

BULLETIN
OF
BROWN UNIVERSITY

• • •

CATALOGUE OF THE COLLEGE
AND PEMBROKE COLLEGE



• 1958-1959 •

CORRESPONDENCE

Correspondence addressed simply to Brown University, Providence 12, Rhode Island, may be expected to reach the proper department at The College or at Pembroke College but, in order to avoid delay, correspondents are requested to note the following directions:

Communications relating to matters directly in the charge of the Corporation, and all correspondence bearing upon the general interests of the University, should be addressed to the President.

Requests for the annual Catalogue should be addressed to the Office of the Recorder at The College or to the Admission Office at Pembroke College.

Correspondence relating specifically to The College (Providence 12):

Definite inquiries from applicants for admission concerning requirements, undergraduate courses, scholarship aid, student loans, dormitory accommodations, and other related matters should be addressed to the Board of Admission, Brown University.

Inquiries from upperclassmen concerning scholarships should be addressed to the Office of Financial Aid.

Inquiries concerning other matters pertaining to members of all classes should be addressed to the Dean of The College.

Inquiries or information concerning Alumni should be sent to the Director of Alumni Relations, Brown University.

Correspondence relating specifically to Pembroke College (Providence 6):

Inquiries of general interest concerning Pembroke College should be addressed to the Dean of Pembroke College, Pembroke Hall, 172 Meeting Street.

Inquiries from applicants for admission concerning entrance requirements, undergraduate courses, scholarship aid, student loans, student employment, dormitory accommodations, and other related matters should be addressed to the Dean of Admission, Pembroke Hall.

Inquiries from upperclassmen concerning student employment and loans should be addressed to the Director of Placement, Pembroke Hall.

Inquiries from upperclassmen concerning scholarships and requests for general information should be addressed to the Dean of Pembroke College.

Inquiries from upperclassmen in regard to rooms on the campus should be addressed to the Director of Residence, Alumnae Hall.

Inquiries or information concerning Alumnae should be sent to the Executive Secretary of the Alumnae Association, Alumnae Hall.

Correspondence relating specifically to the Graduate School should be addressed to the Dean of the Graduate School, Brown University, Providence 12, Rhode Island.

BULLETIN OF BROWN UNIVERSITY

Vol. LV

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THE BULLETIN OF
BROWN UNIVERSITY:
Catalogue of *The College*
and *Pembroke College* for
the year 1958-1959



One Hundred and Ninety-fifth year

PROVIDENCE

1958

Foreword



BROWN UNIVERSITY is located in the City of Providence, the capital of Rhode Island, at the head of Narragansett Bay. The main campus of the University is on College Hill in a residential area overlooking the center of the city.

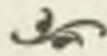
In the words of Dr. Henry Merritt Wriston, Brown's eleventh President, "The central business of the University is the increase of knowledge, the inculcation of wisdom, the refinement of emotional responses, and the development of spiritual awareness." The Corporation of the University, in fulfilling this purpose, continues to follow the policy of maintaining a university-college of liberal arts, securing at Brown many of the advantages of both the small college and the large university.

The two undergraduate colleges of the University, *The College* for men and *Pembroke College* for women, both covered by this catalogue, combine the advantages of separate colleges for men and women with the advantages of coeducation in the classroom and in the use of library and laboratory facilities. A separate catalogue is published covering the *Graduate School*. The Faculty of Brown University is responsible for instruction in Pembroke College as well as in The College and in the Graduate School.

THE COLLEGE. With the founding of Brown University in 1764, the seventh oldest college in America and the third oldest in New England came into existence. In September, 1765, The College, then located in Warren, Rhode Island, and known as Rhode Island College, had its first registration and in 1769 its first class was graduated. In the following year the institution was moved to Providence and in 1804 it became known as Brown University, renamed in recognition of the benefactions of Nicholas Brown. The historical growth of the institution is described in this catalogue on pages 43-49. The offices of administration are now located in University Hall which was constructed in 1770 and known as The College Edifice until 1823.

PEMBROKE COLLEGE. Pembroke College was organized as The Women's College in Brown University in 1891 and the first women received their degrees from Brown University in 1894. The name of the college was changed in 1928 to "Pembroke College in Brown University." As a co-ordinate college within Brown University, Pembroke College is under the control of the Corporation and general Administration of the University, but immediate direction and supervision are vested in the Dean of Pembroke College. The college has a campus of its own, one eighth of a mile from the University campus, with the distinct extracurricular and social life of a separate college, and yet at the same time Brown University offers to the women the same courses of study, leading to the same University degrees, which it offers to the men at The College. Offices of administration at Pembroke College are in Pembroke Hall, 172 Meeting Street.

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JANUARY							FEBRUARY							MARCH							APRIL							
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University Calendar

1958-1959

1958

JUNE 30— AUGUST 12	<i>Monday, June 30—Tuesday, August 12.</i> Graduate Summer School for Teachers.
SEPTEMBER 3	<i>Wednesday.</i> Annual Meeting of the Corporation.
SEPTEMBER 8	<i>Monday.</i> Freshman Week begins (<i>second Monday in September</i>).
SEPTEMBER 9-13	<i>Tuesday through Saturday.</i> Registration of graduate students.
SEPTEMBER 10-13	<i>Wednesday through Saturday.</i> Registration of new entrants and readmission students, and check-in period for upperclassmen.
SEPTEMBER 13	<i>Saturday.</i> Last day for payment of charges for the first semester of all undergraduates.
SEPTEMBER 15	<i>Monday.</i> Opening of the One Hundred and Ninety-Fifth Academic Year (<i>third Monday in September</i>). Convocation.
SEPTEMBER 15	<i>Monday, 10 a.m.</i> Classes of the first semester begin.
SEPTEMBER 16	<i>Tuesday, 12 noon.</i> Opening Convocation at Pembroke College (Sixty-Eighth Year).
SEPTEMBER 25	<i>Thursday.</i> Examination for the President Francis Wayland Prizes in Greek (<i>Thursday preceding first Wednesday in October</i>).
OCTOBER 2	<i>Thursday.</i> Examination for the President Francis Wayland Prizes in Latin (<i>Thursday following first Wednesday in October</i>).
OCTOBER 8, 9	<i>Wednesday and Thursday.</i> Language examinations for candidates for advanced degrees.
OCTOBER 9	<i>Thursday.</i> Examination for the Hartshorn and Hypatia Prizes in Mathematics.
OCTOBER 9	<i>Thursday.</i> Clarkson Abel Collins, Jr., Prize (open to men only), proposed topic title due.
OCTOBER 13	<i>Monday.</i> Columbus Day Holiday. No University exercises.
OCTOBER 16	<i>Thursday.</i> Examination for the Albert Bushnell Johnson Prizes in French.
OCTOBER 23	<i>Thursday.</i> Examination for the Caesar Misch and Asa Clinton Crowell Prizes in German.

CALENDAR

OCTOBER 31	<i>Friday. Scholastic Trophies Day (Friday preceding Mid-semester).</i>
NOVEMBER 1	<i>Saturday. Mid-semester (first Saturday in November).</i>
NOVEMBER 4	<i>Tuesday, 12 noon. Honors Convocation, Pembroke College (Tuesday following Mid-semester).</i>
NOVEMBER 11	<i>Tuesday. Veterans' Day. No University exercises.</i>
NOVEMBER 21	<i>Friday, 12 noon. Honors Convocation, The College.</i>
NOVEMBER 26- DECEMBER 1	<i>Wednesday, 12 noon, to Monday, 8 a.m. Thanksgiving recess. On Wednesday, the Saturday schedule is followed.</i>
DECEMBER 4	<i>Thursday. The Gaston Prize in Oratory (open to men only), written orations due.</i>
DECEMBER 4	<i>Thursday. The Preston Gurney Literary Prizes, essays due.</i>
DECEMBER 4	<i>Thursday. Clarkson Abel Collins, Jr., Prize (open to men only), papers due.</i>
DECEMBER 6	<i>Saturday. Woods Hole Prize in Biology, names of contestants due.</i>
DECEMBER 18, 1958- JANUARY 5, 1959	<i>Thursday, 12 noon, to Monday, 8 a.m. Christmas recess.</i>

1959

JANUARY 5	<i>Monday, 8 a.m. Classes resume.</i>
JANUARY 7	<i>Wednesday. The Gaston Prize in Oratory, public competition.</i>
JANUARY 10	<i>Saturday, 12 noon. Classes of the first semester end (Saturday following second Thursday in January).</i>
JANUARY 14-23	<i>Wednesday to Friday, inclusive, omitting Sunday. Final examinations of the first semester (including third and fourth Thursdays in January).</i>
JANUARY 21-24	<i>Wednesday to Saturday, inclusive. Check-in of all undergraduate men for the second semester and registration of readmitted students.</i>
JANUARY 22-24	<i>Thursday through Saturday. Registration of graduate students for the second semester.</i>
JANUARY 24	<i>Saturday. Last day for payment of charges for the second semester of all undergraduate men except readmitted students.</i>
JANUARY 26, 27	<i>Monday and Tuesday. Final registration of undergraduate women for the second semester.</i>

