and on the Continent.

9. The Puritan Revolution. Mr. Hull.

Half course.

Lectures, prescribed readings, and special reports on the history of England under the Stuarts (1603-1714).

10. The History of Europe in the Nineteenth Century. Mr. Anderson.

Half course.

Lectures, reading, and reports on the development of Europe since the period of the French Revolution. After History 1.

11. The History of Europe since 1900. Mr. Anderson.

Half course. (Omitted in 1934-35.)

Lectures, reading, and reports on the origins, history, and results of the World War. After History 1. Should be taken by students who plan to work in the Honors seminar offered on the Origins of the World War.

12. Special Topics. Mr. Manning.

Half course, especially for seniors.

13. International Law. Mr. Hull.

Full course. (Omitted in 1934-35.)

This course is open to Juniors and Seniors, and is designed to present the outlines of the international law of peace, war, and neutrality. The principles of the science are illustrated by a weekly discussion of current international problems.

14. International Government. Mr. Hull.

Full course.

This course is open to Seniors and Juniors. It traces the historic development of international government and illustrates its strength and weakness, its achievements and attempts, by a weekly discussion of current international problems.

15. The History of Quakerism. Mr. Hull.

By special appointment, and with seminar credits.

This work is done, not in the regular undergraduate courses (except in connection with Course 8), but in individual conference with the instructor. It includes studies in Quaker biography and literature, and in Quaker solutions of social problems.

HONORS WORK

Topics of Final Examinations. Work is offered preparing students for examination papers as follows:

Seminars open to all:

1. Medieval England.
2. Tudor and Stuart England.
3. The Italian Renaissance.
4. The Period of the Reformation in Europe.
(3 and 4 are offered in alternate years)
5. England in the 18th and 19th Centuries.
6. Europe in the 18th and 19th Centuries.

Advanced Seminars, limited in number:

1. The History of the United States, mainly since the Civil War.
2. The Origins of the World War.

3. The Supreme Court, and Its Importance in Recent American History. Whenever there is room, and with the consent of the departments concerned, this seminar may be counted as a unit in Economics or Political Science for students who have taken the course in the History of the United States or its equivalent.
4. History Thesis; the topic to be selected in Junior year if possible.

N.B.—Honors seminars in Greek and Roman history, conducted by the department of classics, are open to students majoring in history; whenever possible the history department will cooperate with students of foreign literature working on special topics in the history of their particular country.

REQUIREMENTS FOR MAJOR AND MINOR

Requirements for students who major 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, literature, philosophy, the fine arts, etc., as, in the opinion of the department, will facilitate a well-rounded preparation for the Comprehensive Examinations in history. A reading knowledge of French and some acquaintance with the principles of economic theory are essential for an intelligent appreciation of history. Most graduate schools require a reading knowledge of French, German, and Latin for any graduate degree in history.

The Comprehensive Examination for major students at the end of their Senior year includes questions on the following topics: (1) European History (2) British History (3) The History of the United States (4) Ancient History. Major students are expected to answer general questions in each of these fields, and more specific questions in at least two of the fields.

The survey-course in European history, the only course open to Freshmen (except by special permission from the department) is a prerequisite for any of the other courses in European or English history, and for any Honors seminars in history. Students who expect to major in history, in Honors seminars or regular courses, should take European history in the Freshman year, American and English history in the Sophomore year. Students who expect to include history as a minor subject for Honors should take European history in Freshman year, and either American or English history in Sophomore year if possible. Course 2, the History of England (or satisfactory completion of special reading and other requirements set by the department) is required for admission to any honors seminar in English history. Course 3, The History of the United States (or satisfactory completion of special reading) is required for admission to any honors seminar in American history.

MATHEMATICS AND ASTRONOMY

PROFESSORS: JOHN A. MILLER, *Director of Sproul Observatory and Research*
Professor of Astronomy

ARNOLD DRESDEN, *Chairman**

ROSS W. MARRIOTT

ASSOCIATE PROFESSORS: HEINRICH BRINKMANN

JOHN H. PITMAN

ASSISTANT PROFESSOR: MICHAEL KOVALENKO**

ACTING ASSISTANT PROFESSOR† (to be appointed)

GENERAL COURSES IN MATHEMATICS

1, 2. First Year Mathematics. Mr. Brinkmann, Mr. Dresden, and Mr. Marriott.
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; students are expected to keep a fifth hour free from standing engagements so that it may be used occasionally for a quiz or a special exercise.

Fine, *College Algebra*; Dresden, *Plane Trigonometry*; Fine and Thomson, *Coordinate Geometry*.

3. Introduction to Mathematics. Mr. Dresden.

Half course, first semester.

This course is intended for those students who expect to do only one year's work in mathematics. It 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. A text in mimeographed form is used in 1934-35.

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. (Omitted in 1934-35.)

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.

* Absent on leave. Feb. 1935-Feb. 1936.

** Absent on leave 1934-35.

† 2nd semester 1934-35 and 1st semester 1935-36

11, 12. Differential and Integral Calculus. 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 four times a week; students are expected to keep a fifth hour free from standing engagements so as to make it available for occasional quizzes or special exercises.

Prerequisite, courses 1, 2.

13. Analytical Mechanics. Mr. Pitman.

Half course, first semester.

Composition and resolution of forces; center of gravity; moments; velocity; acceleration; collision of bodies; the integration of simple equations of motion. One of the purposes of the course is to develop facility in applying mathematical formulae and methods to the investigation of physical phenomena. Miller and Lilly, *Analytic Mechanics*.

Prerequisite, Course 11, 12. The class normally meets three times a week.

14. Theory of Equations. Mr. Dresden.

Half course, first semester.

Operations on Complex numbers. Solutions of cubic and quartic equations. General properties of polynomials. Separation and calculation of roots of numerical equations. Dickson, *First Course in the 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.

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*.

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. Murray, *Differential Equations*.

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.

GENERAL 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. The course is designed to give information rather than to train scientists. A study of the text-book will be supplemented by lectures illustrated by lantern slides from photographs made at various observatories. The class will learn the more conspicuous constellations and have an opportunity to see the various types of celestial objects through the telescope. Some lectures will be held in the Planetarium. The treatment is non-mathematical. Baker, *Astronomy*.

Classes normally meet three times a week.

3. Practical Astronomy. Mr. Pitman.

Half course, first semester.

Theory and use of the transit instrument; 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. Survey of Astronomy.

Half course, second semester.

This course is intended primarily for students of Engineering and Science. Emphasis will be placed on methods of scientific investigation. Students will have the opportunity of using various instruments. Some lectures will be held in the Planetarium.

Classes normally meet three times each week.

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.

52. Method of Least Squares. Mr. Pitman.

53. Theory and Practice of Interpolation. Mr. Pitman.

54. Stellar Parallax. Mr. Pitman.

55. Celestial Mechanics. Mr. Pitman.

HONORS SEMINARS IN MATHEMATICS

I. *Theory of Equations.* This seminar is devoted to the study of algebraic 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.

II. *Solid Analytic Geometry.* In this seminar 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, identification of the general equation of the second degree, special properties of quadric surfaces, such as rulings and circular sections, system of quadric surfaces.

III. *Advanced Calculus.* This seminar deals with the differential calculus for functions of several variables and its geometric applications, with double and triple integrals, improper integrals, line and surface integrals, the elements of vector analysis.

IV. *Differential Equations.* In this seminar the principal topics are the following: 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.

V. *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.

VI. *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.

HONORS SEMINARS IN ASTRONOMY

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

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 12, 13.

Theory and Practice of Stellar Parallax: The theory of trigonometric parallax. Measurement and reduction of parallax plates. Discussion of errors. Theory of spectroscopic and dynamical parallaxes.

Prerequisites, Astronomy 1, 2; Mathematics 12, 13.

Theory of Orbits and computation of orbit of an asteroid or comet. Celestial Mechanics.

Prerequisites, Astronomy 1, 2; Mathematics 12, 13.

REQUIREMENTS FOR MAJOR AND MINOR

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 reading knowledge of French and 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 equipment of the observatory is best suited for astrometric and

kindred problems. The various eclipse expeditions from the Observatory have yielded considerable eclipse data.

The observatory staff is at present devoting time to studies in stellar parallax with the 24-inch telescope, to photography with the 9-inch doublet, and to the study of the eclipses of the sun. Students interested in any of these problems may work with advantage in conjunction with one of the professors. Results of departmental studies are published in the Sproul Observatory publications and in various scientific journals.

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

ASSISTANT PROFESSOR ALFRED J. SWANN, *Chairman*

1. Introduction to Music. Mr. Swann.

One hour weekly throughout year.

The object of this course is to help the average music lover and concert goer acquire a better understanding of the music heard. It deals with the rudiments of music—scales, keys, modulation, rhythm, time, etc., with the analysis of simple folk songs and the smaller musical forms. It leads eventually to some acquaintance with the classic sonata and symphony, and to a brief discussion of the modern orchestra. The lives and works of certain composers of the 18th and 19th century are studied from first-hand documents, such as letters, autobiographies, and the testimony of contemporaries.

2. History of Music. Mr. Swann.

Full course. (Omitted in 1934-35.)

This course deals chiefly with the pre-classic period. Starting with the mediæval music (plain chant, troubadours) it lays especial emphasis on the vocal polyphonic period (Palestrina) and the age of Bach and Haendel, with a detailed study of the B-minor mass and the "Messiah." Discussions of various ideals of beauty (Gothic, Renaissance, Baroque) also form part of this course.

No previous acquaintance with music is required for Music 1, but the latter course or its equivalent is highly recommended to those enrolling in Music 2.

For information about the Swarthmore College Chorus and Orchestra see p. 85 in the Students' Handbook of Swarthmore College.

PHILOSOPHY AND RELIGION

PROFESSORS: BRAND BLANSHARD, *Chairman*
 JESSE H. HOLMES (part-time)

ASSISTANT PROFESSOR: JOHN W. NASON

INSTRUCTORS: MAURICE H. MANDELBAUM
 DEAN FRANCES BLANSHARD (part-time)

GENERAL COURSES

1. Logic. Mr. Mandelbaum (1934-35); Mr. Blanshard (1935-36)

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. Mr. Holmes, Mr. Nason.

Half course, every semester.

A survey of the principal problems of philosophy and the alternative answers to them. Drake's *Invitation to Philosophy* is used as a basis.

4. Ethics. Mr. Nason, Mr. Mandelbaum.

Half course, second semester.

An introduction to ethical theory, with a brief consideration of the various types of ethics and of the application of ethical principles in practice. The introductory works by Sharp, and by Dewey and Tufts, are used.

5. Philosophy and Science. Mr. Holmes.

Half course, first semester.

The first half of the semester is devoted to a review of the history of science, such works as those of Dampier-Whetham, and Sedgwick and Tyler, being used as a basis. The second half is devoted to an examination of the logic of science and some of its more important concepts, such as evolution and relativity.

- 6 (a). Ancient and Mediaeval Philosophy. Mr. Mandelbaum.

Half course, first semester.

The pre-Socratics, Plato, Aristotle, Stoics and Epicureans, Neoplatonists and sceptics, early Christianity and the scholastics. Readings in the sources where practicable.

- 6 (b). History of Modern Philosophy. Mr. Mandelbaum.

Half course, second semester.

A review of the principal systems of thought from Descartes to the present time. The greater philosophers are studied through selections from their works; these readings are coordinated through a standard history of philosophy.

7. Aesthetics. Mrs. Blanshard.

Half course, second semester. (Omitted in 1934-35.)

A historical and critical study of the theory of beauty and of standards of literary and artistic criticism.

8. Contemporary Problems. Mr. Holmes.

Half course, second semester.

A study of selected major issues, such as the controversy between realism, idealism and pragmatism, the relation of philosophy to the natural sciences and to religion, etc., the problems being chosen partly with reference to the interests of the group. This course may be replaced in 1934-35 by a course in Social Ethics.

12. The Philosophy of Religion. Mr. Nason.

Half course, first semester.

The first part of the semester is devoted to an empirical study of religion as it has presented itself in the great religions of history. In the later part the attempt is made to interpret religious experience in the light of philosophic reflection, and to study some present trends in religious thought.

HONORS WORK

Prerequisites: For admission to honors study in philosophy, the requirement is at least two semester courses in the field.

Honors Subjects in Philosophy:

1. *Moral Philosophy:* 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. *Greek Philosophy:* Begins with the dawn of western philosophy in the Milesian nature-philosophers, ends with a brief study of the Stoics and Epicureans. The larger part of the time is devoted to a reading of Plato and Aristotle. Included in this reading are all the major dialogues of Plato and selections from the *Ethics*, the *Metaphysics*, and the logical writings of Aristotle. Recommended for students of literature.
3. *History of Modern Philosophy:* 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 of Philosophy:* 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.
5. *Logic and Scientific Method:* The subject is pursued from the point of view, and from the level of difficulty, presented by Joseph's *Introduction to Logic*. Students are expected to master the manipulations of the traditional formal logic and to supplement Joseph's discussions of theory by readings in Mill, Bradley, Jevons and other logicians.

6. *Aesthetics*: A study, partly historical, partly systematic, of the philosophies of beauty, including theories of tragedy and comedy, of the sublime, and of standards of criticism. Carritt's *Theory of Beauty* has usually been taken as the starting-point; it is supplemented by readings in the sources, ancient and modern. Recommended for students of literature.

Philosophy is a subject that has proved particularly well adapted to study by the honors method, and advanced work in it is done chiefly through honors seminars.

For the use of students in the history of religion there is a small museum, a large supply of lantern slides, and an adequate equipment of maps, charts, and pictures. Some very large archaeological collections are near enough to be visited by students of the college.