CALENDAR

JANUARY 27	<i>Tuesday.</i> Last day for payment by all undergraduate women, including special students, of charges for the second semester.
JANUARY 28	<i>Wednesday, 8 a.m.</i> Classes of the second semester begin (<i>Wednesday after last Sunday in January</i>).
FEBRUARY 14	<i>Saturday.</i> Applications for fellowships, scholarships, and assistantships for 1959-60 in the Graduate School due.
FEBRUARY 19	<i>Thursday.</i> Hicks Prizes for Interclass Debates, preliminary debates for men and women separately.
MARCH 5	<i>Thursday.</i> Annual Initiation Exercises, Sigma Xi (<i>Thursday following first Sunday in March</i>).
MARCH 7	<i>Saturday.</i> The Thomas Carpenter and Minnie Helen Hicks Prizes for Elocution, preliminary applications due.
MARCH 14	<i>Saturday.</i> Mid-semester (<i>Saturday preceding third Sunday in March</i>).
MARCH 18, 19	<i>Wednesday and Thursday.</i> Language examinations for candidates for advanced degrees.
MARCH 19	<i>Thursday.</i> Examination for the Henry Parker Manning Mathematical Prizes.
MARCH 19	<i>Thursday.</i> Hicks Prizes for Interclass Debates (for men and for women separately), public debates.
MARCH 28-APRIL 6	<i>Saturday, 12 noon, to Monday, 8 a.m.</i> Spring recess (<i>including first Wednesday in April</i>).
APRIL 9	<i>Thursday.</i> Samuel C. Lamport Prizes in History and in Political Science, papers due.
APRIL 9	<i>Thursday.</i> Isabel Harris Metcalf Prize (open to women only), essays due.
APRIL 9	<i>Thursday.</i> Gaspee Chapter, D.A.R. Prize (open to women only), papers due.
APRIL 13	<i>Monday.</i> The Thomas Carpenter and Minnie Helen Hicks Prizes for Elocution, contests held (public invited).
APRIL 16	<i>Thursday.</i> Examination for the Lucius Lyon Prizes in Latin.
APRIL 16	<i>Thursday.</i> Susan Colver Rosenberger Prizes in Physics and in Psychology, papers due.
APRIL 16	<i>Thursday.</i> The Philo Sherman Bennett Prize, papers due.
APRIL 16	<i>Thursday.</i> The James Aldrich Pirce Prize; the Minnie Helen Hicks Prize in Classical Appreciation; papers due.

CALENDAR

APRIL 16	<i>Thursday.</i> Class of 1873 Prizes, papers due.
APRIL 16	<i>Thursday.</i> Bishop McVickar Prizes, papers due.
APRIL 20	<i>Monday.</i> Theses of candidates for the degree of Doctor of Philosophy in June due.
APRIL 22, 23	<i>Wednesday and Thursday.</i> The Gilbert Stuart and Minnie Helen Hicks Prizes in Art, (open to men and to women respectively), judging of entries and public exhibit.
APRIL 23	<i>Thursday.</i> Examination for The Lafayette Sabine Foster Prize in Greek.
MAY 4	<i>Monday.</i> Theses of candidates for Masters degrees in June due.
MAY 9-12	<i>Saturday through Tuesday, omitting Sunday.</i> Senior Review Period. Seniors excused from all classes.
MAY 11-15	<i>Monday to Friday, inclusive.</i> Senior examinations for Final Honors.
MAY 12	<i>Tuesday, 6 p.m.</i> Classes of the second semester end (<i>Tuesday following second Friday in May</i>).
MAY 13, 14	<i>Wednesday and Thursday.</i> Comprehensive examinations for seniors.
MAY 16-26	<i>Saturday to Tuesday, inclusive, omitting Sundays.</i> Final examinations of the second semester (<i>including fourth Friday in May</i>).
MAY 29	<i>Friday.</i> Meeting of the Board of Fellows.
MAY 29	<i>Friday.</i> Class Day (The College).
MAY 30	<i>Saturday.</i> Annual Meeting of the Phi Beta Kappa Society.
MAY 30	<i>Saturday.</i> Commencement Meeting of the Corporation.
MAY 31	<i>Sunday, 3 p.m.</i> Baccalaureate Sermon, First Baptist Meeting House.
JUNE 1	<i>Monday.</i> One Hundred and Ninety-First Annual Commencement (<i>first Monday in June</i>), First Baptist Meeting House, and Graduate School Convocation.

1959-1960

1959

SEPTEMBER 21	<i>Monday.</i> Opening of the One Hundred and Ninety-Sixth Academic Year (<i>third Monday in September</i>). Preceded by Freshman Week.
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Officers of the University



The Corporation

Officers

BARNABY CONRAD KEENEY, Ph.D., LL.D., *President*
HAROLD BROOKS TANNER, Ph.B., LL.B., LL.D., *Chancellor*
FRED BARTLETT PERKINS, A.B., LL.B., *Secretary*
GORDON LANCASTER PARKER, Ph.B., *Treasurer*

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DONALD STURGES BABCOCK, A.B.	Providence
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DANIEL LUCIUS BROWN, A.B., LL.B.	Boston, Mass.

¹ Resigned October 11, 1958.

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Consultation between the Advisory and Executive Committee and the Associated Alumni

Provost BLISS; Dr. A. C. THOMAS.

Consultation between the Corporation and the Faculty

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John Carter Brown Library Committee of Management

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The following is a list up to September 15, 1958, of all Officers of Administration holding appointment under the Corporation of Brown University.

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MAURICE JOSEPH MOUNTAIN, PH.D., *Assistant Vice-President*

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ANNA ELIZABETH BAMFORD, A.B., *Assistant to the Recorder*

HOPE RICHARDS BROTHERS, A.B., *Placement Officer of The College*

¹ Began February 1, 1958.

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¹DONALD RICHARD JANIS, A.B., *Financial Aid Officer*

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WILLIAM DINNEEN, A.M., *Director of Chapel Music*

¹ Began October 14, 1957.

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¹CAROLINE PIERCE ALLINGHAM, A.M.T., *Instructor in Education*

¹ Master of Arts in Teaching Program, Summer, 1958.

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GORDON FRANCIS ANDERSON, SC.M., *Research Associate in Engineering*

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²GRACE LESLIE ARNOLD, PH.B., *Research Associate in Chemistry*

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WILLIAM DICKSON BARCUS, JR., PH.D., *Assistant Professor of Mathematics*

³ROSWELL PARKHURST BARNES, JR., A.B., *Research Assistant in Physics*

JAMES ORRIS BARNHILL, A.M., M.F.A., *Assistant Professor of English; Assistant Director of Dramatics*

CHARLES JOSEPH BATTAGLIA, A.B., *Assistant in Chemistry; Research Assistant²*

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JACK LIONEL SERGE BELLIN, SC.B., *Assistant in Physics*

JACQUES GEORGES BENAY, A.M., *Instructor in French*

WILLIAM RAMSDEN BENFORD, SC.M., *Professor of Civil Engineering*

ROBERT HOWARD BENNETT, *Instructor in Physical Education*

STANLEY ALLAN BERGER, SC.B., *Research Assistant in Applied Mathematics*

²WALTER BERNARD, A.M., *Research Associate in Applied Mathematics*

¹ On leave of absence, Semester II.

² Summer, 1958.

³ December 16, 1957-May 31, 1958.

OFFICERS OF INSTRUCTION

- JEROME STRAUS BERNSTEIN, A.B., *Assistant in Spanish*
ROBERT THOMAS BEYER, PH.D., *Professor of Physics*
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EDWARD ALAN BLOOM, PH.D., *Associate Professor of English*
DONALD SOMMERS BLOUGH, PH.D., *Assistant Professor of Psychology*
SOL RUBIN BODNER, PH.D., *Assistant Professor of Engineering*
¹HENRY VICTOR BOHM, PH.D., *Research Associate in Physics*
GEORGE HERBERT BORTS, PH.D., *Associate Professor of Economics*
CHELCIE CLAYTON BOSLAND, PH.D., *Eastman Professor of Political Economy*
KENNISON TILDEN BOSQUET, SC.M., *Lecturer in Psychology*
¹JOHN BRUCE BRACKENRIDGE, SC.M., *Research Assistant in Physics*
LEICESTER BRADNER, PH.D., *Professor of English*
PHILIP JAMES BRAY, PH.D., *Professor of Physics*
MICHAEL JOSEPH BRENNAN, PH.D., *Assistant Professor of Economics*
ROBERT MURRAY BRENNER, PH.D., *Instructor in Biology*
JACK BARRY BRESLER, PH.D., *Assistant Professor of Biology*
²RICHARD IRA BROD, A.B., *Instructor in German*
GLIDDEN LANTRY BROOKS, M.D., *Director of the Institute for Research in the Health Sciences; Lecturer in Health Sciences*
EDWARD JAMES BROWN, PH.D., *Professor of Russian*
HARCOURT BROWN, PH.D., *Professor of the French Language and Literature*
HARRY GLENN BROWN, A.M., M.A. IN L.S., *Supervisor of Readers' Service; Associate Professor of Bibliography*
³SHARON BROWN, A.B., *Professor of English*
JEAN-MARIE FRANÇOIS BUCHER, M.A., *Assistant in French*
DAVID ALVIN BUCHSBAUM, PH.D., *Assistant Professor of Mathematics*
JOSEPH FREDERICK BUNNETT, PH.D., *Associate Professor of Chemistry*
KURT BURKHARD, DIPLOMA, TECHN. INST. OF ZURICH, *Research Assistant in Engineering*
¹RICHARD F. BURNS, ED.M., *Research Associate in Chemistry*
JOHN LOUIS BUTLER, JR., SC.B., *Assistant in Physics; Research Assistant⁴*
MARTIN ALEXANDER BUZAS, A.B., *Assistant in Geology*
PHILLIP DAVID CAGAN, PH.D., *Associate Professor of Economics*
CONRAD PETER CALIGARIS, A.M., *Teaching Associate in Economics*

¹ Summer, 1958.