PHYSICAL EDUCATION FOR MEN

ASSISTANT PROFESSOR ROBERT DUNN, *Acting Chairman*

INSTRUCTORS: GEORGE R. PFANN
AVERY F. BLAKE

ASSISTANTS: CHARLES P. LARKIN VINCENT B. SCHNEIDER
E. J. FAULKNER ALBERT B. BARRON
HENRY L. PARRISH WILLIS J. STETSON

COLLEGE PHYSICIAN FOR MEN, DR. FRANKLIN GILLESPIE

Physical Education for Men. Mr. Dunn, Mr. Blake.

This course is required of all first- and second-year men and of all upper-class men who have not completed the requirement.

The minimum requirement is one hour of activity on each of two days each week.

It is the aim of the department to offer every student an opportunity to participate in a variety of activities as regularly as his interest and time will permit; to broaden his social contacts with other students and receive the valuable benefits of sports; to develop carry-over activities that he will continue to enjoy after he leaves college.

A wide range of sports are listed and it is hoped that no student will take so little interest in his physical development as merely to fulfil the minimum requirement.

Students may elect from the following:

FALL ACTIVITIES

Opening of College to Thanksgiving Recess

5. Football. Mr. Pfann, Mr. Parrish, Mr. Schneider.

11. Soccer. Mr. Dunn, Mr. Stetson.

(In these sports there will be a varsity, second varsity, freshmen and beginners group.)

17. Tennis. Mr. Blake.

Fall tournament and informal play.

6. Golf.

Informal.

13. Speedball. Mr. Blake.

One hour each week is required of all students registering in the informal activities No. 17 and No. 6.

WINTER ACTIVITIES

Thanksgiving Recess to Spring Recess

11. Soccer. Mr. Dunn.

Advanced, Beginners and Informal.

2. Basketball. Varsity, Mr. Larkin; Junior Varsity and Freshman, Mr. Stetson; Beginners, Mr. Dunn; Fraternity, Mr. Blake.
10. Lacrosse. Mr. Blake.
Beginners and Informal.
16. Swimming. Mr. Parrish.
Varsity, Fraternity and Informal.
8. Handball.
Informal.
18. Touch football.
Informal.
14. Ice skating.
Informal. On permission from the director when conditions are safe.
6. Golf. Mr. Dunn.
Beginners. Instruction on appointment.
17. Tennis. Mr. Blake.
Beginners. Instruction on appointment.
- Hygiene. Dr. Gillespie.
Required of all Freshmen.

SPRING ACTIVITIES

Spring Recess to Commencement

1. Baseball. Mr. Dunn, Mr. Stetson.
Varsity, Junior Varsity, Freshmen and Fraternity.
10. Lacrosse. Mr. Blake.
Varsity, Junior Varsity and Beginners.
19. Track. Mr. Barron.
Varsity and Beginners.
17. Tennis. Mr. Faulkner.
Varsity, Junior Varsity, Fraternity and Informal.
6. Golf.
Varsity and Informal.

Special Class: A student who is unable to follow the regular program in physical education because of a physical handicap will be assigned special activities to meet his needs.

Equipment: It is requested that every student entering college have a complete sweat suit, a pair of shorts, a sleeveless jersey (gray) of washable material, a pair of basketball shoes and a pair of leather shoes, either soccer or football.

PHYSICAL EDUCATION FOR WOMEN

ASSISTANT PROFESSOR VIRGINIA RATH, *Acting Chairman*

INSTRUCTORS: VIRGINIA BROWN

MAY E. PARRY

COLLEGE PHYSICIAN FOR WOMEN, DR. DOROTHY ASHTON

REQUIREMENTS FOR WOMEN

Three hours of Physical Education each week are required of all resident and non-resident women throughout their college course. Every student is given a physical and medical examination at the opening of each college year and is advised at that time by the college physician which activities she may enter.

Each student is allowed five (5) absences from class during the fall season, ten (10) during the winter season and five (5) during the spring season. These cover absences for every reason except those incurred while the student is in the infirmary or ill at home. Each unexcused absence in excess of the numbers mentioned above, shall be penalized by one extra class hour for one season.

The program is divided into three terms: fall, opening of college to Thanksgiving recess; winter, Thanksgiving recess to spring recess; spring recess to June.

First-year students are required to attend a course of hygiene lectures, given once a week during the first semester.

Regulation costumes should be ordered before college opens. Blanks for this purpose will be sent out from the Deans' office to all incoming students.

COURSES FOR WOMEN

1. Hockey. Miss Rath, Miss Brown, Miss Parry.

Two periods per week. Fall term.

Required of first- and second-year students and elective for third- and fourth-year students.

Varsity hockey is required of squad members instead of class hockey.

2. Archery. Miss Rath, Miss Brown.

Two periods per week. Fall and Spring.

Open to third- and fourth-year students in the fall. Open to all students in the Spring.

3. Horseback Riding. Mr. Bowen.

Two periods per week. Fall and Spring.

Open to all students.

4. Swimming. Miss Rath, Miss Brown, Miss Parry.

*One period per week Fall and Spring
or one period per week Winter
or two periods per week Fall or Spring.*

Required of all students with the following exceptions: Seniors who pass a standard swimming test are excused. Sophomores or Juniors who pass all requirements on the swimming chart are excused.

Beginning, Intermediate, and Advanced classes in strokes, diving, and Red Cross Life Saving.

Third- and fourth-year students have the option of substituting a free swimming period for class instruction. This privilege may be withheld at the discretion of the Department.

Varsity swimming, two periods per week Winter term, is required of all squad members.

5. Danish Gymnastics. Miss Brown.

Two periods per week. Winter term.

Open to all students.

6. Tumbling. Miss Rath.

Two periods per week. Winter term.

Open to first- and second-year students.

7. Natural Dancing. Miss Brown.

Winter term.

(a) Intermediate and Advanced. Two periods per week.

(b) Beginners. One period per week.

8. Basketball. Miss Brown, Miss Parry, Miss Rath.

Winter term.

(a) Open to second- and third-year students. Two periods.

(b) Open to first- and second-year students. One period.

(c) Varsity basketball is required of all squad members. Two periods per week.

9. Tap Dancing. Miss Rath, Miss Brown.

Winter term.

Open to all students.

(a) Intermediate and Advanced. Two periods per week.

(b) Beginners. One period per week.

10. Volley Ball. Miss Parry.

One period per week. Winter term.

Open to third- and fourth-year students.

11. Individual Gymnastics. Miss Rath.

Two periods per week. Winter term.

For those students who need special exercise because of incorrect posture or minor orthopedic defects.

12. Moderate Sports. Miss Brown.

One period per week. Fall, Winter, Spring.

Clock golf, tenequoit, badminton, horse shoe pitching, archery may be substituted for other work upon advice of the physician.

13. Tennis. Miss Parry, Miss Brown, Miss Rath.

Two periods per week. Fall and Spring.

Open to third- and fourth-year students in the Fall.

Open to all students in the Spring.

Varsity tennis is required of all squad members in the Spring.

14. Lacrosse. Miss Parry.

Two periods per week. Fall, Winter, and Spring.

Open to third- and fourth-year students in the Fall.

Open to all students in the Winter and Spring.

15. Golf. Miss Michael.

Two periods per week. Fall and Spring.

Open to experienced players only, in the Fall.

Open to all students in the Spring.

PHYSICS

PROFESSOR WINTHOP R. WRIGHT

ASSISTANT PROFESSOR MILAN W. GARRETT

GENERAL COURSES

1. General Physics. Mr. Wright and Mr. Garrett.

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. Garrett.

Half course, first semester.

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.

3. Modern Physics. Mr. Wright.

Second semester.

These lectures in the field of modern physics present in an elementary fashion the progress in physics during the past quarter century with some indication of directions in which active growth is now going on. They center around the nature of matter, electricity, and radiation and include such experimental subjects as positive and negative ions, X-rays, radioactivity, spectra, and the photo-electric effect. They carry no credit and their primary aim is to stimulate curiosity and to provide some familiarity with authors who set forth these matters in their fullness. An elementary knowledge of general physics is presumed.

HONORS WORK

I. Physical Optics. Mr. Wright.

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.

II. Electricity and Magnetism. Mr. Garrett.

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.

III. Atomic Physics. Mr. Wright and Mr. Garrett.

Readings in the fields of gaseous conduction, photoelectricity, thermionic emissions, X-rays, radioactivity, and atomic structure with accompanying quantitative experiments.

IV. General Physics. Mr. Wright.

This seminar is given for majors in the biological sciences. It emphasizes the fields of dynamics of solids and liquids, the kinetic theory, electricity, and modern physics. The readings are supplemented by experiments.

MAJOR AND MINOR REQUIREMENTS

Students majoring in physics will ordinarily be expected to read for honors but in special cases the degree may be taken in course. In either event the following courses are to be completed by the end of the second year: two courses in mathematics, one in chemistry, one in physics, and the second course in German. The half course in advanced general physics is recommended.

One full course in physics and two in mathematics are prerequisite to honors work in physics when taken as a minor. The mathematics requirements may be somewhat reduced for students who carry only the seminar in general physics.

POLITICAL SCIENCE

PROFESSOR ROBERT C. BROOKS, *Chairman*
 ASSISTANT PROFESSOR J. ROLAND PENNOCK
 ASSISTANT, FRANCES REINHOLD

GENERAL COURSES

1. Introduction to Political Science. Mr. Brooks and Miss Reinhold.

Full course.

Nature, content and applications of political science, its relation to other social sciences, illustrated by an outline study of the framework of government and the organization, methods and aims of leading political parties in England, France, Switzerland, Germany, Italy and Russia. Comparisons between the political institutions of the countries named above and those of the United States.

Open to all students.

2. American Political Parties and Issues. Mr. Brooks.

Half course, second semester.

Party activities, present-day issues, the legal status of parties in the United States, detailed study of the presidential campaigns of 1928 and 1932.

Open to all students except Freshmen.

3. American Federal Government. Mr. Pennock.

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. Open to all students except Freshmen.

4a. Municipal Government in the United States. Miss Reinhold.

Half course, first semester.

A detailed study of municipal organization and functions in the United States, particular attention being given to the cities of New York, Philadelphia, Chicago, and Cincinnati. Reform proposals—the commission plan, the city manager plan, short ballot, proportional representation, bureaus of municipal research. Open to all students who have taken Course 1.

4b. State Government in the United States. Miss Reinhold.

Half course, second semester.

A detailed study of practical problems and proposed solutions in the field of comparative state government. Special emphasis on Pennsylvania, New York, Illinois, Wisconsin, and California. Recent trends in administration—correction, charity, education, health, highways, natural resources. Open to all students who have taken Course 1.

5. Recent Political Literature. Miss Reinhold.

Half course, first semester.

Biographical sketches of recent authors in the field of political literature with a view to the analysis of prejudices, methodology, conclusions, and special interests. Particular emphasis on Laski, Merriam, Beard, and Holcombe. Bibliography of political science presented topically. Open to all students who have taken Course 1.

6. Statesman of Our Time. Mr. Speight.

Half course, first semester.

A study of the personal development, motives, and careers of several leaders, such as Lenin, Mussolini, Ramsay MacDonald, Ghandi, Theodore Roosevelt, and Woodrow Wilson, who, in their several countries, have notably influenced national and international life. Open to Sophomores, Juniors and Seniors.

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 States; examination of such alternative principles as those offered by Communism, Fascism, and Guild Socialism; also an investigation of the possibilities of developing modified forms of representative government to fit the new situation, and an appraisal of present tendencies in political development. Open to all students except Freshmen.

8. Special Readings in Political Science. Miss Reinhold.

Half course, second semester.

Intensive readings on special phases of politics—types of governments, executives, legislatures, judiciaries, administrative systems, and the like, with a view to throwing into high relief the most controversial questions in each field. Preparation for the final comprehensive examinations. Open only to Seniors with the major in Political Science.

9. American Constitutional Law. Mr. Pennock.

Full course.

The Constitution as developed by the Court; and the Court as seen through the cases. Stressing (a) the development of national power, (b) constitutional limitations upon state legislation, (c) constitutional restrictions upon administrative government, (d) the Supreme Court and the economic emergency.

Prerequisite, Course 1.

10. Political Theory. Mr. Brooks.

Half course, first semester.

An advanced course dealing with the principal classics of political theory with the purpose of ascertaining what light they throw upon the conflicts being waged in and between modern states.

Prerequisite, Course No. 1.

Students with a major in political science should select as much collateral work as possible in economics; also in modern history and philosophy.

HONORS WORK

Prerequisites. The course prerequisite for Honors work in Political Science is Introduction to Political Science. Students may substitute

for this the two courses in American Federal Government and American Political Parties and Issues. Instead of American Federal Government the course in American Constitutional Law may be offered.

Topics of Final Examinations. Honors seminars are offered preparing students for examination papers as follows:

1. History of Political Philosophy.
2. Political Institutions of the United States.
3. Contemporary Democracies and Dictatorships.
4. International Law and Organization.
5. Thesis.

PSYCHOLOGY AND EDUCATION

ASSISTANT PROFESSOR ROBERT B. MACLEOD, *Chairman*

LECTURERS: MARY WENTWORTH MCCONAUGHY

EDITH M. EVERETT

ASSISTANT, RANDOLPH S. DRIVER

1. Introduction to Psychology. Mr. MacLeod.

Full course.

A study of the structure and organization of the mental life of the normal, human, adult individual. Not open to Freshmen.

2. Experimental Psychology. Mr. MacLeod.

Half course. (Omitted in 1934-35.)

A laboratory course on problems in human psychology.

Prerequisite, Course 3.

3. Comparative Psychology. Mr. MacLeod.

Half course. (Omitted in 1934-35.)

A comparative study of psychological processes at different levels of development. Particular attention is paid to representative animal forms and to primitive man.

Prerequisite, Course 3.

4. Child Psychology. Mrs. McConaughy.

Half course. (Omitted in 1934-35.)

An intensive study of the psychology of childhood from infancy to adolescence.

Prerequisite, Course 3.

5. Educational Psychology. Mrs. McConaughy.

Half course, second semester.

A discussion of the changes in education which are the results of the application of psychology and mental hygiene, including a study of the nature of the learning process, and an evaluation of the methods of education, both at home and at school.

Prerequisite, Course 3.

6. Social Psychology. Mr. MacLeod.

Half course, first semester.

A psychological study of relationships between individual and individual and between group and individual.

7. Mental Hygiene. Mrs. McConaughy.

Half course, each semester.

An attempt to present the best existing knowledge concerning the achievement and maintenance of mental health. Special emphasis is laid upon the evolution of the personality from infancy to adult life. Open to all students.

8. Modern Psychology in Historical Perspective. Mr. MacLeod.

Half course, second semester.

A survey of current problems and points of view with special reference to their historical derivation.

Prerequisite, Course 3.

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9. Introduction to Education. Mrs. McConaughy.

Half course, first semester.

A critical examination of educational practices, institutions and theories, setting forth the role played by education, as a function of government, in organized society of the past and the world to-day.

10. Principles of Education. Mrs. McConaughy.

Half course. (Omitted in 1934-35.)

A study of the fundamental biological, psychological and sociological principles underlying the modern conception of education, together with a discussion of school organization and curricula on the basis of these principles.

- 11 (a and b). Childhood and Adolescence. Miss Everett.

Full course.

The seminar meets one afternoon a week, and is devoted to a study of the formation and modification of patterns of relationship within the family, the neighborhood and the school. Biography as well as psychological theory is used as source material. The practicum consists of one day a week of social case work under the supervision of counselors of the White-Williams Foundation of Philadelphia. The first semester, part *a*, dealing primarily with childhood, may be taken as a half-course. Either part *a* or Child Psychology is prerequisite for part *b*.

REQUIREMENTS FOR MAJOR

Those intending to elect psychology as a major subject are advised to take general courses in philosophy and the biological sciences and to acquire a reading knowledge of German. The new laboratory facilities in the dome of Parrish Hall will make possible a considerable extension of the work of the department in the experimental direction, and all major students will be required to include in their four courses in psychology at least one half course in the laboratory.

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 fulfil these requirements by taking Introduction to Psychology, Educational Psychology and Introduction to Education, together with three further half courses in the department chosen from the following: Mental Hygiene, Child Psychology, Childhood and Adolescence, and Principles of Education.

HONORS WORK

Prerequisites: Introduction to Psychology is the normal prerequisite for all honors work. This may be waived, however, in cases of candi-

dates who have done advanced work in zoology and physiology, and who propose to concentrate in the field of physiological psychology. All honors students are advised to take introductory work in zoology and philosophy and to acquire a reading knowledge of German.

Topics of Final Examinations: Honors seminars are offered in the following subjects:

1. *Systematic Psychology.*

An historical and critical study of the principal contemporary schools of psychology.

2. *Perception.*

Survey of the fundamental problems connected with the apprehension of objects, events and relationships; space, time and movement; the special senses; the interrelation of the senses; psychophysics; the psychological bases of music, painting and the plastic arts. Discussion supplemented by laboratory demonstration.

3. *The Individual in Society.*

A psychological study of the relationships between the individual and the group, based on material drawn from studies of primitive man and of contemporary social life. Special attention is paid to the role of society in moulding the individual, and to such concrete problems as those of criminality, neurosis and insanity.

4. *Genetic Psychology.*

The comparative study of fundamental psychological activities at various levels of organization in the animal world and at various stages of development in the child.

5. *Psychophysiology.*

Selected problems concerned with the functioning of sense-organ, nerve, muscle and gland. Designed primarily for pre-medical students and students who are majoring in physiology-zoology.

ROMANCE LANGUAGES

PROFESSORS: EDITH PHILIPS

NORMAN L. TORREY

ASSISTANT PROFESSORS: LEON WENCELIUS*

MARCEL BRUN

INSTRUCTORS: MERCEDES C. IRIBAS

FRANC THÉNAUD

ASSISTANT, ARTURO MATHIEU

FRENCH

1. Elementary French. Miss Philips.

Full course.

For students who begin French in college. Aimed to cover the equivalent of two years' secondary school preparation. Texts: Dondo, *Modern French Course*, Hills and Dondo, *Contes Dramatiques*, Dumas, *Les Trois Mousquetaires*.

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 outstanding authors. Conducted in French with frequent written reports in French.

4. Le Romantisme français. Miss Philips.

Half course, first semester.

Lyric poetry, the theater and the novel of the romantic period. Prerequisite French 3.

5. La Littérature française depuis 1850. Miss Philips.

Half course, second semester.

Modern tendencies in the novel, theater and lyric poetry. Prerequisite, French 3.

6. Le Théâtre et le roman au 18e siècle. Mr. Torrey.

Half course, first semester.

Introduction to the intellectual and social life of the eighteenth century. Prerequisite, French 3.

* Absent on leave, 1934-35.

7. Montesquieu, Voltaire et Rousseau. Mr. Torrey.

Half course, second semester.

Prerequisite, French 3.

8. Le Théâtre classique. Mr. Brun.

Full course.

Molière, Corneille, Racine. The origins and ideals of French classicism. Prerequisite, French 3.

9. La Prose classique. M. Wencelius.

Full course. (Omitted in 1934-35.)

French prose from the Renaissance to the 18th century. Calvin, Rabelais, Montaigne, Descartes, Pascal. Prerequisite, French 3.

10. Practical Phoenitics. Miss Philips.

One hour a week, not counted as a course.

Designed to give the student increased facility and precision in spoken French through study and practice of the sounds of the language. Recommended to majors and honors students.

11. Advanced Conversation. M. Thénuaud.

One hour a week, not counted as a course.

Open to all students beyond French 2.

SPANISH

1. Elementary Spanish. Miss Iribas.

Full course.

A course aimed to give a knowledge of the essentials of Spanish grammar, the ability to read ordinary Spanish with ease, and some practice in conversation. Hills and Ford, *First Spanish Course; Cuentos Modernos*.

2. Second-year Spanish. Miss Iribas.

Full course.

Crawford, *Spanish Composition*; reading of six modern novels and plays, and conversation based upon these works.

3. Third-year Spanish. Miss Iribas.

Full course.

A study of Contemporary Spanish Texts.

ITALIAN

1. Elementary Italian. Mr. Mathieu.

Full course.

Aimed to give the student ability to read ordinary Italian and to write and speak simple Italian.

2. Italian reading and composition.

Full course. (Omitted in 1934-35.)

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.

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 equivalent, History of Europe or History of France, History of Philosophy or Introduction to Philosophy.

Seminars are offered as follows:

1. La Renaissance en France. M. Wencelius.

(Omitted in 1934-35.)

Rabelais, Montaigne, Ronsard.

2. Le Classicisme français. M. Brun.

Special attention is given to the theater as the purest manifestation of the classical ideal.

3. La Pensée française au dix-huitième siècle. Mr. Torrey.

Montesquieu, Voltaire, Rousseau and the Encyclopedists.

4. La Poésie lyrique au dix-neuvième siècle. Miss Philips.

The romantic parnassian and symbolist movements. Modern tendencies.

5. Le Roman français depuis Flaubert. Miss Philips.

Realism, naturalism, modern tendencies.

6. Histoire des idées politiques du 19e siècle. M. Wencelius.

(Omitted in 1934-35.)

Lamennais, de Maistre, Saint-Simon, Auguste Comte and others, studied in their relation to literature and to the development of French ideas.

7. Thesis.

ZOOLOGY

ASSISTANT PROFESSORS: WALTER J. SCOTT, *Chairman*
ROBERT K. ENDERS

INSTRUCTORS: FRANK R. KILLE
RUTH MCCLUNG JONES

GENERAL COURSES

1. General Zoölogy. The staff.

Full course.

Lectures, demonstrations, conferences and laboratory exercises covering the major aspects of Zoölogy. Biological principles as illustrated by invertebrate animals are stressed during the first semester. A study of vertebrate morphology and physiology with special consideration of the general topics of embryology, evolution, genetics and ecology forms the basis of the work of the second semester.

2. Comparative Vertebrate Anatomy. Mr. Enders.

Half course, second semester.

A course of lectures, laboratory conferences and dissection presented from the comparative viewpoint. Dissection of several vertebrate types including the monkey is undertaken. Prerequisite, 1.

3. Elementary Physiology. Mr. Scott and Mr. Kille.

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.

4. Embryology. Mr. Enders and Mr. Kille.

Half course, first semester in alternate years.

The purpose of this course is to acquaint the student with the morphological details of the developmental processes in vertebrates. Experimental evidence is introduced in the lectures and conferences.

5. Invertebrate Zoölogy. Mr. Kille.

Half course, offered in alternate years.

A study of the structure, development, and physiology of representative invertebrates. Prerequisite, 1.

6. Histology. Mrs. Jones.

Half course, offered in alternate years.

This course combines histology and histological technique. Most of the tissues studied are prepared by the student. Prerequisite, 1.

7. Mammalian Physiology. Mr. Scott.

Half course, offered in alternate years.

A laboratory course of experiments illustrating the more important features of the circulatory, respiratory and nervous systems. Prerequisites, 1, 2, 3, 4.

8. Experimental Zoölogy. Mr. Enders.

Half course, offered in alternate years.

An introduction to the methods used in simple experimental procedure with lectures, conferences, comprehensive reading in some one field supplemented by intensive laboratory work. Prerequisites, 1, 2, 3, 4, 6.

9. History of Zoölogy. The Staff.

One hour (voluntary), offered in alternate years.

General discussions tracing the evolution of Zoölogy. Attention is paid to the philosophical aspects of the science and its influence on the development of civilization. Open to majors only.

10. Special Problems. The Staff.

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

HONORS WORK

TOPICS FOR FINAL EXAMINATIONS

The work is so arranged that the field of Zoölogy is treated as a unified whole rather than as a group of more or less related subjects. Thus the nervous system is studied for a period of some months from the standpoint of its embryology, histology, comparative anatomy and physiology, as well as its relation to animal behavior and evolutionary concepts. A similar procedure is followed for the other systems that make up living organisms. The honors seminars are in this way designed to train the student for competent scholarship in the field of biological and medical science.

Topics of Final Examinations:

1. Cytology and Genetics.
2. Skeletal Systems, Muscle and the Nervous System.
3. Cardio-Vascular Systems and Respiration.
4. Metabolism and Reproduction.

Distribution of Work: Eight papers.

Not more than four papers in Physiology-Zoölogy.

Four papers from the following: Organic Chemistry
Scientific Method and Logic
Physical Chemistry
Physics
Botany
Psychology

REQUIREMENTS FOR MAJOR AND MINOR

Students majoring in Zoölogy may take a degree either in general courses or with Honors. In either case there must be completed during

the first two years the following: One course in chemistry, one course in mathematics, one and a half courses in Zoölogy, and two courses in German (or their equivalent). An additional course in chemistry and mathematics together with a course in physics provides a more satisfactory preparation.

Pre-medical students must complete two courses in chemistry, one course in mathematics, one course in physics, and one course in zoölogy.

In addition to these courses major students are required to complete two and one half courses from the following electives during the junior and senior years: Embryology, Invertebrate Zoölogy, Histology, Genetics, Experimental Zoölogy, Advanced Physiology. Under certain conditions a special course in Psychology or one in advanced Botany will be acceptable.

Students who are reading for Honors take four seminars in the department during the last two years.

For admission to minor Honors work in Zoölogy one full course is a prerequisite.

The attention of students preparing for the medical profession is directed to the necessity of fulfilling the admission requirements of the medical school they plan to attend.