² Academic year, 1957-58.

³ On leave of absence, Semester II.

⁴ Semester II, 1957-58.

OFFICERS OF INSTRUCTION

¹RICARDO AUGUSTO CAMINOS, PH.D., D.PHIL. (OXON.), *Associate Professor of Egyptology*

JOHN VINCENT CANFIELD, A.B., *Assistant in Philosophy*

PAUL RONALD CARON, B.S. IN E.E., *Assistant in Engineering*

GENE BLAKELY CARPENTER, PH.D., *Associate Professor of Chemistry*

RICHARD BRUCE CARPENTER, PH.D., *Assistant Professor of Art*

¹DEANE CHALMERS CARSON, PH.D., *Assistant Professor of Economics*

PHILIP ANTHONY CASABELLA, SC.M., *Research Assistant in Physics*

²GILBERT EUGENE CASE, PH.D., *Professor of Education; Director, Division of University Extension*

JESSIE DOUGLAS CASTON, A.B., *Assistant in Biology*

ROBERT MAXWELL CHAPMAN, SC.M., *Research Assistant in Psychology*

BRUCE AYLWIN CHARTRES, PH.D., *Visiting Lecturer in Applied Mathematics*

HERMAN BURLEIGH CHASE, PH.D., *Professor of Biology*

AMARESHWAR CHATTERJEE, PH.D., *Research Associate in Chemistry*

CHUAN FANG CHEN, SC.M. IN M.E., *Research Assistant in Engineering*

WILLIAM TZE-YOU CHEN, B.SC., *Research Assistant in Engineering*

ROGER ANDREW CHIARODO, SC.B., *Assistant in Physics*

BRUCE BRAGDON CHICK, SC.M., *Research Associate in Applied Mathematics*

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RICHARD CIFELLI, A.M., *Instructor in Geology*

³LEWIS TAYLOR CLAIBORNE, JR., B.S. IN PHYSICS, *Research Assistant in Physics*

²LEALLYN BURR CLAPP, PH.D., PD.D., *Professor of Chemistry*

JOSEPH HENRY CLARKE, PH.D., *Associate Professor of Engineering*

FRANCES LOUISE CLAYTON, PH.D., *Assistant Professor of Psychology*

ALICE RODRIGUES CLEMENTE, A.B., *Assistant in Spanish*

ROBERT HUGH COLE, PH.D., *Professor of Chemistry*

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RICHARD HERRICK CONDON, A.M., *Assistant in History*

ARLAN RALPH COOLIDGE, PH.B., *Professor of Music*

FRANCES BASS COOPER, A.B., *Assistant in Psychology*

LEON N. COOPER, PH.D., *Associate Professor of Physics*

¹ On leave of absence.

² On leave of absence, Semester II.

³ Summer, 1958.

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ARVID HELGE CORNELIUSSEN, JR., Sc.M., *Research Assistant in Applied Mathematics*

¹JAMES WELTON CORNMAN, A.M., *Assistant in Philosophy*

ELMER ECKERT CORNWELL, JR., Ph.D., *Assistant Professor of Political Science*

²MILTIADES COTTIS, Sc.M., *Assistant in Physics*

HERBERT NEWELL COUCH, Ph.D., *David Benedict Professor of Classics; Secretary of the Faculty*

GEORGE RICHARD COWPER, M.S., *Research Assistant in Applied Mathematics*

³FRANKLIN STUART COYLE, A.B., *Assistant in History*

JAMES WILKINSON CRAGGS, Ph.D., *Visiting Associate Professor of Applied Mathematics*

STEPHEN TROWBRIDGE CRARY, Ph.D., *Associate Professor of Religious Studies*

ROBERT PAYSON CREED, Ph.D., *Assistant Professor of English*

DANIEL ROLFE CRISTALL, Sc.M., *Research Assistant in Physics*

HARRY RANDALL CROUCH, JR., Sc.B., *Research Assistant in Physics*

FRANCIS JOSEPH CROZIER, Sc.B., *Assistant Professor of Naval Science*

⁴RUTH ROWLAND CURTIS, A.B., *Assistant in Economics*

JOHN HAMILTON CURTISS, Ph.D., *Research Associate in Mathematics*

⁵JOSEPH BENTLY D'ADAMO, A.M., *Research Associate in Applied Mathematics*

SAMUEL FOSTER DAMON, A.M., *Professor of English; Curator of the Harris Collection*

MARY CELINE DAVIDOW, A.M., *Teaching Associate in English*

ANTHONY DAVIDS, Ph.D., *Associate Professor of Psychology*

NELSON DEARMONT, A.B., *Assistant in History*

JOHN DE KLERK, Ph.D., *Assistant Professor of Physics (Research)*

RODNEY KENNETH DELASANTA, A.M., *Teaching Associate in English*

HERMAN J. DEMEULENAERE, Ph.D., *Visiting Lecturer in Egyptology*

⁶GORDON ROHDE DEWART, Ph.D., *Assistant Professor of French*

ESTHER AMELIA DICK, A.M., *Assistant in Botany*

WENDELL SANFORD DIETRICH, B.D., *Instructor in Religious Studies*

JOHN ANDREW DILLON, JR., Ph.D., *Assistant Professor of Physics; Assistant to the Dean of the College*

WILLIAM DINNEEN, A.M., *Professor of Music*

EDWIN ROLAND DOBBS, Ph.D., *Research Associate in Applied Mathematics*

GUY HOWARD DODGE, Ph.D., *Professor of Political Science*

¹ Began September, 1957.

² Began Semester II, 1957-58.

³ Academic year 1957-58.

⁴ Semester II, 1957-58.

⁵ Summer, 1958.

⁶ On leave of absence, Semester II.

OFFICERS OF INSTRUCTION

- THOMAS MOORE DOWNIE, A.B., *Research Assistant in Applied Mathematics*
GEORGE ELLIOT DOWNING, PH.D., *Professor of Art*
PATRICK AIDAN DOYLE, PH.D., *Assistant Professor of Engineering*
DANIEL CHARLES DRUCKER, PH.D., *Professor of Engineering*
JACQUES WAYNE DUFFY, PH.D., *Assistant Professor of Engineering*
ANDREW MELVILLE DUGUID, PH.D., *Research Associate in Applied Mathematics*
FRANCES ELLIOT DUNN, ED.D., *Associate Professor of Educational Psychology; Director of Educational Measurement*
HAROLD SEARL DUNN, M.S.E., *Assistant in Engineering*
HOWARD MICHAEL DUNN, A.M.T., *Assistant in Classics*
MARGARET COLMORE DUNN, A.B., *Research Assistant in Biology*
RONALD LEE DUTY, SC.B., *Research Assistant in Applied Mathematics*
HUBERT JEROME DYER, PH.D., *Assistant Professor of Botany*
DURAND ECHEVERRIA, PH.D., *Associate Professor of French*
FRANK DONALD ECKELMANN, PH.D., *Assistant Professor of Geology*
MAC VINCENT EDDS, JR., PH.D., *Professor of Biology*
JOHN OELHAF EDWARDS, PH.D., *Associate Professor of Chemistry*
MARK WILLIAM EDWARDS, M.A., *Instructor in Classics*
¹ALICE EICHENBAUM, PH.D. IN CHEM. (GRAZ), *Research Assistant in Chemistry*
NORMAN GERALD EINSPRUCH, SC.M., *Research Assistant in Applied Mathematics*
EDMUND EISENBERG, SC.B., *Assistant in Mathematics*
RICHARD AKERS ELLIS, PH.D., *Assistant Professor of Biology*
²CAVID ENER, PH.D., *Visiting Research Associate in Physics*
TRYGG ENGEL, PH.D., *Assistant Professor of Psychology*
MARILYN TARASIEWICZ ERICKSON, A.B., *Assistant in Psychology; Research Assistant³*
ROBERT PORTER ERICKSON, PH.D., *Research Associate in Psychology*
HAROLD PORTER EUBANK, PH.D., *Assistant Professor of Physics*
ROGER JAMES EVANS, B.SC., *Assistant in Engineering*
WERNER D. FALK, PH.D., *Visiting Professor of Philosophy*
⁴HARRY EDWARD FARNSWORTH, PH.D., *Professor of Physics*
HERBERT FEDERER, PH.D., *Professor of Mathematics*
JOEL FEINBERG, PH.D., *Assistant Professor of Philosophy*
THOMAS GUSTAF FEININGER, A.B., *Assistant in Geology*
DAVID FELDMAN, PH.D., *Associate Professor of Physics*
WALTER SIDNEY FELDMAN, M.F.A., *Assistant Professor of Art*
PAUL FREDRIC FENTON, PH.D., *Professor of Biology*

¹ Began March 17, 1958.