STUDENTS, 1934-35

UNDERGRADUATE STUDENTS

Name	Major Subject	Address
ADAMS, WILLIAM E., '35	<i>Engineering,</i>	Dingmans Ferry, Pa.
ALBEN, JANE SHIRLEY, '37	<i>Chemistry,</i>	332 Carnegie Place, Pittsburgh, Pa.
ALBERTSON, JOHN AUGUSTUS, '36	<i>Economics,</i>	Hitchcock Lane, Westbury, N.Y.
ALBURGER, JAMES REID, '35	<i>Physics,</i>	350 Meadow Lane, Merion, Pa.
ALLEMAN, VIRGINIA STUART, '36	<i>Psychology,</i>	Sylvan Hills, Hollidaysburg, Pa.
ALLEN, ELEANOR, '36	<i>Engineering,</i>	3345 Woodland Avenue, Philadelphia, Pa.
ALTICK, MARTHA JANE, '36	<i>French,</i>	239 Lonsdale Avenue, Dayton, Ohio.
ANDERSON, JAMES LEWIS, '38	<i>English,</i>	680 N. Chester Road, Swarthmore, Pa.
ANFINSEN, CHRISTIAN BOEHMER, Jr., '37	<i>Chemistry,</i>	7222 Spruce Street, Upper Darby, Pa.
ANNIS, MARGARET GERTRUDE, '38		6542 Harvey Avenue, Merchantville, N.J.
ASH, ALFRED FRANK, '38	<i>Mathematics,</i>	1910 University Avenue, New York, N.Y.
ATKINSON, FRANCIS WHITMER, Jr., '37	<i>Engineering,</i>	210 S. Washington Avenue, Moorestown, N.J.
BAER, JOHN ELSON, '38	<i>Chemistry,</i>	3902 Spuyten Duyvil Parkway, New York, N.Y.
BAKER, ELEANOR TREGO, '38	<i>English,</i>	989 Memorial Drive, Cambridge, Mass.
BALLARD, JOHN SCOTT, '37	<i>Engineering,</i>	3552-11th Street N.W., Washington, D.C.
BALLARD, LYDIA J., '35	<i>Economics,</i>	3552-11th Street N.W., Washington, D.C.
BARBER, MARGARET H., '36	<i>Fine Arts,</i>	Niles, Mich.
BARCLAY, WALTER S., '37	<i>Economics,</i>	205 Lippincott Avenue, Riverton, N.J.
BARKER, RICHARD GLEIM, '35	<i>Zoology,</i>	207 Orange Road, Montclair, N.J.
BARSALOW, FAITH HAMBLBY, '38		166 Whitmarsh Avenue, Worcester, Mass.
BAYS, CATHERINE HARRIET, '36		2330 Ewing Ave., Evanston, Ill.
BEARDSLEY, JAMES HODGE, '38	<i>English,</i>	69 Kensington Road, Bronxville, N.Y.
BECK, JOHN N., '36	<i>Mech. Engin.,</i>	2 Chestnut Avenue, Narberth, Pa.
BELDEN, VIRGINIA, '37		Plandome, L.I., N.Y.
BELL, CLARENCE DESHONG, '35	<i>Pol. Science,</i>	400 Summit Street, Upland, Pa.
BELL, ROBERT L., '36		3049 Warrington Road, Shaker Heights, Ohio.
BELLOWS, ELIZABETH ANN, '37		527 W. 33rd Street, Oklahoma City, Okla.
BENDITT, EARL PHILIP, '37	<i>Zoology,</i>	247 S. 63rd Street, Philadelphia, Pa.
BENKERT, ISABEL REST, '37	<i>Mathematics,</i>	658 Ferne Avenue, Drexel Hill, Pa.
BERNSTEIN, HERBERT IRVING, '36	<i>Chemistry,</i>	4529 N. 12th Street, Philadelphia, Pa.
BEST, MARION, '37		115 Brightwood Avenue, Westfield, N.J.
BIGELOW, RICHARD LYNN, '36	<i>Pol. Science,</i>	179 N. Laurel Street, Hazelton, Pa.
BIGGERSTAFF, ELIZABETH FUNSTON, '37		444 E. Tulpehocken Street, Philadelphia, Pa.
BILL, MARGARET ANNE, '38	<i>English,</i>	32 Occom Ridge, Hanover, N.H.
BITTLE, HARRIET ELIZABETH, '38		Sellersville, Pa.
BLACKBURN, BARBARA JEAN, '36	<i>English,</i>	Everett, Pa.
BLAI, ISIDOR, '38	<i>Chemistry,</i>	4th & High Avenues, Melrose Park, Pa.
BLAIR, ELIZABETH MARY, '35	<i>English,</i>	237 S. Oak Park Avenue, Oak Park, Ill.
BLATT, A. SYDNEY, '35	<i>Pol. Science,</i>	409 Chester Street, Lancaster, Pa.

- BLOCH, ALAN EDWARD, '37 *Physics,*
 BLUMENTHAL, FRANK HOWARD, '36 *Pol. Science,*
 BOARDMAN, MYRON LEWIS, '35 *English,*
 BOLLINGER, THOMAS WARREN, '38
 BOMBERGER, HARRY R., '35 *German,*
 BOND, VIRGINIA BEW, '38 *English,*
 BOOTH, MIRIAM RAVI, '38 *History,*
 BORBÁS, LÁSZLÓ, '35 *English,*
 BOWER, HELEN ELIZABETH, '36 *Economics,*
 BOYER, LENORE ELIZABETH, '36 *English,*
 BRADBURY, WILLIAM CHAPMAN, JR., '36 *Economics,*
 BRADEN, GEORGE DORSEY, '38
 BRANSON, ANNE F., '35 *Pol. Science,*
 BREARLEY, EMILY CAROLINE, '38
 BREDIN, JEAN ELIZABETH, '36 *English,*
 BRECKENRIDGE, JOHN HOLT, '38 *Chemistry,*
 BRIGHT, LIONEL DUFFELLE, '35 *Economics,*
 BROOKE, ELIZABETH ANNE, '37 *History,*
 BROOKS, BARBARA BICKFORD, '37 *English,*
 BROOKS, MARGARET BOLLES, '37 *History,*
 BROOMALL, THOMAS HAMILTON, '37 *Pol. Science,*
 BROOMELL, GEORGE LUPTON, JR., '37 *Engineering,*
 BROSIUS, ELIZABETH STEWART, '38 *French,*
 BROUGHER, JANET VIRGINIA, '38
 BROWN, BETTY, '38 *History,*
 BROWN, DAVID, '38 *Chemistry,*
 BROWN, JOHN HUNN, '38
 BRUNHOUSE, RICHARD STEWART, '38 *Engineering,*
 BUCKINGHAM, JAMES ELLIS, '37
 BUDDINGTON, AUGUSTUS FRANK, '38
 BURHOP, FRANCES, '35 *German,*
 BURRITT, HAZEL HORTON, '37 *Economics,*
 BURT, C. OLIVER, '37 *Engineering,*
 BUTLER, CAROLINE, '35 *Economics,*
 BUTLER, THOMAS RICHARD, '35 *Pol. Science,*
 CADWALLADER, THOMAS SIDNEY, '36 *History,*
 CALDWELL, CHARLES ADAMS, '38 *Engineering,*
 CALDWELL, WESLEY HURST, JR., '38 *History,*
 CAMPBELL, WILLIAM CURTISS, '37 *Economics,*
 CANTINE, HOLLEY RUDD, JR., '38 *Zoology,*
 CARLSON, JOHN ROBERT, '38 *Chemistry,*
 CARRIGAN, ALICE EUGENIA, '38
 CARROLL, WILLIAM ROBERT, '38
 CARSWELL, JEAN ALISON, '37
 CARTWRIGHT, P. DORWIN, '37 *Philosophy,*
 CASSEL, SAMUEL HAAG, JR., '35 *Economics,*
 Springhill Farm, Hillsdale, N.Y.
 1-5th Avenue, New York, N.Y.
 15 State Road, Media, Pa.
 2914 Frankfort Ave., Louisville, Ky.
 Rothsville, Pa.
 103 S. Avolyn Avenue, Ventnor, N.J.
 1 Monument Avenue, Old Bennington, Vt.
 Magyaradi ut. 50, Budapest 11, Hungary.
 1216 Ashland Avenue, Wilmette, Ill.
 267 W. Court Street, Doylestown, Pa.
 21 Lookout Road, Mountain Lakes, N.J.
 225 Hillcrest Road, Louisville, Ky.
 225 S. 17th Street, Philadelphia, Pa.
 57 Princeton Ave., Princeton, N.J.
 New Hope, Pa.
 137-7th Avenue N., Twin Falls, Idaho.
 206 DuPont Street, Ridley Park, Pa.
 210 Essex Avenue, Narberth, Pa.
 45 Orchard Road, Akron, Ohio.
 14 Dewey Avenue, New Rochelle, N.Y.
 100 Moylan Avenue, Moylan, Pa.
 429 W. Stafford Street, Philadelphia, Pa.
 61 Baldwin Road, Pittsburgh, Pa.
 504 W. South Street, Carlisle, Pa.
 Providence Cottage, Media, Pa.
 40-5th Avenue, New York, N.Y.
 Wyoming, Del.
 11 Mill Road, Brookline, Pa.
 252 E. Philadelphia Street, York, Pa.
 6054 N. Bay Ridge Avenue, Milwaukee, Wis.
 395 Riverside Drive, New York, N.Y.
 16 Prospect Drive, Yonkers, N.Y.
 402 E. 20th Street, Chester, Pa.
 424 N. High Street, West Chester, Pa.
 Goshen Road, Newton Square, Pa.
 Fairfield Terrace, Yardley, Pa.
 909 Westdale Avenue, Swarthmore, Pa.
 7412 Crittenden Street, Philadelphia, Pa.
 236 Haverford Avenue, Swarthmore, Pa.
 Woodstock, N.Y.
 1809 Avenue N., Brooklyn, N.Y.
 808 W. Broad Street, Quakertown, Pa.
 701 Delaware Avenue, Urbana, Ill.
 107 Bryn Mawr Avenue, Lansdowne, Pa.
 3104 Rose Terrace, Chattanooga, Tenn.
 628 Derstine Avenue, Lansdale, Pa.

- CHALMERS, KEITH WALDON, '37 *English*, 2536 Third Avenue N., St. Petersburg, Fla.
 CHAMBERS, ALFRED H., JR., '36 *Zoology*, 130 W. Spring Street, Reading, Pa.
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 CHILD, JOHN SOWDEN, '37 3126 Midvale Avenue, Philadelphia, Pa.
 CLARK, ARNOLD FRANKLIN, '37 *Physics*, 2136 VanHise Avenue, Madison, Wis.
 CLARKE, JAMES HULME, '37 *Economics*, 15 Meadow Avenue, Bronxville, N.Y.
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 COFFIN, ELIZABETH GLEN, '36 *English*, 820 C Street, Sparrows Pt., Md.
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 COLE, JANE FRANCES, '35 *Pol. Science*, 64 Hollywood Avenue, Crestwood, N.Y.
 COLKET, CARL COFFIN, '38 *Engineering*, 44 Monroe Place, Brooklyn, N.Y.
 CONOVER, JOHN HOAGLAND, '38 *Physics*, 179 Fern Avenue, Collingswood, N.J.
 COOK, CATHERINE, '38 *English*, 8231 Woodbine Avenue, Cincinnati, Ohio.
 COOPER, ANNE, '38 *Engineering*, Langley Field, Va.
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 COOPER, NANCY JANE, '38 4871 Jefferson Street, Bellaire, Ohio.
 COOPER, W. ROGER, '35 *English*, 824 Stirling Street, Coatesville, Pa.
 COPPOCK, ETHEL REBECCA, '35 *English*, Moylan, Pa.
 CORLISS, MYRTLE ELIZABETH, '37 *Psychology*, 9 Post Crossing, Southampton, N.Y.
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 COWDEN, ROSEMARY, '35 *English*, 58 Spirea Drive, Dayton, Ohio.
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 CROLL, SARAH REBECCA, '35 *English*, 264 Mather Road, Jenkintown, Pa.
 CROWL, PHILIP AXTELL, '36 *History*, 802 Far Hills Avenue, Dayton, Ohio.
 CUPITT, MARGARET ELEANOR, '37 *English*, 205 Sylvania Place, Westfield, N.J.
 CURRIER, CHARLOTTE FRANCES, '38 31 Pratt Street, Reading, Mass.
 CUTTINO, GEORGE P., '35 *Pol. Science*, 38 Jackson Street, Newnan, Ga.
- DAILEY, WILLIAM NOBLE, '37 *Economics*, 141 Connett Place, S. Orange, N.J.
 DANA, HARRIET MERRILL, '38 2031 Hill Street, Ann Arbor, Mich.
- DAVENPORT, MARGARET VIRGINIA, '38 131 DuBois Avenue, DuBois, Pa.
 DAVIS, DAVID E., '35 *Zoology*, 721 Elmwood Avenue, Wilmette, Ill.
 DAVIS, EURETTA, '36 *French*, 5614 Northumberland Street, Pittsburgh, Pa.
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 DAVIS, MARIAN YOUNG, '35 *Economics*, 1251 E. Lincoln Highway, Coatesville, Pa.
 DAVIS, JANE VIRTUE, '38 *English*, 3830 Waldo Avenue, Riverdale, New York, N.Y.
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 DEARDOFF, SARAH JANE, '38 743 S. George Street, York, Pa.