² Began January 1, 1958.

³ Semester II, 1957-58.

⁴ On leave of absence, Semester II.

OFFICERS OF INSTRUCTION

WILLIAM LEOPOLD FICHTER, PH.D., *Professor of the Spanish Language and Literature*

MADELEINE PAULE FIELDS, PH.D., *Instructor in French*

WILLIAM NICHOLS FINDLEY, SC.M. IN ENGIN., A.M., *Professor of Engineering*

MARTIN JOHN FISCHER, MUS.B., A.M., *Associate Professor of Music (Artist)*

DONALD HARNISH FLEMING, PH.D., *Visiting Professor of History*

WENDELL HELMS FLEMING, PH.D., *Assistant Professor of Mathematics*

PAUL DONALD FORBES, SC.B., *Assistant in Biology; Special Research Assistant¹*

¹DONALD HOLLY FORTNUM, PH.D., *Research Associate in Chemistry*

ALLISTER FRANCIS FRASER, SC.B., *Research Assistant in Engineering*

DEAN KIMBALL FREDERICK, B.E., *Assistant in Engineering*

WALTER FREDERICK FREIBERGER, PH.D., *Associate Professor of Applied Mathematics*

ERNEST SUNLEY FRERICHS, PH.D., *Assistant Professor of Religious Studies; Assistant Dean of The College*

¹PETER JOHN FREYD, A.B., *Assistant in Mathematics*

¹GABRIEL PAUL FROMMER, A.B., *Research Assistant in Psychology*

SARA LOUISE FROMMER, A.B., *Assistant in German*

JAMES HERD FULLERTON, SC.B., *Instructor in Physical Education*

IVAN WILLIAM FUQUA, SC.M. IN ED., *Instructor in Physical Education*

ROBERT FREDERICK GALANTE, A.B., *Assistant in Economics*

DONALD BARRETT GALBRAITH, SC.B., *Assistant in Biology*

DAVID GALE, PH.D., *Associate Professor of Mathematics*

JOHN BERDAN GARDNER, A.M., *Instructor in English*

¹JOHN DAVID GAVENDA, A.M., *Research Assistant in Physics*

KARL OLAF GELOTTE, SC.B., *Research Assistant in Chemistry*

ROBERT HUDSON GEORGE, PH.D., L.H.D., *Munro, Goodwin, Wilkinson Professor of History*

DONALD BERNARD GIBSON, A.M., *Assistant in English*

JAMES LOUIS GIDDINGS, PH.D., *Associate Professor of Sociology; Director of the University Museum*

ATLE GJELSVIK, B.SC. IN ENGIN., *Research Assistant in Engineering*

MARK GOLDIE, PH.D., *Instructor in Biology*

²RICHARD J. GOLDSTEIN, SC.M., *Assistant Professor of Engineering*

SIDNEY GOLDSTEIN, PH.D., *Associate Professor of Sociology*

ELLIOT RAYMOND GOODMAN, PH.D., *Assistant Professor of Political Science*

LEWIS HALL GORDON, PH.D., *Professor of Italian*

³MILTON MYRON GORDON, PH.D., *Visiting Associate Professor of Sociology*

¹ Summer, 1958.

² Beginning Semester II.

³ Semester II.

OFFICERS OF INSTRUCTION

- RICHARD JOHNSON GOSS, PH.D., *Associate Professor of Biology*
ANTHONY CABOT GOSSE, A.M., *Instructor in English*
¹ROBERT KENNETH GOULD, SC.M., *Research Assistant in Physics*
SYDNEY HENRY GOULD, PH.D., *Research Associate in Mathematics*
ROBERT EDWARD GREEN, JR., SC.M., *Research Assistant in Applied Mathematics*
LEON GREENBERG, PH.D., *Instructor in Mathematics*
EDWARD FORBES GREENE, PH.D., *Associate Professor of Chemistry*
GRETCHEN HEIDEL GREGORY, A.B., *Research Assistant in Biology*
ULF GRENANDER, PH.D., *Professor of Mathematical Statistics and Probability*
²DOGAN ERDUN GÜÇER, PH.D., *Visiting Assistant Professor of Engineering*
MORTON LEON GUREWITCH, PH.D., *Assistant Professor of English*
JOSEPH GURLAND, SC.D., *Associate Professor of Engineering*
GEORGE WASHINGTON HAGY, PH.D., *Assistant Professor of Biology*
JOHN FRANCIS HALE, A.B., *Assistant in Psychology*
GEORGE HALEY, JR., PH.D., *Assistant Professor of Spanish*
³BRADFORD ALLYN HALL, A.B., *Assistant in Geology*
DAN HANEMAN, M.SC., *Research Associate in Physics*
⁴DAVID KENT HARRISON, PH.D., *Assistant Professor of Mathematics*
⁵ROBERT WILLIAM HARRISON, PH.D., *Special Instructor in Biology*
⁶KAMAL-ELDIN HASSAN, PH.D., *Visiting Lecturer in Engineering*
FRANK LYMAN HASSLER, SC.M., *Research Assistant in Physics*
SUZANNE ROBERTS HAWES, A.B., *Assistant in Botany*
JOHN C. B. HAWKES, JR., A.B., *Assistant Professor of English*
DAVID GOODWIN HAYES, A.B., *Assistant in Economics*
ROBERT MORPHET HAYTHORNTHWAITHE, PH.D., *Associate Professor of Engineering; Senior Resident Fellow*
¹EDWARD AUGUSTINE HEALY, PH.D., *Research Associate in Chemistry*
JAMES BLAINE HEDGES, PH.D., *George L. Littlefield Professor of American History*
JOHN MACLEAN HEFFERNAN, ED.M., *Instructor in Physical Education*
MARY CATHERINE HENRY, SC.M., *Assistant in Biology*
OLE HERBJØRNSEN, CAND. REAL., *Research Assistant in Physics*
WILLIAM MEREDITH HERNDON, A.B., *Assistant Professor of Air Science*
MAYO DYER HERSEY, A.M. IN PHYSICS, *Visiting Professor of Engineering (Research)*
⁵JACK H. HEXTER, PH.D., *Professor of History*
DAR-VEIG HO, SC.M., *Research Assistant in Applied Mathematics*

¹ Summer, 1958.

² Beginning December 1, 1958.

³ Began Semester II, 1957-58.

⁴ Resigned August 31, 1958.

⁵ Master of Arts in Teaching Program, Summer, 1958.

⁶ Beginning Semester II.