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 DENNIS, BETTY FOREE, '37
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 DIEBOLD, WILLIAM, JR., '37
 DITHRIDGE, JEAN BAILEY, '37
 DIXON, ROBERT B., '35
 DOBBINS, MARY ELLEN, '35
 DOBSON, ELIZABETH LOUISE, '37
 DODD, SARAH M., '36
 DODGE, EMILY POMEROY, '36
 DOLE, JANE ELIZABETH, '37
 DORMON, DOROTHEA DOZIER, '38
 DUDLEY, GERRY JANE, '35
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 DUMM, MARY ELIZABETH, '38
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 ECKES, MURIEL CONSTANCE, '37
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 ECKMAN, GRACE AMALIE, '37
 EDWARDS, J. EARLE, '36
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 ELLIS, MARION, '37
 ELMORE, HARRIET CHESNUT, '36
 EMMEL, ELIZABETH WARE, '36
 ENGLE, JAMES G., '35
 EPLEY, ANNE HAMMOND, '38
 EPPINGER, DORIS ELEANOR, '38
 ERVIEN, RICHMOND, '36
 EVANS, JEAN ANNE, '38
 EVANS, MARY BLIEM, '36
 EVES, ELEANOR EDITH, '37
- FAIR, ESTHER, '36
 FALCONER, ROBERT MCLAIN, '36
 FARRADAY, CLAYTON L., JR., '36
 FAUST, OLVA FULLER, '37
 FEELY, MIRIAM RUTH, '38
 FERGUSON, ELEANOR HEWITT, '38
 FERNSLER, ALICE ELIZABETH, '38
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 FINLEY, JAMES A., JR., '36
 FISHER, JAMES CANFIELD, '35
 FORSYTHE, GEORGE ELMER, '37
 FOULDS, JULIET KNIGHT, '38
 FOULDS, WILLIAM LAMBERT, '36
- Zoology, English,*
English,
Pol. Science,
Pol. Science,
Economics, English,
Zoology, French,
English,
English,
Economics,
Pol. Science, German,
Pol. Science, Zoology, Physics, French, English, Psychology, Economics, French, English, Engineering, Botany, English, Zoology,
English, Engineering, Botany,
French,
Psychology, English, Engineering, Zoology, Zoology,
Engineering,
- 234 Summit Avenue, Mount Vernon, N.Y.
 2101 Dorothy Avenue, Louisville, Ky.
 28 Rockbridge Road, Mount Vernon, N.Y.
 1637 Glynn Court, Detroit, Mich.
 62 Columbia Terrace, Weehawken, N.J.
 20 DeForest Road, Lansdowne, Pa.
 Easton, Md.
 104 Garrison Avenue, Battle Creek, Mich.
 2893 Southington Road, Cleveland, Ohio.
 185-82 Street, Brooklyn, N.Y.
 115 N. Allen Street, Madison, Wis.
 308 W. Market Street, Clearfield, Pa.
 25 E. Essex Avenue, Lansdowne, Pa.
 895 Seventh Street, Charleston, Ill.
 15 Middle Road, Hamden, Conn.
 13 Sampson Avenue, Madison, N.J.
 Dogwood Road, Woodlawn, Md.
 36 West Broad Street, Tamaqua, Pa.
 31 Gifford Avenue, Jersey City, N.J.
 10 Greenway Terrace, Forest Hills, N.Y.
 10 Greenway Terrace, Forest Hills, N.Y.
 8990-215th Street, Queens Village, N.Y.
 111 S. 9th Avenue, Mount Vernon, N.Y.
 915-37th Avenue, Seattle, Wash.
 419 Valley Road, Llanerch, Pa.
 129 Montgomery Avenue, Cynwyd, Pa.
 55 Pondfield Parkway, Mount Vernon, N.Y.
 Clarksboro, N.J.
 2529 Atkinson Avenue, Detroit, Mich.
 225 Main Street, Tottenville, N.Y.
 1664 Harrison Street, Philadelphia, Pa.
 101 Lansdowne Court, Lansdowne, Pa.
 Franklin & Prospect Streets, Pottstown, Pa.
 318 E. Market Street, Danville, Pa.
 2015 Mt. Vernon Avenue, Toledo, Ohio.
 2737 Endicott Road, Cleveland, Ohio.
 4811 Regent Street, Philadelphia, Pa.
 817 Madison Avenue, Albany, N.Y.
 734 Crescent Parkway, Westfield, N.J.
 9 Deering Street, Portland, Maine.
 1009 Ohio Avenue, Midland, Pa.
 416 West Avenue, Jenkintown, Pa.
 424 N. Monroe Street, Media, Pa.
 Arlington, Vt.
 1819 Hill Street, Ann Arbor, Mich.
 225 Virginia Avenue, Phoenixville, Pa.
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 FUCES, JANE, '36
 FUNKHOUSER, ELISABETH MARY
 JANETTE, '38
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 GARDNER, JAMES RICHARD, '37
 GARRETT, WILLIAM NICHOLSON, '37
 GARRISON, WALTER SHERMAN, '36
 GATES, ONNALIE LOUISE, '36
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 GILL, LYLE BENNETT, '37
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 GLENN, DOROTHY BOWMAN, '35
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 HARLOW, HERBERT BEAUCHAMP,
 '35
 HARPER, JAMES ALAN, '37
 HARRIS, EDSON S., JR., '35
 HARRISON, E. ARMASON, '35
- English,
 Zoology,
 English,
 Zoology,
 English,
 Engineering,
 French,
 Pol. Science,
 Pol. Science,
 Zoology,
 English,
 English,
 Zoology,
 Chemistry,
 Zoology,
 Economics,
 History,
 English,
 Mathematics,
 Economics,
 English,
 French,
 Zoology,
 English,
 Psychology,
 Chemistry,
 Psychology,
 History,
 French,
 English,
 Engineering,
 Engineering,
 Engineering,
 English,
- Eldora, Iowa.
 7102 Hilltop Road, Upper Darby, Pa.
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 33 Perdicularis Place, Trenton, N.J.
 21 Columbus Avenue, New Rochelle, N.Y.
 600 S. Church Street, Monroe, N.C.
 7933 Park Avenue, Elkins Park, Pa.
 Cedarville, N.J.
 Borie Street, Coudersport, Pa.
 994 Eastern Avenue, Schenectady, N.Y.
 167 Rutland Road, Brooklyn, N.Y.
 635 N. I Street, Fremont, Neb.
 11 Chatamika Road, Worcester, Mass.
 110 Chestnut Street, Berwick, Pa.
 110 Chestnut Street, Berwick, Pa.
 Los Gatos, Calif.
 1706 E. 56th Street, Chicago, Ill.
 1125 Westover Avenue, Norfolk, Va.
 635 Riverside Dr., New York, N.Y.
 519 Colonial Avenue, York, Pa.
 6501 N. 8th Street, Philadelphia, Pa.
 370 Normal Parkway, Chicago, Ill.
 95 Lenox Road, Brooklyn, N.Y.
 3923 S. Calhoun Street, Ft. Wayne, Ind.
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 5750 Virginian Road, Philadelphia, Pa.
 24 N. Washington St., Fort Washington,
 N.Y.
 93 Glenwood Avenue, Leonia, N.J.
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 225 Curry Place, Youngstown, Ohio.
 7945 Montgomery Avenue, Elkins Park,
 Pa.
 Fort Dodge, Iowa.
 Ravinia, Ill.
 Sandy Spring, Md.
 Punkasteest Road, Tiverton, R.I.
 115 Rock Creek Church Road, Washing-
 ton, D.C.
 2801 Pacific Avenue, Atlantic City, N.J.
 411 Bedford Avenue, Mount Vernon, N.Y.
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 Media, Pa.
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- HEILIG, DAVID, '35 *English*, 19 Downing Avenue, Downingtown, Pa.
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 JEFFRIES, BETTY, '35
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 JOHNSON, WINIFRED ETHEL, '36
 JONES, W. ALDEN, '35
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 KINGSBURY, JEAN, '35
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 KIRN, JOHN JUSTUS, '37
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 LAIRD, MARY L., '36
 LAMBRIGHT, FRANCES ELIZABETH, '37
 LANDIS, ELFRIDA GERTRUDE, '36
- Chemistry,*
English,
- Economics,*
English,
English,
- History,*
English,
English,
Physics,
English,
English,
- Chemistry,*
Engineering,
English,
- Economics,*
History,
French,
French,
- Chemistry,*
English,
Economics,
- Zoology,*
History,
English,
English,
- Zoology,*
Psychology,
Zoology,
Chemistry,
English,
Engineering,
- History,*
Psychology,
- Pol. Science,*
English,
- 140-10 Franklin Avenue, Flushing, N.Y.
 1245 Madison Avenue, New York, N.Y.
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 479 Baldwin Road, South Orange, N.J.
 Penns Grove, N.J.
 2861 Broxton Road, Cleveland, Ohio.
 517 Pelhamdale Avenue, Pelham Manor, N.Y.
 90 Raymond Street, Cambridge, Mass.
 840 DeGraw Avenue, Newark, N.J.
 Redstone Lane, Washington, Pa.
 7 Abernethy Drive, Trenton, N.J.
 608 N. Chester Road, Swarthmore, Pa.
 720 W. North Avenue, Baltimore, Md.
 30 E. Wheelock Street, Hanover, N.H.
- 1562 38th Street, Brooklyn, N.Y.
 1150 Fifth Ave., New York, N.Y.
 333 Mosholu Parkway, New York, N.Y.
 333 Mosholu Parkway, New York, N.Y.
 8212 Cedar Road, Elkins Park, Pa.
 1211 W. California Street, Urbana, Ill.
 91 Durand Road, Maplewood, N.J.
 634 Childs Avenue, Drexel Hill, Pa.
 3 Fairfield Place, Yonkers, N.Y.
- 916 Bloomfield Avenue, Akron, Ohio.
 912 Childs Avenue, Drexel Hill, Pa.
 320 E. Main Street, Lancaster, Ohio.
 149 Greenridge Avenue, White Plains, N.Y.
 "Lapidea Manor," Chester, Pa.
 158 W. Hortter Street, Germantown, Pa.
 15 S. LaClede Place, Atlantic City, N.J.
 716 Clinton Place, Evanston, Ill.
 308 Marvin Rd., Elkins Park, Pa.
 410 Collings Avenue, Collingswood, N.J.
 1516 N. 15th Street, Philadelphia, Pa.
 75 Woodbridge Avenue, Metuchen, N.J.
 281 St. Ann's Avenue, Kew Gardens, N.Y.
 Media, Pa.
 405 N.E. 39th Street, Miami, Fla.
- Box 297, Narberth, Pa.
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- 21925 Parnell Road, Shaker Heights, Ohio.
 111 Bala Avenue, Bala-Cynwyd, Pa.

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 McKEON, ELLEN SIDNEY, '37
 MacGREGOR, JEAN ELIZABETH, '37
 MACY, EDWARD ARTHUR, '37
 MADDEN, BETTY JEAN, '38
 MALCOLM, JAMES ARTHUR, '38
 MALONE, HELEN BOURKE, '36
 MANN, NANCY MACDONALD, '37
 MARIS, MARY H., '36
 MARSH, MICHAEL, '38
- Philosophy,*
History,
- Philosophy,*
Physics,
- Engineering,*
English,
- English,*
- Economics,*
- Pol. Science,*
Pol. Science,
Zoology,
Pol. Science,
Mathematics,
- Zoology,*
Zoology,
Economics,
- Psychology,*
- Economics,*
Mathematics,
English,
Economics,
Zoology,
- Economics,*
English,
- English,*
Pol. Science,
English,
Engineering,
Economics,
French,
French,
Economics,
- Croton-on-Hudson, N.Y.
 32 Washington Square, New York, N.Y.
 443 E. 87th Street, New York, N.Y.
 240 W. 102nd Street, New York, N.Y.
 Port Washington, N.Y.
 12 Pierpont Street, Brooklyn, N.Y.
 3430 Mt. Pleasant Street, Washington, D.C.
- 920 S. 48th Street, Philadelphia, Pa.
 1198 Ocean Avenue, Brooklyn, N.Y.
 247 Breeding Avenue, Ben Avon, Pittsburgh, Pa.
 1011 Fillmore Street, Philadelphia, Pa.
 304 Wendover Road, Guilford, Baltimore, Md.
 921 Madison Avenue, New York, N.Y.
 Roslyn, L.I., N.Y.
 25 S. 4th Street, Emaus, Pa.
 High Bridge, N.J.
 718 Penn Street, Camden, N.J.
 945 Ridgmont Avenue, Charleston, W.Va.
 5017 Ellis Avenue, Chicago, Ill.
 133 E. 80th Street, New York, N.Y.
- Cedar Road, Elkins Park, Pa.
 25 N. 2nd Street, Easton, Pa.
 Lewes, Del.
 2730 Main Street, Buffalo, N.Y.
 146 Brookline Boulevard, Upper Darby, Pa.
- 302 Prospect Avenue, Cranford, N.J.
 37 W. Preston Street, Baltimore, Md.
 Walnut Avenue, Wayne, Pa.
 2104 N. 6th Street, Sheboygan, Wis.
 4209 Tyson Street, Philadelphia, Pa.
- 223 Woodlawn, Topeka, Kan.
 1400 Lovering Avenue, Wilmington, Del.
 666 Ferne Avenue, Drexel Hill, Pa.
 116 Drake Avenue, New Rochelle, N.Y.
 1 Lynwood Avenue, Wheeling, W.Va.
 12 Clarke Street, Brooklyn, N.Y.
 248 Windemere Avenue, Lansdowne, Pa.
 Jericho, L.I., N.Y.
 Beaver Dam, Wis.
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 39 Owen Avenue, Lansdowne, Pa.
 1626 Riggs Place N.W., Washington, D.C.

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 MARVIN, BETSY, '38
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 MATZ, ELIZABETH, '38
 MAUGER, MARGARET HELEN, '36
 MAXWELL, ROBERT EDWIN, special
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Virgin Islands	1
Washington	1
TOTAL	613

HOLDERS OF THE JOSHUA LIPPINCOTT FELLOWSHIP

1893-94.

THOMAS ATKINSON JENKINS, A.B., 1887; Ph.B., University of Pennsylvania, 1888; Ph.D., Johns Hopkins University, 1894; Litt.D., Swarthmore College, 1922; Professor of the History of the French Language, University of Chicago. Retired.

BENJAMIN FRANKLIN BATTIN, A.B., 1892; studied in Berlin; Ph.D., Jena, 1900. Deceased.

1894-95.

DAVID BARKER RUSHMORE, B.S., 1894; M.E., Cornell University, 1895; C.E., Swarthmore, 1897; Sc.D., 1923. Member of Board of Managers, Swarthmore College. Consulting Engineer.

1895-96.

HOWARD WHITE, JR., B.S., 1895; M.S., University of Michigan, 1896; C.E., Swarthmore, 1900. Deceased.

1896-97; 1897-98.

JOHN W. GREGG, B.L., 1894; A.M., Cornell University, 1898; LL.B., George Washington University, 1905. Lawyer.

1898-99.

ELLWOOD COMLY PARRY, B.L., 1897; studied in Berlin; M.L., Swarthmore, 1900; Ph.D., University of Pennsylvania, 1903. Professor of German and French, Central High School, Philadelphia.

1899-1900; 1900-01.

JOHN EDWIN WELLS, B.L., 1896; M.L., 1899; A.M., Columbia, 1900; Ph.D., Yale University, 1915. Head of the Department of English, Connecticut College for Women.

1901-02.

MARY GRAY LEIPER, B.L., 1899; studied in Berlin.

1902-03.

BIRD THOMAS BALDWIN, B.S., 1900; A.M., Harvard University, 1903; Ph.D., *Ibid.*, 1905. Deceased.

1903-04.

ALBERT COOK MYERS, B.L., 1898; M.L., 1901; studied at the Universities of Wisconsin and Harvard. Historical Writer.

1904-05.

MARION VIRGINIA (PEIRCE) FRANK, A.B., Swarthmore, 1903; A.M., University of Chicago, 1904; studied in Ecole des Hautes Etudes, Sorbonne, and Collège de France in Paris, and in the Libraries of Madrid.