OFFICERS OF INSTRUCTION

- HUNG-TA HO, B.Sc., *Research Assistant in Applied Mathematics*
CHARLES HENRY HOCKMAN, A.B., *Research Assistant in Psychology*
MICHAEL WAYNE HODGES, Sc.B., *Research Assistant in Physics*
ALAN HOLSKE, Ph.D., *Professor of German*
MAURICE HOLT, Ph.D., *Associate Professor of Applied Mathematics*
¹EDWIN HONIG, A.M., *Associate Professor of English*
DONALD DWIGHT HOOK, A.M., *Assistant in German*
HENRY OLCOTT HOOPER, B.S. IN ENGIN. PHYSICS, *Assistant in Physics*
BERNARD HOWARD, Sc.B., *Assistant in Mathematics*
STEPHEN HENRY HOWE, Sc.M., *Research Assistant in Applied Mathematics*
DANIEL JOHN HUGHES, Ph.D., *Instructor in English*
²RONALD SYLVANUS HUGHES, A.B., *Research Assistant in Biology*
ELEANOR HULL, A.M., *Assistant in French*
³ELMER CHARLES HUMES, JR., A.B., *Assistant in Biology*
ROY HUNTER, JR., Sc.M., *Assistant in Biology*
GEORGE WASHINGTON HUTCHESON, JR., Ed.B., A.M., *Professor of Air Science*
RUDOLPH CHIA-CHO HWA, Ph.D., *Research Assistant in Physics*
ROBERT NICHOLAS IACONA, Sc.B., *Assistant in Chemistry; Research Assistant⁴*
MAKOTO INABA, Agr. Chem. B., *Research Assistant in Chemistry*
NEIL DAVID ISAACS, A.M., *Teaching Associate in English*
KALKUNTE VEDANTHACHAR KRISHNA IYENGAR, M.Sc., *Research Assistant in Physics*
FRANCIS JOSEPH JACKSON, Sc.M., *Assistant in Physics*
DAVID JAMES, Ph.D., *Lecturer in the Division of Modern Languages*
JANE JASPersen, A.B., *Assistant in History*
GORDON ALFRED JOBE, A.B., *Assistant Professor of Naval Science*
⁴ERNEST PARKER JOHNSON, Ph.D., *Research Associate in Psychology*
IAN JARVIS JOHNSON, A.B., *Assistant Professor of Naval Science*
NORMAN DUDLEY JOHNSON, Sc.B., *Associate Professor of Naval Science*
DON RICHARD JOHNSTON, B.A., IN CHEM., *Research Assistant in Chemistry*
DAVID ALONZO JONAH, Sc.M., *Librarian; John Hay Professor of Bibliography*
DAVID WOODLEY JONAH, Sc.M., *Assistant in Mathematics; Research Assistant⁴*
DOROTHY FRANKLYN JONES, A.M., *Assistant in French*
LESLIE ALLEN JONES, Ph.B., *Assistant Professor of English; Technical Director of Dramatics*
LOIS CHRISTIAN JONES, Sc.B., *Research Assistant in Biology*

¹ On leave of absence.

² Began Semester II, 1957-58.

³ Semester II, 1957-58.

⁴ Summer, 1958.

OFFICERS OF INSTRUCTION

DAVID JORAVSKY, PH.D., *Associate Professor of History*

WILLIAM HENRY JORDY, PH.D., *Associate Professor of Art*

ALEX KACEN, A.M., *Assistant in French*

PANKAJA K. KADABA, PH.D., *Research Associate in Chemistry*

¹CORNELIA MARTINA KALKMAN, Physical Engineer, *Research Assistant in Applied Mathematics*

RAPHAEL KAPLAN, A.B., *Research Assistant in Physics*

ISRAEL JAMES KAPSTEIN, PH.D., *Professor of English*

BARBARA ANN KATORSKI, SC.B., *Assistant in Biology*

ROBERT LEO KAY, PH.D., *Assistant Professor of Chemistry*

WINFIELD KECK, PH.D., *Visiting Associate Professor of Physics (Research)*

BARNABY CONRAD KEENEY, PH.D., LL.D., *President; Professor of History*

RICHARD ERMINE KEESEY, II, SC.M., *Assistant in Psychology; Research Assistant²*

JACSUE KEHOE, A.B., *Assistant in Psychology; Research Assistant²*

HUNTER KELLENBERGER, PH.D., *Professor of French*

ROBERTA MEADE KELLOGG, ED.M., A.M., *Associate Professor of Education*

HENRY CURTIS KELLY, SC.B., *Assistant in Chemistry*

JAMES KELLY, B.SC., *Research Assistant in Engineering*

ROBERT WEBB KENNY, PH.D., *Professor of English*

WALTER JAMES KENWORTHY, PH.D., *Associate Professor of Biology*

STANLEY KERTZNER, SC.M., *Instructor in Mathematics*

³JOSEPH KESTIN, PH.D., D.I.C., *Professor of Engineering*

JAN ARNOLD ALBERT KETELAAR, PH.D., *Visiting Professor of Chemistry*

MUKHTAR HUSSAIN KHAN, B.C.E., *Research Assistant in Engineering*

BERNARD MELVIN KIERNAN, JR., A.B., *Assistant in Mathematics*

HUGH BAXTER KILLOUGH, PH.D., *Professor of Economics*

JOSEPH CHOL KIM, A.B., *Assistant in Chemistry*

²YEONG-WOOK KIM, M.S., *Research Assistant in Physics*

WILLIAM TRAVERS KING, III, PH.D., *Instructor in Chemistry*

CHESTER HUGO KIRBY, PH.D., *Professor of History*

³PAUL NORMAN KISTLER, SC.M., A.M., *Professor of Mechanical Engineering*

STEPHEN WARREN KLAPPER, A.B., *Assistant in Psychology; Research Assistant²*

JULIUS WILLIAM KLING, PH.D., *Associate Professor of Psychology*

CHARLES DWAIN KNOTSON, SC.B., *Assistant in Physics; Research Assistant²*

RALPH DAVID KODIS, PH.D., *Associate Professor of Engineering*

LEROY MICHAEL KONZELMAN, SC.B., *Assistant in Chemistry*

SAID KHALIL KOOZEKANANI, MATH.DIPLOMA, *Research Assistant in Engineering*

¹ Began April 28, 1958.

² Summer, 1958.

³ On leave of absence.

OFFICERS OF INSTRUCTION

- EDWARD THEODORE KORNHAUSER, PH.D., *Associate Professor of Engineering*
 ARON DAVID KOSSOFF, PH.D., *Assistant Professor of Spanish*
 RUTH HORNE KOSSOFF, PH.D., *Lecturer in Spanish*
 KENNETH LAWRENCE KOWALSKI, SC.B., *Research Assistant in Physics*
¹DOROTHY LOIS KRAMER, SC.B., *Research Assistant in Biology*
²DAVID KRAUSE, PH.D., *Assistant Professor of English*
 JOHN KRAUSKOPF, PH.D., *Assistant Professor of Psychology*
 WEI-ERH KUAN, SC.B., *Research Assistant in Engineering*
 HENRY KUCERA, PH.D., *Associate Professor of Russian and Linguistics;*
Head Resident Fellow
 ERICH KUNZEL, JR., A.B., *Assistant in Music*
 JUDITH SAYRE LACEFIELD, A.B., *Research Assistant in Applied Mathematics*
²JOHN LADD, PH.D., *Associate Professor of Philosophy*
 JOHN HARRY LAUCK, B.S. IN B.A., *Assistant Professor of Naval Science*
 DAVID LAURENT, A.M., *Assistant Professor of Music*
 SEYMOUR LEDERBERG, PH.D., *Assistant Professor of Biology*
 ELIZABETH HORTENSE LEDUC, PH.D., *Associate Professor of Biology*
 ERASTUS HENRY LEE, PH.D., *Professor of Applied Mathematics*
 JOSEPH YUEN CHOR LEE, B.A., *Assistant in Chemistry*
 LI-CHIH LEE, B.S., *Research Assistant in Engineering*
³SOOK LEE, B.S., *Assistant in Physics*
 TI-CHIANG LEE, B.SC., *Research Assistant in Engineering*
 KEITH EDWARD LEHRER, A.B., *Assistant in Philosophy*
 JACK RICHARD LEIBOWITZ, SC.M., *Assistant in Physics*
 LOUIS HENRY LEITER, A.M., *Instructor in English*
 HERMES LEMONIAS, A.M., *Teaching Associate in Economics*
 JOHN WILLIAM LENZ, PH.D., *Assistant Professor of Philosophy*
 SAMUEL LERNER, ENG.D., *Associate Professor of Engineering*
 STEPHEN VAUGHAN LETCHER, SC.B., *Assistant in Physics*
 MARVIN LEVENTHAL, SC.B., *Assistant in Physics*
⁴GEORGE NAPOLEON LEVESQUE, SC.M. IN ENGIN., *Visiting Lecturer in*
Engineering
 ERWIN LEON LEVINE, A.M., *Assistant in Political Science*
 NISSIM MORRIS LEVY, PH.D., *Assistant Professor of Psychology*
 BARBARA KIEFER LEWALSKI, PH.D., *Assistant Professor of English*
 GEORGE LIANIS, PH.D., *Research Associate in Engineering*
⁵VADIM LIAPUNOV, A.B., *Assistant in Russian*
 BERNHARD GEORG LIEBMANN, DR.RER.NAT., *Assistant Professor of Physics*
(Research)
⁶JOAN RITA LIFTIN, A.B., *Instructor in Physical Education*

¹ Summer, 1958.

² On leave of absence.

³ Began Semester II, 1957-58.

⁴ Semester II, 1957-58.

⁵ Began 1957-58.

⁶ Academic year 1957-58.