1905-06.

LEWIS FUSSELL, B.S., 1902; M.S., 1903; E.E. and Ph.D., University of Wisconsin, 1907. Professor of Electrical Engineering, Swarthmore College.

1906-07.

LOUIS NEWTON ROBINSON, A.B., 1905; Ph.D., Cornell University, 1911; studied at the Universities of Halle and Berlin, 1906-07; Fellow in Cornell University, 1907-08. Director, with Russell Sage Foundation, 1922-25. Lecturer in Economics, Swarthmore College.

1907-08.

SAMUEL COPELAND PALMER, A.B., 1895; A.M., 1907; A.M., Harvard University, 1909; Ph.D., *Ibid.*, 1912. Studied abroad 1927-28. Professor of Botany, Swarthmore College.

1908-09.

MARY ELIZA (NORTH) CHENOWETH, A.B., 1907; A.M., 1910; studied at Oxford University.

1909-10.

MARY TALBOT (JANNEY) COXE, A.B., 1906; studied at the University of Berlin.

1910-11.

SAMUEL COPELAND PALMER, A.B., 1895; A.M., 1907; A.M., Harvard University, 1909; Ph.D., *Ibid.*, 1912. Studied abroad 1927-28. Professor of Botany, Swarthmore College.

1911-12.

JOHN HIMES PITMAN, A.B., 1910; A.M., 1911; studied at the University of California. Associate Professor of Mathematics and Astronomy, Swarthmore College.

1912-13.

IOLA KAY EASTBURN, B.L., 1897; A.M., University of Pennsylvania, 1907; Ph.D., *Ibid.*, 1913; Professor of German, Brenau College, Gainesville, Ga., 1925-33.

1913-14.

EDWIN ANGELL COTTRELL, A.B., 1907; A.M., Harvard University, 1913. Professor of Political Science, Leland Stanford Junior University.

1914-15.

FREDERICK MYERLE SIMONS, JR., A.B., 1909; A.M., 1912; studied at the University of Chicago. Deceased.

1915-16.

FRANK H. GRIFFIN, B.S., 1910; A.M., Columbia University, 1916. Technical Manager, The Viscose Company, Marcus Hook, Pa.

1916-17.

RAYMOND T. BYE, A.B., 1914; A.M., Harvard University, 1915; Ph.D. University of Pennsylvania, 1918. Professor of Economics, University of Pennsylvania.

1917-18.

CHARLES J. DARLINGTON, A.B., 1915; A.M., 1916. Chemist with E. I. du Pont de Nemours & Company.

1918-19.

JOHN E. ORCHARD, A.B., 1916; A.M., Harvard University, 1920; Ph.D., *Ibid.*, 1923. Associate Professor, Economic Geography, School of Business, Columbia University.

1919-20.

PAUL FLEMING GEMMILL, A.B., 1917; Ph.D., University of Pennsylvania, 1925. Professor of Economics, University of Pennsylvania.

1920-21.

JOSEPH EVANS SANDS, A.B., 1917; M.D., University of Pennsylvania, 1921. Physician.

1921-22.

DETLEV WULF BRONK, A.B., 1920; M.S., University of Michigan, 1922; Ph.D., *Ibid.*, 1925. Johnson Professor of Biophysics and Director of the Johnson Foundation for Medical Physics, University of Pennsylvania, School of Medicine.

1922-23.

DAVID MATHIAS DENNISON, A.B., 1921; A.M., University of Michigan, 1922; Ph.D., *Ibid.*, 1924. International Education Board Fellow, Copenhagen, Denmark, 1924-27. Assistant Professor of Physics, University of Michigan.

1923-24.

WILLIAM MORSE BLAISDELL, A.B., 1921; A.M., University of Pennsylvania, 1926; Ph.D., University of Pennsylvania, 1932. Studied in Paris. Instructor in Economics, Swarthmore College, 1928-29. Research Fellow of the Institute of Economics of the Brookings Institution, Washington, D.C., 1929-31. Assistant Professor of Business Administration, Temple University.

1924-25.

KATHARINE DENWORTH, A.B., 1914; M.A., Columbia University, 1921; Ph.D., *Ibid.*, 1927. President, Bradford Junior College, Bradford, Mass.

1925-26.

GEORGE PASSMORE HAYES, A.B., 1918; A.M., Harvard University, 1920; Ph.D., *Ibid.*, 1927. Head of Department of English, Agnes Scott College, Decatur, Ga.

1926-27.

MARVIN YARD BURR, A.B., 1925; A.M., Columbia University, 1927; Ph.D., *Ibid.*, 1930. Deceased.

1927-28.

DOROTHY FLORENCE (TROY) YOUNG, A.B., 1926; M.A., Columbia University, 1928. Instructor in English, Swarthmore College, 1928-29.

1928-29.

DOROTHEA A. (KERN) DEVEREUX, A.B., 1927; A.M., 1928. Studied at the University of Chicago.

1929-30.

ELIZABETH (HORMANN) STRODACH, A.B., 1927; M.A., University of Pennsylvania, February 1930.

1930-31.

THOMAS M. BROWN, A.B., 1929; M.D., Johns Hopkins Medical School, 1933. Physician.

WINONA (VON AMMON) MACCALMONT, A.B., 1929; M.S., University of Pennsylvania, 1930. Instructor in Physiology and Pharmacology, Woman's Medical College of Pennsylvania.

1931-32.

MARGARET GURNEY, A.B., 1930; M.A., Brown University, 1931; Ph.D., *Ibid.*, 1934.

1932-33.

JAMES A. MICHENER, A.B., 1929; studied at the University of Aberdeen, 1931-33. Teaching at George School.

1933-34.

HELEN STAFFORD, A.B., 1930; A.M., Bryn Mawr College, 1931. Holder of Bryn Mawr European Fellowship, 1932-33; Teacher at the Ethel Walker School, Simsbury, Connecticut.

1934-35.

RUTH (COOK) STILSON, A.B., 1933; M.A., Radcliffe College, 1934; studying at Radcliffe College.

WILLIAM EATON, A.B., 1932. (Special Fellowship awarded only for 1934-35) studying at Yale University.

HOLDERS OF THE LUCRETIA MOTT FELLOWSHIP

1895-96.

HELEN BRIGHT (SMITH) BRINTON, A.B., 1895; studied at Oxford University; A.M., Swarthmore, 1899.

1896-97.

MARY STONE McDOWELL, A.B., 1896; studied at Oxford University; A.M., Columbia University, 1903.

1897-98.

SARAH (BANCROFT) CLARK, B.S., 1897; studied at Newnham College, Cambridge.

1898-99.

EDNA HARRIET RICHARDS, B.L., 1898; studied in Berlin; A.M., Columbia University, 1904. Fellow and Instructor, University of Wisconsin, 1921-22. Teacher of German in High School.

1899-1900

MARY ELIZABETH SEAMAN, A.B., 1899; studied at Newnham College, Cambridge; A.M., Adelphi College, 1905. Deceased.

1900-01

ANNA GILLINGHAM, A.B., 1900; A.B., Radcliffe College, 1901; A.M., Columbia University, 1910. Teacher in Ethical Culture School, New York, N. Y.

1901-02.

LILLIAN WINIFRED (ROGERS) ILLMER, A.B., 1901; studied in Berlin.

- 1902-03.
MARGARET HOOD (TAYLOR) (SIMMONS) TAYLOR, B.L., 1902; studied at Berlin University.
- 1903-04.
ANNIE ROSS, A.B., 1903; Ph.M., University of Chicago, 1904. Chairman of Modern Language Department, High School, Flushing, L. I., N. Y.
- 1904-05.
CHARLOTTE RITZEMA BOGART, A.B., 1904; A.M., Columbia University, 1905.
- 1905-06.
ELIZABETH HALL, A.B., 1905; A.M., Columbia University, 1906. Teacher of English, Media High School.
- 1906-07.
BERTHA CAROLINE PEIRCE, A.B., 1906; A.M., Cornell University, 1907; Head of Department of Latin and Greek, Beaver College, Jenkintown, Pa.
- 1907-08.
JEANNETTE (CURTIS) CONS, A.B., 1907; A.M., 1909; studied at the University of Berlin.
- 1908-09.
ELIZABETH SIKES (JAMES) NORTON, A.B., 1908; studied at the University of Berlin; A.M., University of Pennsylvania, 1912; Ph.D., *Ibid.*, 1914.
- 1909-10.
HELEN HARRIET PORTERFIELD, A.B., 1909; studied at the University of Chicago.
- 1910-11.
JEAN HAMILTON (WALKER) CREIGHTON, A.B., 1910; studied at the University of Chicago.
- 1911-12.
ANNA HEYDT, A.B., 1911; A.M., Radcliffe College, 1912. Teacher of Latin and French, State Teachers' College, Kutztown, Pa.
- 1912-13.
CAROLINE HALLOWELL (SMEDLEY) COLBURN, A.B., 1912; A.M., 1918; studied at the University of California.
- 1913-14.
ESTHER MIDLER, A.B., 1913; A.M., Columbia University, 1929; studied at the University of Berlin. Social Worker.
- 1914-15.
MARIE SAFFORD (BENDER) DARLINGTON, A.B., 1914; A.M., University of Chicago, 1916. Deceased.
- 1915-16.
REBA MAHAN (CAMP) HODGE, A.B., 1915; A.M., Radcliffe College, 1916.
- 1916-17.
ANNA M. MICHENER, A.B., 1916; A.M., Columbia University, 1917; Ph.D., *Ibid.*, 1921; Economic Research.

1917-18.

HILDA A. (LANG) DENWORTH, A.B., 1917; studied at the University of Wisconsin; A.M., University of Pennsylvania, 1921.

1918-19.

EDITH W. (MENDENHALL) HAYES, A.B., 1918; A.M., Columbia University, 1919.

1919-20.

GLADYS AMANDA REICHARD, A.B., 1919; A.M., Columbia University, 1920; Ph.D., Columbia University, 1925; Research Fellow in Anthropology, University of California, 1922-23; Holder of John Simon Guggenheim Fellowship for 1926-27; studied in Hamburg. Assistant Professor Anthropology, Barnard College, Columbia University.

1920-21.

HENRIETTA ALBERT SMITH, A.B., 1920. (Resigned)

1921-22.

ALINE MATHIESON (WOODROW) ROBERTSON, A.B., 1921; studied at the University of Glasgow.

1922-23.

HENRIETTA IDA (KELLER) HOWELL, A.B., 1922; A.M., Radcliffe College, 1923.

1923-24.

GERTRUDE MALZ, A.B., 1923; A.M., University of Wisconsin, 1924; Ph.D., *Ibid.*, 1928, studied at American School of Classical Studies, Athens, 1929-30. Instructor in Greek and Latin, Sweet Briar College, Sweet Briar, Va.

1924-25.

GERTRUDE PAULA (KNAPP) RAWSON, A.B., 1924; studied at Somerville College, Oxford.

1925-26.

MARGARET (PITKIN) BAINBRIDGE, A.B., 1925; Ph.D., University of Chicago, 1928. Assistant Professor of Romance Languages, Swarthmore College, 1928-33.

1926-27.

ALICE CAROLYN (PAXTON) BRAINERD, A.B., 1926; A.M., Radcliffe College, 1928.

1927-28.

CECILE (BROCHEREUX) JARVIS, A.B., 1927; M.A., University of Pennsylvania, 1928. Teaching French, Haverford School.

1928-29.

GERTRUDE (SANDERS) FRIEDMAN, A.B., 1928; studied at the University of Pennsylvania.

1929-30.

MARGARET (WORTH) CROWTHER, A.B., 1929; Law Student, Yale University, 1929-30.

1930-31.

ELEANOR FLEXNER, A.B., 1930; studied at Somerville College, Oxford.

1931-32.

BEATRICE F. BEACH, A.B., 1931; M.A., Yale Dramatic School, 1934. Director of Dramatics, Swarthmore College.

1932-33.

FRANCES REINHOLD, A.B., 1932; (Resigned). Assistant in Political Science, Swarthmore College.

*EDNA N. PUSEY, A.B., 1932; M.A., University of Pennsylvania, 1933. Teacher of French and History, Avondale, Pa.

*ELEANOR Y. PUSEY, A.B., 1932; M.A., University of Pennsylvania, 1933. Teacher of French, Haddonfield, N.J.

1933-34.

RUTH ERNESTINE (COOK) STILSON, A.B., 1933; M.A., Radcliffe College, 1934; studying at Radcliffe College.

1934-35.

VIRGINIA HALL SUTTON, A.B., 1934; studying at the University of Chicago.

HOLDERS OF THE JOHN LOCKWOOD MEMORIAL FELLOWSHIP

1910-11.

EDWIN CARLETON MACDOWELL, A.B., 1909; M.S., Harvard University, 1911; Sc.D., *Ibid.*, 1912. Investigator, Cold Spring Harbor.

1911-12.

HENRY FERRIS PRICE, A.B., 1906; University of Pennsylvania, 1913; Ph.D., *Ibid.*, 1915. Professor of Mathematics and Registrar, Pacific University, Forest Grove, Oregon.

1912-13.

WALTER FRANK RITTMAN, A.B., 1908; A.M., 1909; M.E., 1911; Ch.E., 1917; Ph.D., Columbia University, 1914. Consulting Chemical Engineer, U. S. Department of Agriculture. Professor of Engineering, Carnegie Institute of Technology.

1913-14.

HELEN PRICE, A.B., 1907; Ph.D., University of Pennsylvania, 1915. Head of Latin and Greek Department, Meredith Collège, Raleigh, N. C.

1914-15.