OFFICERS OF INSTRUCTION

ROBERT BRUCE LINDSAY, PH.D., *Dean of the Graduate School; Hazard Professor of Physics*

LEWIS PAEFF LIPSITT, PH.D., *Assistant Professor of Psychology*

¹CHARLES ARMSTRONG LITTLER, M.F.A., *Visiting Instructor in Art*

WILLIAM CARL LOERKE, JR., PH.D., *Assistant Professor of Art*

JUAN LÓPEZ-MORILLAS, PH.D., *Professor of Spanish*

FREDERICK RUTAN LOVE, PH.D., *Assistant Professor of German*

DAVID SHERMAN LOVEJOY, PH.D., *Assistant Professor of History*

GRAHAM D. LOVELUCK, B.Sc., *Research Associate in Chemistry*

ALBERT EDGAR LOWNES, PH.B., A.M., *Lecturer in the History of Science*

JACK ANDREW LUBRANO, A.M., *Technical Assistant in Physics*

ALBERT THOMAS LUNDELL, A.M., *Instructor in Mathematics*

JANET LUTZ, M.S. IN ED., *Instructor in Physical Education*

²CHARLES ARTHUR LYNCH, PH.D., *Professor of Classics*

CHARLES MALAHER LYONS, JR., Sc.B., A.M., *Professor of Naval Science*

HANNIBAL HAMLIN MADDEN, A.M. IN PHYSICS, *Research Associate in Physics*

FRANCIS KING CAREY MADEIRA, A.M., *Visiting Associate Professor of Music*

PAUL FRITZ MAEDER, PH.D., *Professor of Engineering*

JOYCE ELLEN MANGLER, A.M., *Lecturer in Music*

STANLEY JOSEPH MANN, A.M., *Assistant in Biology; Special Research Assistant³*

DAVID R. MANWARING, A. M., *Instructor in Political Science*

CHARLES DAVID MARKHAM, A.B., *Instructor in Physical Education*

BARRY ALAN MARKS, PH.D., *Assistant Professor of English*

JOHN BRIMACOMBE MARSH, A.B., *Research Assistant in Physics*

WILLIAM SCHUMACHER MASSEY, PH.D., *Professor of Mathematics*

JOSEPH THOMAS MASSIMO, A.B., *Research Assistant in Physics*

KURT BERND MAYER, PH.D., *Professor of Sociology*

ALLEN McCONNELL, PH.D., *Assistant Professor of Political Science*

EDWARD ALLEN McCORMICK, D.PHIL. (BERN), *Assistant Professor of German*

⁴FORREST McDONALD, PH.D., *Associate Professor of History*

WILLIAM DOUGLAS McGEE, A.M., *Assistant Professor of Art*

WILLIAM GERALD McLoughlin, JR., PH.D., *Assistant Professor of History*

SURINDER KUMAR MEHTA, A.M., *Instructor in Sociology*

RICHARD MERL MEIGHAN, A.B., *Assistant in Chemistry*

THOMAS LEE MENTZER, Sc.B., *Research Assistant in Psychology*

HATTIE MESSNER, A.B., *Teaching Associate in Physical Education*

¹ Master of Arts in Teaching Program, Summer, 1958.

² On leave of absence, Semester II.

³ Summer, 1958.

⁴ Beginning February 1, 1959.

OFFICERS OF INSTRUCTION

- RICHARD ERNST MEYER, D.Sc., *Associate Professor of Applied Mathematics*
LOUIS C. MIDGLEY, Sc.M., *Assistant in Political Science*
JOHN HEDLEY MILES, Ph.D., *Research Associate in Chemistry*
MARY BOAT MILLER, A.M., *Assistant in Philosophy*
STEPHEN BRADFORD MILLIKEN, A.B., *Assistant in Chemistry; Research Assistant¹*
BARRY MILLER MITCHELL, M.A., *Assistant in Mathematics*
HORST RUDOLF MOEHRING, Ph.D., *Instructor in Religious Studies*
CHI-HUNG MOK, B.S., *Research Assistant in Engineering*
DAVID CHARLES MOLTA, Sc.B., *Assistant in Chemistry*
GEORGE KARL MONROE, Sc.B., *Assistant in Physics*
WILLIAM MONTAGNA, Ph.D., *Professor of Biology*
GEORGE MONTEIRO, A.M., *Assistant in English*
KAY KIRLIN MOORE, A.B., B.S. in L.S., *Head Cataloger, John Hay Library; Instructor in Bibliography*
¹CYRUS NORTHROP MORGAN, A.B., *Research Associate in Applied Mathematics*
GEORGE WALTER MORGAN, Ph.D., *Associate Professor of Applied Mathematics*
HAZIME MORI, Ph.D., *Research Associate in Chemistry*
RICHARD JAMES MORIN, A.B., *Assistant Professor of Naval Science*
LESLIE WILLIAM MORLAND, Ph.D., *Research Associate in Applied Mathematics*
ROBERT WARREN MORSE, Ph.D., *Professor of Physics; Director of the Honors Program*
WESTCOTT ENOCH SUMNER MOULTON, A.M., *Secretary of the Brown University Fund; Associate Professor of Physical Education*
ROKURO MUKI, B.E., *Research Associate in Applied Mathematics*
MARY-ELIZABETH MURDOCK, A.B., *Teaching Associate in American Civilization*
CONSTANTINE MYLONAS, Ph.D., *Associate Professor of Engineering*
HAROLD RUSS NACE, Ph.D., *Associate Professor of Chemistry*
PAUL KAZUO NAKANE, A.B., *Assistant in Biology; Special Research Assistant¹*
HISAO NEGITA, D.Sc., *Research Associate in Physics*
RON NELSON, A.M.D., *Assistant Professor of Music*
OTTO EDUARD NEUGEBAUER, Ph.D., LL.D., Sc.D., *Professor of the History of Mathematics*
JOHN FRED NEUMER, Ph.D., *Instructor in Chemistry*
²GORDON FRANK NEWELL, Ph.D., *Associate Professor of Applied Mathematics*

¹ Summer, 1958.

² On leave of absence.

OFFICERS OF INSTRUCTION

- WILLIAM PATTANGALL NICOLET, A.M., *Assistant in English*
ELIZABETH WHARTON NIEHL, A.B., *Assistant in Psychology; Research Assistant*¹
SAMUEL GILBERT NORD, A.M., *Assistant in Psychology; Technical Assistant*¹
TORSTEN NORVIG, PHILOSOFICUM, *Assistant in Mathematics*
ROBERT GALE NOYES, PH.D., *Professor of English*
WESLEY LEMARS NYBORG, PH.D., *Associate Professor of Physics*
BRUCE OAKLEY, A.B., *Assistant in Psychology*
²EARL WAYNE O'DELL, SC.M., *Research Assistant in Physics*
JOSEPH GEORGE O'KEEFE, M.S., *Research Assistant in Physics*
TORE OLSEN, CAND. REAL., *Visiting Research Associate in Physics*
ROBERT MILTON OMAN, SC.B., *Research Assistant in Physics*
EMIN TURAN ONAT, D.Sc., *Associate Professor of Engineering*
ELIZABETH KATHERINE OSBORN, SC.B., *Assistant in Chemistry*
VURAL OSKAY, M.A.E., *Research Assistant in Engineering*
HEINZ-DIETER ÖSTERLE, STAATSEXAMEN, *Assistant in German*
GIDEON JAN OUDEMANS, DOCTORANDUS, *Research Assistant in Chemistry*
BARBARA ANN PALMER, SC.M., *Research Assistant in Chemistry*
ROBERT SALVATORE PANVINI, SC.B., *Research Assistant in Physics*
V. MICHAEL PAPADOPOULOS, PH.D., *Assistant Professor of Engineering*
JAN PARKER, A.M., *Teaching Associate in Economics*
RICHARD ANTHONY PARKER, PH.D., *Wilbour Professor of Egyptology*
WILLIAM LANGDON PATTERSON, JR., SC.M., *Research Assistant in Chemistry*
BURTON PAUL, PH.D., *Assistant Professor of Engineering*
EARL STANLEY PAUL, JR., SC.B., *Instructor in Economics*
LOIS EILEEN PAUL, A.B., *Research Assistant in Applied Mathematics*
CAROLINE NESTMANN PECK, PH.D., *Assistant in Egyptology*
RUSSELL ALLEN PECK, JR., PH.D., *Associate Professor of Physics*
WHITNEY TROW PERKINS, PH.D., *Associate Professor of Political Science*
FRANCIS JOSEPH PETRONE, JR., SC.B., *Assistant in Chemistry; Research Assistant*¹
³CARL PFAFFMANN, PH.D., *Professor of Psychology*
⁴HAROLD WINSTON PFAUTZ, PH.D., *Associate Professor of Sociology*
CHARLES HORACE PHILBRICK, II, PH.D., *Assistant Professor of English*
LOUIS PICHIERRI, PH.D., *Lecturer in Music*
MILTON JOHN PIEPUL, B.S., IN P.E., *Instructor in Physical Education*
PAUL PINCHUCK, SC.B., *Assistant in Biology*
ALLEN COMPERE PIPKIN, SC.B., *Research Assistant in Applied Mathematics*
NIKODEMUS PITULA, DIPL.PHYS., *Research Assistant in Applied Mathematics*

¹ Summer, 1958.

² Semester I, 1957-58.

³ On leave of absence, Semester II.

⁴ On leave of absence, Semester I.