HELEN HEED, A.B., 1905; A.M., Radcliffe College, 1915. Studied at Oxford, University, 1925-26. Head of Department of English, High School, Pleasantville, N.Y.

1915-16.

FRANCES DARLINGTON, A.B., 1926; A.M., University of Pennsylvania, 1916. Teacher.

* Joint Alternates.

1916-17.

RACHEL KNIGHT, B.L., 1898; A.M., 1909; Ph.D., University of Iowa, 1919.
Deceased.

1918-19.

RALPH LINTON, A.B., 1915; A.M., University of Pennsylvania, 1916; Ph.D.,
Harvard University, 1925. Professor of Anthropology, University of Wis-
consin.

1917-18.

WALTER HARRISON MOHR, A.B., 1914; A.M., University of Pennsylvania,
1921; Ph.D., *Ibid.*, February, 1931. Teacher, George School.

1919-20.

ESTHER E. BALDWIN, A.B., 1909; A.M., Columbia University, 1913. Teacher
of French and English, South Philadelphia High School.

1920-21.

GEORGE PASSMORE HAYES, A.B., 1918; A.M., Harvard University, 1920; Ph.D.,
Ibid., 1927. Acting Professor of English, Robert College, Constantinople,
1921-25. Professor of English, Agnes Scott College, Decatur, Ga. Head
of Department.

1921-22.

FRANK WHITSON FETTER, A.B., 1920; A.M., Princeton University, 1922; A.M.,
Harvard University, 1924; Ph.D., Princeton University, 1926. Assistant
Professor of Economics, Princeton University, 1927-1934; Associate Pro-
fessor of Economics, Haverford College.

1922-23.

MARGARET (POWELL) AITKEN, A.B., 1919; A.M., 1921.

1923-24.

WALTER HALSEY ABELL, A.B., 1920; A.M., 1924; Professor of Art, Acadia
University, Wolfville, Nova Scotia, Canada.

1924-25.

EDGAR Z. PALMER, A.B., 1919; Ph.D., University of Wisconsin, 1928. Associate
Professor in Economics, College of Commerce, University of Kentucky.

1925-26.

EMMA T. R. (WILLIAMS) VYSSOTSKY, A.B., 1916; Ph.D., Radcliffe College,
1929. Studied at University of Chicago, 1925-26. Studied at Harvard
University Observatory, 1927-29. Research Fellow, Leander-McCormick
Observatory.

1926-27.

MARGARET LYLE (WALTON) MAYALL, A.B., 1925; M.A., Radcliffe College,
1928. Research Assistant at Harvard Observatory.

1927-28.

ALICE P. GARWOOD, A.B., 1913. "Certificate of Play Production," Department
of Drama, School of Fine Arts, Yale University. Director, Little Theatre,
Galveston, Texas.

1928-29.

JAMES ROLAND PENNOCK, A.B., 1927; A.M., Harvard University, 1928; Ph.D., Harvard University, 1932. Assistant Professor in Political Science, Swarthmore College.

1929-30.

WALTER B. KEIGHTON, JR., A.B., 1923; Ph.D., Princeton University, 1933. Instructor, Department of Chemistry, Swarthmore College.

1930-31.

C. LAWRENCE HAINES, B.S., 1928. Studied at Johns Hopkins University, 1930-1933; Research Volunteer, Bartol Foundation, Swarthmore.

1931-32.

KATHERINE SMEDLEY, A.B., 1930; M.A., University of North Carolina, 1932.

1932-33.

RICHARD ABELL, A.B., 1926; M.A., University of Pennsylvania, 1930; Ph.D., *ibid.*, 1934. Instructor in Anatomy, School of Medicine, University of Pennsylvania.

1933-34.

THOMAS SEAL CHAMBERS, A.B., 1931; A.M., Harvard University, 1933. Junior Prize Fellow, Harvard University, since 1933.
(Held by Alternate, LEWIS FUSSELL, JR., B.S., 1931; M.S. Massachusetts Institute of Technology, 1932; studying at Massachusetts Institute of Technology.)

1934-35.

RICHARD E. PASSMORE, A.B., 1933; studying at Columbia University.

HOLDERS OF THE HANNAH A. LEEDOM FELLOWSHIP

1913-14.

ARTHUR PERCIVAL TANBERG, A.B., 1910; A.M., 1913; Ph.D., Columbia University, 1915. Chemist, E. I. du Pont de Nemours & Co.

1914-15.

ARCHER TAYLOR, A.B., 1909; A.M., University of Pennsylvania, 1910; Ph.D., Harvard University, 1915. Professor of German Literature, University of Chicago.

1915-16.

HAROLD S. ROBERTS, A.B., 1912; A.M., Princeton University, 1915; Student at the University of Wisconsin, 1915-17. Teacher of French and Spanish, St. Paul's School, Garden City, N. Y.

1916-17.

HANNAH B. (STEELE) PETTIT, A.B., 1909; A.M., 1912; Ph.D., University of Chicago, 1919. Astronomer.

1917-18.

JAMES MONAGHAN, JR., A.B., 1913; A.M., University of Pennsylvania, 1918.

1918-19.

CHARLOTTE (BREWSTER) JORDAN, B.L., 1882; M.L., 1886; studied in Madrid.
Translator and writer.

1919-20.

PAUL M. CUNNINGHAM, A.B., 1915; A.M., Princeton University, 1920; Ph.D.,
Ibid., 1925. Assistant Professor of Political Science, University of Michigan.

1920-21.

WILLIAM CHRISTIE MACLEOD, A.B., 1914; Ph.D., University of Pennsylvania,
1924. Instructor, Wharton School, University of Pennsylvania.

1921-22.

LEON M. PEARSON, A.B., 1920; A.M., Harvard University 1922. Teacher, Oral
English, Haverford School, Haverford, Pa.

1922-23.

W. RALPH GAWTHROP, A.B., 1918; M.S., University of Pennsylvania, 1924.
Patent Lawyer, du Pont Ammonia Co.

1923-24.

WILLARD S. ELSBREE, A.B., 1922; A.M., Columbia University, 1924; Ph.D.,
Ibid., 1928. Assistant Professor of Education, Teachers' College, Columbia
University. Studied abroad, 1930-31.

1924-25.

WALTER ABELL, A.B., 1920; A.M., 1924. Studied in France. Professor of Art,
Acadia University, Wolfville, Nova Scotia, Canada.

1926-27.

MARGARET (PITKIN) BAINBRIDGE, A.B., 1925; Ph.D., University of Chicago,
1928. Assistant Professor of Romance Languages, Swarthmore College,
1928-33.

1927-28.

AUDREY SHAW (BOND) ALEISTORE, A.B., 1926; M.A., University of Chicago,
1928. Assistant, Department of Romance Languages, Northwestern Uni-
versity.

1928-29.

SAMUEL ROBERT M. REYNOLDS, A.B., 1927; A.M., 1928; Ph.D., University of
Pennsylvania, 1931; Fellow, National Research Council, 1931-32, Car-
negie Institution, Baltimore, Md. Instructor in Physiology, Medical School,
Western Reserve University.

1929-30.

EDWARD SELLERS, A.B., 1928. Studied at Brown University, 1929-30. Actuarial
Clerk, Guardian Life Insurance Co.

1930-31.

ELIZABETH (HORMANN) STRODACH, A.B., 1927; M.A., University of Penn-
sylvania, February, 1930.

1931-32.

HELEN STAFFORD, A.B., 1930; A.M., Bryn Mawr, 1931; Holder of Bryn Mawr European Fellowship, 1932-33; Teacher at the Ethel Walker School, Simsbury, Connecticut.

1932-33.

ROGERS MCVAUGH, A.B., 1931. Studied at the University of Pennsylvania, 1931-33. Assistant Instructor, University of Pennsylvania.

HYMAN DIAMOND, A.B., 1931. (Special Fellowship awarded only for 1932-33.) Studying at Princeton University.

1933-34.

FRANK ELMER FISCHER, A.B., 1933. Studying at Princeton.

1934-35.

RAYMOND M. IMMERWAHR, A.B., 1934. Studying at Northwestern University. (Held by Alternate, Anna Janney DeArmond, A.B., 1932; A.M., Columbia University, 1934. Studying at Bryn Mawr College.)

HOLDERS OF THE MARTHA E. TYSON FELLOWSHIP

1914-15.

HELEN PRICE, A.B., 1907; Ph.D., University of Pennsylvania, 1915. Head of Latin and Greek Department, Meredith College, Raleigh, N. C.

1915-16.

ANNE SHOEMAKER (HAINES) MARTIN, A.B., 1912; A.M., University of Wisconsin, 1916.

1916-17.

KATHERINE PROCTER (GREEN) VINCENT, A.B., 1907; A.M., Columbia University, 1917. Teacher of Latin in Newtown High School, New York, N. Y.

1917-18.

CHARLOTTE (BREWSTER) JORDAN, B.L., 1882; M.L., 1886; studied in Madrid. Translator and writer.

1918-19.

EDNA ANNA TYSON, A.B., 1909; A.M., Columbia University, 1919. Teacher of English in High School, Newark, N. J.

1919-20.

DOROTHEA (GILLETTE) MURRAY, A.B., 1914; A.M., Columbia University, 1920. Teacher of English, Friends' Central School, Philadelphia, Pa.

1920-21.

BEULAH (DARLINGTON) PRATT, A.B., 1890; A.M., Teachers' College, Columbia University, 1922.

- 1921-22.
- RHODA A. LIPPINCOTT, A.B., 1917; A.M., Columbia University, 1922. Teacher of French, Morristown, N. J., High School.
- 1922-23.
- GRACE COCHRAN, A.B., 1917; Ph.D., University of Iowa, 1930. Student, Certificat d' Aptitude d' enseigner le français à l'étranger, Sorbonne, France, 1922. Assistant Professor of Romance Languages, State University of Iowa, Iowa City, Iowa.
- 1923-24.
- MILDRED E. (WILLARD) FRY, A.B., 1920; A.M., University of Pennsylvania, 1924.
- 1924-25.
- CAROLINE E. MYRICK, A.B., 1914; A.M., Radcliffe College, 1916.
- 1925-26.
- HELEN E. HOWARTH, A.B., 1920; M.A., Smith College, 1926. Research Associate, Harvard University Observatory.
- 1926-27.
- DOROTHY (PLACK) PUCTA, A.B., 1911; M.A., University of Pennsylvania, 1927. Principal, Canistota, S. D., High School.
- 1927-28.
- EMMA T. R. (WILLIAMS) VYSSOTSKY, A.B., 1916; Ph.D., Radcliffe College, 1929. Student, Harvard University Observatory, 1927-29. Research Fellow, Leander-McCormick Observatory.
- 1928-29.
- EDNA JEAN (PROSSER) WEBSTER, A.B., 1926; M.A., University of Wisconsin, 1929.
- 1929-30.
- GERTRUDE MALZ, A.B., 1923; A.M., University of Wisconsin, 1924; Ph.D., *Ibid.*, 1928. Studied at the American School of Classical Studies, Athens, 1929-30. Instructor in Greek and Latin, Sweet Briar College, Sweet Briar, Va.
- 1930-31.
- MARY ELIZABETH SHINN, A.B., 1924; M.A., Swarthmore College, 1931. Teaching Latin in the Swedesboro High School.
- 1931-32.
- GERTRUDE (GILMORE) LAFORE, A.B., 1928; M.A., Columbia University, 1932. Teaching at Bennington College, 1932-34.
- 1933-34.
- JOSEPHINE ELLIOTTE WILSON, A.B., 1915. Studied at Teachers' College, Columbia University.

SIGMA XI FELLOWSHIP

- 1934-35.
- HELEN LOUISE WEST, A.B., 1932; M.A., Mt. Holyoke College, 1934. Studying at the University of California.

HOLDERS OF THE IVY MEDAL*

1898. ANNA BELLE EISENHOWER, A.B., 1899; A.B., Radcliffe College, 1900; A.M., *Ibid.*, 1907.
1899. MARY G. LEIPER, B.L., 1899.
1900. MARY S. HAVILAND, B.L., 1900; A.B., Radcliffe College, 1901. Deceased.
1901. GEORGE A. SEAMAN, A.B., 1901. Deceased.
1902. ELLIOTT RICHARDSON, B.S., 1902; C.E., 1905.
1903. SAMUEL T. STEWART, A.B., 1903.
1904. HALLIDAY R. JACKSON, A.B., 1904.
1905. LOUIS N. ROBINSON, A.B., 1905; Ph.D., Cornell University, 1911.
1906. T. H. DUDLEY PERKINS, A.B., 1906. Deceased.
1907. AMOS J. PEASLEE, A.B., 1907; LL.B., Columbia University, 1911.
1908. HERMAN PRICHARD, B.S., 1908; A.M., 1911.
1909. WALTER F. RITTMAN, A.B., 1908; A.M., 1909; M.E., 1911; Ch.E., 1917; Ph.D., Columbia University, 1914.
1910. JOHN E. JOHNSON, B.S., 1910.
1911. JOSEPH H. WILLITS, A.B., 1911; A.M., 1912; Ph.D., University of Pennsylvania, 1916.
1912. HERMAN ELLIOTT WELLS, B.S., 1912.
1913. HENRY LEE MESSNER, A.B., 1913.
1914. ALBERT ROY OGDEN, A.B., 1914. Deceased.
1915. THOMAS BAYARD MCCABE, A.B., 1915.
1916. HUGH FREDERICK DENWORTH, A.B., 1916; A.M., University of Pennsylvania, 1918.
1917. WILLIAM WEST TOMLINSON, A.B., 1917.
1918. FREDERICK STOCKHAM DONNELLY, A.B., 1918. Deceased.
1919. CHARLES MANLY HOWELL, A.B., 1919.
1920. DETLEV WULF BRONK, A.B., 1920; M.S., University of Michigan, 1922; Ph.D., *Ibid.*, 1925.
1921. ALAN C. VALENTINE, A.B., 1921; A.M., University of Pennsylvania, 1922. Rhodes Scholar, B.A. (Honors), Oxford University, 1925. M.A., Oxford, 1929.
1922. RICHARD WILLIAM SLOCUM, A.B., 1922; LL.B., Harvard University, 1925.
1923. ARTHUR JOY RAWSON, A.B., 1923; M.E., 1930.
1924. RICHMOND PEARSON MILLER, A.B., 1924.
1925. MARVIN YARD BURR, A.B., 1925; A.M., Columbia University, 1927; Ph.D., *Ibid.*, 1930. Deceased.
1926. RICHARD MELVILLE PERDEW, A.B., 1926.
1927. JAMES ROLAND PENNOCK, A.B., 1927; A.M., Harvard University, 1928; Ph.D., 1932.
1928. DOUGLASS WINNETT ORR, A.B., 1928.
1929. THOMAS MCPHERSON BROWN, A.B., 1929; M.D., 1933, Johns Hopkins Medical School.
1930. RICHARD MORGAN KAIN, A.B., 1930; A.M., University of Chicago, 1931; Ph.D., 1933.
1931. SAMUEL MAHON, A.B., 1931.