OFFICERS OF INSTRUCTION

¹ILSE POLITZER, *Assistant in German*

²EARL AUREL POPE, B.D., A.M., *Assistant in Religious Studies*

³WILLIAM PRAGER, ENG.D., *Professor of Applied Mechanics*

ALEXANDER VLADIMIR PRISLEY, A.M., *Assistant in Political Science*

RONALD FILMORE PROBSTEIN, PH.D., *Associate Professor of Engineering*

ALONZO WALLACE QUINN, PH.D., *Professor of Geology*

LEONARD SALVATOR QUIRINO, A.M., *Assistant in English*

BERTRAM RAPHAEL, SC.B., *Research Assistant in Applied Mathematics*

AMRAM RASIEL, PH.D., *Assistant Professor of Engineering*

WILLIAM H. REID, PH.D., *Assistant Professor of Applied Mathematics*

JOSEPH RESTIC, B.S. IN ED., *Instructor in Physical Education*

PAUL LAMBERT RICHARDS, PH.D., M.S. IN L.S., *Circulation Chief Assistant;
Professor of Bibliography*

STEPHANIE MELLNIK RICHARDS, A.B., *Research Assistant in Chemistry*

PETER DAMIAN RICHARDSON, PH.D., *Visiting Lecturer in Engineering*

BEVERLY SELLMAN RIDGLEY, PH.D., *Associate Professor of French*

⁴LORRIN ANDREWS RIGGS, PH.D., *Professor of Psychology*

PAUL JOSEPH RING, SC.M., *Research Assistant in Physics*

MARVIN CHARLES RINTALA, A.M., *Instructor in Political Science*

RAYMOND WARREN RISHEL, SC.M., *Assistant in Mathematics*

RONALD SAMUEL RIVLIN, SC.D., *Professor of Applied Mathematics*

HOWARD MAHLON ROBERTS, A.M., *Assistant in Mathematics*

RICHARD HAROLD ROBILLARD, A.M., *Teaching Associate in English*

CHARLES ALEXANDER ROBINSON, JR., A.M., *Professor of Classics*

KENNETH HARING ROCKWELL, SC.B., *Assistant in Biology*

CATHERINE RODGERS, A.B., *Assistant in English*

ALFRED RODRIGUEZ, A.M., *Assistant in Spanish*

GABRIEL RODRIGUEZ, C.E., *Research Assistant in Engineering*

GUENTER HERBERT ROSE, SC.B., *Research Assistant in Psychology*

JUDY FRANCIS ROSENBLITH, PH.D., *Assistant Professor of Psychology*

JOHN ROSS, PH.D., *Associate Professor of Chemistry*

VIRGINIA FRANKLIN ROSS, PH.D., *Research Associate in Chemistry*

AMADEO GUILLERMO ROSSI, MECH. AERO. ENGIN., *Research Assistant in
Engineering*

⁵LEON ROTH, D.PHIL. (OXON.), *Visiting Professor of Philosophy*

⁶ALEX THOMAS ROWLAND, PH.D., *Research Associate in Chemistry*

BESSIE HUNTTING RUDD, A.B., A.M., *Professor of Hygiene and Physical
Education*

WILLIAM WALKER RUSSELL, PH.D., *Newport Rogers Professor of Chemistry*

ROBERT PAT RYAN, SC.B., *Research Assistant in Physics*

¹ Academic year 1957-58.

² Began Semester II, 1957-58.

³ On leave of absence.

⁴ On leave of absence, Semester I.

⁵ Semester II, 1957-58.

⁶ April 1-August 31, 1958.

OFFICERS OF INSTRUCTION

- ¹ANDREW JOSEPH SABOL, PH.D., *Assistant Professor of English*
ABRAHAM JOSEPH SACHS, PH.D., *Professor of the History of Mathematics*
²WESLEY CHARLES SALMON, PH.D., *Assistant Professor of Philosophy*
ALBERT JACQUES SALVAN, PH.D., *Professor of French*
ALVIN MARTIN SAPERSTEIN, PH.D., *Research Associate in Physics*
HARRIET BROWN SAPERSTEIN, A.B., *Assistant in Sociology*
³ALICE TURNER SCHAFER, PH.D., *Visiting Associate Professor of Mathematics*
ERICH SCHAFRANIK, DIPL. ING., *Research Associate in Engineering*
⁴MAX JOSEF SCHILHANSL, ENG.D., *Professor of Engineering*
PATRICIA SCHILTZ, SC.B., *Teaching Associate in Physical Education*
HAROLD SCHLOSBERG, PH.D., *Edgar J. Marston Professor of Psychology*
RICHARD GEORGE SCHMITT, PH.D., *Instructor in Philosophy*
WALTER JOHNSON SCHNERR, PH.D., *Associate Professor of Romance Languages*
CHARLES SCHOTTA, JR., A.B., *Assistant in Economics*
ALLAN MARTIN SCHRIER, PH.D., *Assistant Professor of Psychology*
CARL WILLIAM SCHUETTE, PH.B., *Instructor in Physical Education*
ROBERT OSCAR SCHULZE, PH.D., *Assistant Professor of Sociology; Assistant to the Dean of The College*
⁵MICHAEL SECURO, ED.M., *Research Associate in Engineering*
MANFRED ISMAR LUDWIG SEEGALL, SC.B., *Assistant in Physics*
ANATOLE MORRIS SHAPIRO, PH.D., *Associate Professor of Physics*
HOWARD FRANKLIN SHAWCROSS, A.M., *Assistant in English*
FREDERICK GEORGE SHERMAN, PH.D., *Professor of Biology*
ROBERT MOODY SHERMAN, SC.B., *Lecturer in Chemistry; Instructor³*
JANE HAMILTON SHERWOOD, A.B., *Assistant in Biology*
RICHARD THORPE SHIELD, PH.D., *Associate Professor of Applied Mathematics*
⁵ARA ARTHUR SHIRAGIAN, B.A. IN MED., *Assistant in Chemistry*
GEORGE KEEN SHORTESS, A.B., *Research Assistant in Psychology*
DIANA EISENSTAT SILK, *Assistant in Russian*
MARIE CLAIRE SIMONEAU, SC.B., *Research Assistant in Biology; Special Research Assistant⁶*
GORDON BURGESS SMALL, JR., A.M., *Assistant in Mathematics*
CHARLES HUGH SMILEY, PH.D., *Professor of Astronomy; Director of Ladd Observatory*
CALEB ALLEN SMITH, PH.D., *Associate Professor of Economics*
ELMER REID SMITH, A.M., ED.D., *Professor of Education; Director of the Summer School; Director of the Master of Arts in Teaching Program*
⁶GERALD FRANCIS SMITH, PH.D., *Research Associate in Applied Mathematics*

¹ On leave of absence, Semester I.

² On leave of absence, Semester II.

³ Master of Arts in Teaching Program, Summer 1958.

⁴ On leave of absence.

⁵ Summer, 1958.

OFFICERS OF INSTRUCTION

WALTER HENRY SNELL, PH.D., *Stephen T. Olney Professor of Natural History*

ERIC JAMES SOFTLEY, B.Sc., *Research Assistant in Engineering*

HAROLD HYMAN SOGIN, PH.D., *Associate Professor of Engineering*

ETTA SOIREF, PH.D., *Registrar of the Graduate School; Assistant Professor of English*

FREDERICK AUGUSTUS SPEAR, PH.D., *Instructor in French*

WILLIAM C. SPEARS, A.B., *Assistant in Psychology*

NORMAN ARTHUR SPRINTHALL, A.B., *Director of Financial Aid; Assistant in Political Science*

MARTHA WARREN STAGG, A.M., *Research Assistant in Biology*

JEROME LEON STEIN, PH.D., *Assistant Professor of Economics*

CARL EDWARD STENBERG, A.B., *Teaching Associate in English*

MARJORIE JONES STENBERG, A.B., *Research Assistant in Biology*

PIERRE STERN, DIPL.D'ING., *Research Assistant in Engineering*

ELI STERNBERG, PH.D., *Professor of Mechanics*

¹FRANK MOORE STEWART, PH.D., *Associate Professor of Mathematics*

EDWARD GRANT STOCKWELL, A.M., *Research Assistant in Sociology*

MERTON PHILIP STOLTZ, PH.D., *Professor of Economics*

²RAYMOND LEWIS STONE, A.B., *Research Assistant in Applied Mathematics*

SAINSBURY LEE STRACK, A.M., *Research Assistant in Applied Mathematics*

WILLIAM EDWIN STRAILE, PH.D., *Research Associate in Biology*

CHARLES ARTHUR STUART, PH.D., *Robert P. Brown Professor of Biology*

V. SANKARA SUBRAMANIAN, B.Sc., B. ENGIN., *Research Assistant in Engineering*

NANCY ANN SULLIVAN, A.M., *Instructor in English*

PAUL SOUTHWORTH SYMONDS, PH.D., *Professor of Engineering*

³PHILIP TAFT, PH.D., *Professor of Economics*

⁴PETER TASI, B.C.E., *Research Assistant in Engineering*

⁵JOHN CLAUDE TAYLOR, M.Sc., *Research Assistant in Applied Mathematics*

MERLIN GENE TAYLOR, Sc.B., *Assistant in Physics*

PAUL BEEKMAN TAYLOR, A.M., *Assistant in English*

RICHARD CLYDE TAYLOR, PH.D., *Associate Professor of Philosophy*

LOUIS JOSEPH TEUTONICO, PH.D., *Research Associate in Applied Mathematics*

NATHANIEL STERNS THAYER, A.B., LL.B., *Lecturer in Engineering*

JOHN LOVELL THOMAS, A.M., *Instructor in History*

MONTCALM TOM THOMAS, Sc.M., *Assistant in Physics*

HANS JAKOB ULRICH THOMMEN, PH.D., *Assistant Professor of Engineering*

WADE CLAYTON THOMPSON, A.M., *Instructor in English*

¹ On leave of absence.