* The terms of the award of this medal are found on page 33.

1932. EDWIN SCOTT LUTTON, A.B., 1932.
1933. FRANKLIN PORTER, A.B., 1933.
1934. FRANK C. PIERSON, A.B., 1934.

HOLDERS OF THE OAK LEAF MEDAL*

1922. BARBARA (MANLEY) PHILIPS, A.B., 1922.
1923. ISABELLE SHAW (FUSSELL) EWING, A.B., 1923.
1924. GERTRUDE PAULA (KNAPP) RAWSON, A.B., 1924.
1925. INEZ VICTORIA (COULTER) RUSSELL, A.B., 1925.
1926. LYDIA WILLIAMS (ROBERTS) DUNHAM, A.B., 1926.
1927. KATHERINE JOSEPHINE (SNYDER) SASSÉ, A.B., 1927.
1928. MARGARET (SOMERVILLE) MCINERNEY, A.B., 1928.
1929. HELEN CAROLINE (ROBISON) BISHOP, A.B., 1929.
1930. ELIZABETH YARD, A.B., 1930.
1931. CAROLINE ALBERTA (JACKSON) RUSHMORE, A.B., 1931.
1932. FLORENCE ELIZABETH (WILLIAMS) POTTS, A.B., 1932.
1933. BABETTE SCHILLER, A.B., 1933.
1934. RUTH ELEANOR KEWLEY, A.B., 1934.

* The terms of the award of this medal are found on page 33.

DEGREES CONFERRED IN 1934

BACHELOR OF ARTS WITH HONORS

In the Division of the Humanities

FRANCES ALLEN (<i>Honors</i>)	LONDON GRIER HAYNES (<i>Honors</i>)
ANNE ROTHERMEL BOWLY (<i>High Honors</i>)	LEE ELBERT HOLT (<i>High Honors</i>)
ROBERT JAMES CADIGAN (<i>High Honors</i>)	RAYMOND MAX IMMERWAHR (<i>Highest Honors</i>)
ELINOR HORNE CLAPP (<i>Highest Honors</i>)	RUTH ELEANOR KEWLEY (<i>Highest Honors</i>)
KATHLEEN DILLON (<i>High Honors</i>)	MARIAN R. McAVOY (<i>Honors</i>)
SARAH DUNNING (<i>Honors</i>)	RACHEL ANNE MERRILL (<i>High Honors</i>)
MARGARET KIRBY-SMITH FAYERWEATHER (<i>Highest Honors</i>)	ESTHER BREUNINGER PIERSON (<i>Honors</i>)
FREDERIC BARRON FREEMAN (<i>High Honors</i>)	ELIZABETH FRANCES SHAFER (<i>Honors</i>)
HOWARD FRENCH (<i>Highest Honors</i>)	

In the Division of the Social Sciences

SARAH DENNY ANTRIM (<i>Honors</i>)	BEN TILLMAN MOORE (<i>Highest Honors</i>)
JOHN STOKES CLEMENT, JR. (<i>Honors</i>)	JAMES ALFRED PERKINS (<i>High Honors</i>)
MARY HERRON FAIRBANKS (<i>High Honors</i>)	FRANK COOK PIERSON (<i>Highest Honors</i>)
NANCY WALES FOSTER (<i>Honors</i>)	HELEN MARGARET PIKE (<i>Honors</i>)
MARIAN BELLAMY HUBBELL (<i>High Honors</i>)	JOHN H. POWELL (<i>Highest Honors</i>)
JANE WRIGHT JACK (<i>Honors</i>)	GEORGE DAVIES PRESTON (<i>Honors</i>)
MARGARET BERTHA LOEB (<i>High Honors</i>)	HARRIET EDITH SMEDLEY (<i>High Honors</i>)
PAUL WARTTIG LUNKENHEIMER (<i>Highest Honors</i>)	THOMAS NOEL STERN (<i>Honors</i>)
JOHN KEITH MAHON (<i>High Honors</i>)	VIRGINIA HALL SUTTON (<i>High Honors</i>)
LEONARD FRANK MARKEL, JR. (<i>High Honors</i>)	HELEN LOUISE VANTUYL (<i>Honors</i>)
LUCILE MONTGOMERY (<i>High Honors</i>)	WALTER AMÉRICO VELA (<i>High Honors</i>)
	JOAN WELLS (<i>Honors</i>)

In the Division of Mathematics and the Natural Sciences

DAVID WAKEFIELD BISHOP (<i>Honors</i>)	CALVIN TREXLER KLOPP (<i>Honors</i>)
JOHN SYDNEY BROD (<i>Honors</i>)	CHARLES COALE PRICE, III (<i>High Honors</i>)
ALICE REINERT BURTON (<i>High Honors</i>)	CHARLES HENRY STAUFFER (<i>Honors</i>)

BACHELOR OF SCIENCE WITH HONORS

In Electrical Engineering

WALTER TRAYNER BAKER, JR. WILLIAM WILSON SIMONS (*Honors*)
(*Honors*)

In General Engineering

GEORGE SWIFT SCHAIRER PORTER REID WRAY (*Honors*)
(*Highest Honors*)

BACHELOR OF ARTS IN GENERAL COURSES

With the Major in Chemistry

DAVID BREARLEY

With the Major in Economics

DONALD WEBSTER BAXTER	CLIFFORD ELGES MASER
ROBERT MASTERS BROWNING	GEORGE WILLIAM ORR
SAMUEL DEAN CALDWELL, III	ELLIS BRANSON RIDGWAY, JR.
KATHERINE ELIZABETH GRIER	ROBERT SEAMAN RUSHMORE
MAYNARD THOMAS KENNEDY	ROBERT AUGUSTUS YOUNG, JR.

With the Major in English

THOMAS GRIDLEY CASEY	LORRAINE EDWARDS MARSHALL
MARGARET OMMERT CRESSON	GERTRUDE ELIZABETH MITCHELL
FLORENCE WILLCOX FAUCETTE	OSMOND MOLARSKY
ELIZABETH WORTH GEDDES	EDITH HELEN MUNSON
HILDA SIDNEY GRUENBERG	JANE PARROTT
RICHARD GIBSON HUBLER	JOHN HAMILTON PREST
BETTINA ELMIRA HUNTER	KATHERINE REA
ELIZABETH BARTON JONES	LOUISE REISLER STUBBS
ROBERT FISHER LEWINE	LUCINDA BUCHANAN THOMAS
RUTH BORTON LIPPINCOTT	ESTHER DAVIS WALKER
FREDERICK EVERETT WILLITS	

With the Major in Fine Arts

EVELYN SAYRE DOTTERER	KATHERINE LIPPINCOTT
JOHN AUSTIN JUMP	MIMI SCHAFER

With the Major in French

ELIZABETH ANN BLESSING	GRACE R. SHELLY
CHARLES DUNTON WATLAND	

With the Major in German

MARGARET ROSWITHA ANDERSON	ELIZABETH SANDERS CARVER
----------------------------	--------------------------

With the Major in History

JOHN ABRAMS

NINA MILNER BOWERS

ARTHUR T. MCKEAG

With the Major in Mathematics

MARISE LILLIAN FAIRLAMB

KATHARINE NEUMANN PENNYPACKER

RENATO AUGUSTUS RICCA

With the Major in Philosophy

GEORGE WILLIAM BARNES, JR.

With the Major in Physics

ROBERT SHAW EIKENBERRY

CLARA FRANCES LANG

With the Major in Physiology-Zoology

H. CRAIG BELL

JAMES MACPHERSON MILLER, JR.

CEDRIC BOLTON DAVIDHEISER

ALISON HOWE PRICE

HELEN ROGERS MANSFIELD

MILES HADLEY ROBINSON

NED BLANCHARD WILLIAMS

With the Major in Political Science

JOHN ARMSTRONG, JR.

DOROTHY LIGHTFOOT

MABEL GALBREATH CLEMENT

ARTURO CARLO FELICE MATHIEU

JAMES FREDERICK KELLY

KATHRYN SMITH MESCHTER

ELIZABETH META SEAMAN

With the Major in Psychology

GRACE ANNA BIDDLE

MARION REINA HIRST

LORRAINE GERTRUDE BUCKINGHAM

ELINOR ROBINSON

MARTHA LEA TUFTS

BACHELOR OF SCIENCE

With the Major in Electrical Engineering

RICHARD EASTWICK HARPER

LLOYD THOMAS MACGILL, JR.

With the Major in General Engineering

EDWARD LOVETT JACKSON

With the Major in Mechanical Engineering

BENJAMIN MCLAIN

MASTER OF ARTS

In English

JOHN MORTON WATTS, A.B., Dartmouth College, 1932

ELECTRICAL ENGINEER

BRADLEY C. ALGEO, JR., B.S., Swarthmore College, 1929

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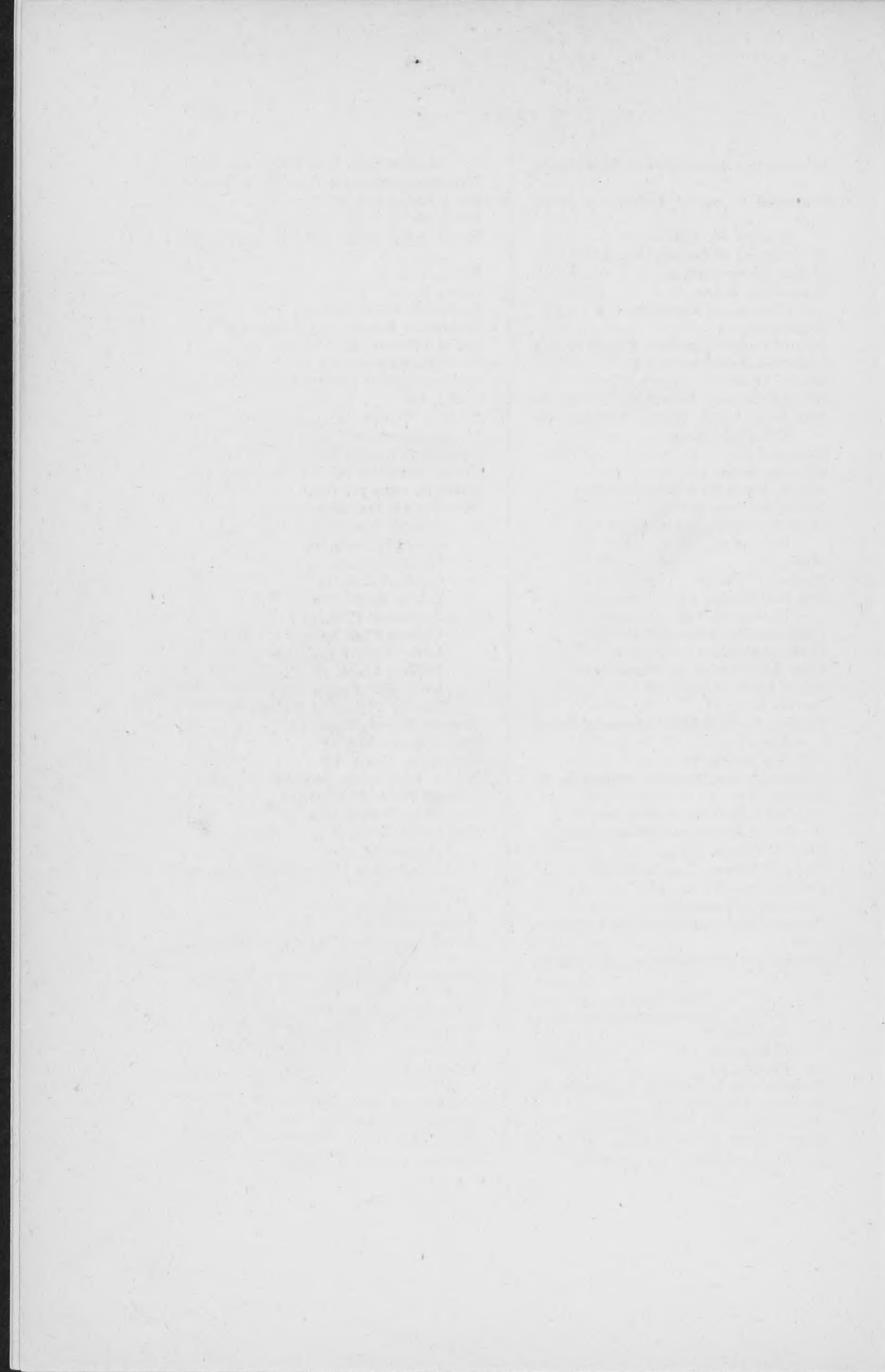
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