² Summer, 1958.

³ On leave of absence, Semester II.

⁴ Academic year 1957-58.

⁵ Began October 1, 1957.

OFFICERS OF INSTRUCTION

VINCENT ANTHONY TOMAS, PH.D., *Professor of Philosophy*

¹FREDERICK NEALE TOMPKINS, SC.B., *Professor of Electrical Engineering*

²ALAN STUBBS TRUEBLOOD, PH.D., *Associate Professor of Spanish*

ROHN TRUELL, PH.D., *Professor of Applied Mathematics; Director of Research in Applied Mathematics*

ÜLKER SANIYE TULUNAY, A.M., *Research Assistant in Psychology*

JOHANNES TUUL, SC.M., *Research Assistant in Physics*

WILLIAM FREEMAN TWADDELL, PH.D., *Professor of Linguistics and German*

WILLIAM FELKER TYNDALL, SC.B., *Assistant in Mathematics*

³CATHERINE VAKIRTZI, SC.M., *Special Research Assistant in Biology*

MIRIAM MARA VAMOS, A.M., *Assistant in French*

JANICE OAKLEY VAN DE WATER, A.M., *Associate Professor of English; Director of Dramatics*

PIETER JOSEPH MARIA VAN HETEREN, DOCTORANDUS, *Research Assistant in Chemistry*

³HUBERTA EVA VAN HEYNINGEN, MASTER'S DEGREE, *Special Research Assistant in Biology*

OTTO VAN KOPPENHAGEN, A.M., *Associate Professor of Music (Artist)*

ALBERT DOUGLASS VAN NOSTRAND, PH.D., *Associate Professor of English*

ERIC VARLEY, HONS. DEGREE MATHS., *Research Assistant in Applied Mathematics*

FRANKLIN HOWARD VAUGHN, A.M., *Assistant in English*

MICHAEL VOICHICK, A.B., *Assistant in Mathematics*

HYATT HOWE WAGGONER, PH.D., *Professor of American Literature*

GEORGE DEWEY WALDMAN, SC.M., *Research Assistant in Applied Mathematics*

CHARLES THOMAS WALKER, SC.M., *Assistant in Physics*

THOMAS JOSEPH WALLACE, A.B., B.F.A., *Teaching Associate in Art*

³CHARLES CHEN-DING WANG, B.SC., *Research Assistant in Engineering*

HENRY TSUEY-TANG WANG, B.SC., *Research Assistant in Engineering*

JOHN ROBERT WARD, B.SC., *Assistant Professor of Engineering*

LEROY STANLEY WARD, SC.B., *Instructor in Physical Education*

FRANK ALGERNON WARREN, III, A.M., *Teaching Associate in American Civilization*

JOSEPH WATMOUGH, *Instructor in Physical Education*

CHARLES HENRY WATTS, II, PH.D., *Dean of The College; Associate Professor of English*

CLARENCE MERTOUN WEBSTER, PH.D., *Associate Professor of English*

KARL SIEGFRIED WEIMAR, PH.D., *Associate Professor of German*

PAUL B. WEISZ, PH.D., *Professor of Biology*

¹ On leave of absence, Semester II.

² On leave of absence, Semester I.

³ Summer, 1958.

OFFICERS OF INSTRUCTION

- JOHN WERMER, PH.D., *Associate Professor of Mathematics*
¹PETER JOCELYN WESTERVELT, PH.D., *Associate Professor of Physics*
CHARLES GAMMONS WHITING, PH.D., *Instructor in French*
VINCENT HEATH WHITNEY, PH.D., *Professor of Sociology*
GITA JANE WILDER, A.B., *Assistant in Sociology*
JOSEPH WILDER, B.S. IN E.E., *Research Assistant in Engineering*
ARTHUR OLNEY WILLIAMS, JR., PH.D., *Professor of Physics*
CALVIT HERNDON WILLIAMS, JR., A.B., *Assistant in Chemistry*
LEA EVERARD WILLIAMS, PH.D., *Assistant Professor of Political Science*
JAMES WALTER WILSON, PH.D., *Frank L. Day Professor of Biology*
THOMAS MICHAEL B. WILSON, PH.D., *Research Associate in Chemistry*
EDWARD JOHN WITTERHOLT, SC.B., *Research Assistant in Applied Mathematics*
TSE-CHIEN WOO, M.S. IN M.E., *Research Assistant in Applied Mathematics*
JOHN ROWE WORKMAN, PH.D., *Associate Professor of Classics*
DENNIS HUME WRONG, PH.D., *Assistant Professor of Sociology*
LAWRENCE COUNSELMAN WROTH, A.B., LITT.D., L.H.D., *Research Professor of American History*
SUKUFE YAMANTURK, DR.S.(ISTANBUL), *Research Assistant in Applied Mathematics*
SHOU YAO YIH, B.Sc., *Research Associate in Chemistry*
BOHYUN YIM, B.Sc., *Research Assistant in Applied Mathematics*
SHUN-JING YING, B.M.E., *Research Assistant in Engineering*
HIDEHIKO YOSHIDA, B. OF ENGIN., B.S. IN PHYSICS, *Research Assistant in Applied Mathematics*
MARGARET YOUNGE, A.B., *Research Assistant in Applied Mathematics*
JEUNG SOON YUN, SC.M., *Research Assistant in Biology*
SEUNG SOO YUN, A.B. IN PHYSICS, *Assistant in Physics*
MICHAEL RAYMOND ZATZICK, A.M., *Research Assistant in Physics*
WILLIAM PAUL ZEIMER, SC.M., *Assistant in Mathematics*
JOSEPH ABRAHAM ZILBER, A.M., *Research Associate in Mathematics*
²JOHANNES WINANDUS EGIDIUS ZINK, MASTER'S DEGREE, *Visiting Research Associate in Physics*
PHILIP HEINZ ZOLDESTER, DR.RER.POL., *Assistant in German*
³FRANCIS JOHN ZUCKER, A.M. IN PHYSICS, *Visiting Lecturer in Engineering*
MARTIN MICHAEL ZUCKERMAN, A.B., *Assistant in Mathematics*

¹ On leave of absence.

² Began Semester II, 1957-58.

³ Semester II, 1957-58.

Recipients of Special Grants for Sabbatical Study and Research

The following Officers of Instruction have received grants or fellowships from the sources indicated to conduct independent study and research in their respective fields while on leave of absence from the University during all or part of 1958-59:

RICARDO AUGUSTO CAMINOS, *Associate Professor of Egyptology*
John Simon Guggenheim Memorial Foundation Fellowship

DEANE CHALMERS CARSON, *Assistant Professor of Economics*
Ford Foundation Faculty Research Fellowship

LEALLYN BURR CLAPP, *Professor of Chemistry*
National Science Foundation Faculty Fellowship

JOHN LADD, *Associate Professor of Philosophy*
John Simon Guggenheim Memorial Foundation Fellowship

GORDON FRANK NEWELL, *Associate Professor of Applied Mathematics*
Alfred P. Sloan Foundation Grant

WILLIAM PRAGER, *Professor of Applied Mechanics*
John Simon Guggenheim Memorial Foundation Fellowship

ALAN STUBBS TRUEBLOOD, *Associate Professor of Spanish*
United States Government Fulbright Award for Advanced Research

Standing Committees of the Faculty¹

Board of Admission

THE PRESIDENT, Chairman; the PROVOST OF THE UNIVERSITY; the DEAN OF THE COLLEGE; the DEAN OF PEMBROKE COLLEGE; the DEAN OF ADMISSION OF THE COLLEGE; the DEAN OF ADMISSION OF PEMBROKE COLLEGE; and the DIRECTOR OF EDUCATIONAL MEASUREMENT, all *ex-officio*; Messrs. CLAPP (to 1959), WORKMAN (to 1960), and PROBSTEN (to 1961).

On Academic Standing

THE PROVOST OF THE UNIVERSITY; the DEAN OF THE COLLEGE, Chairman; the DEAN OF PEMBROKE COLLEGE; the DEAN OF STUDENTS OF THE COLLEGE; the CHAIRMAN OF THE BOARD OF ADMISSION (or his representative); the RECORDER OF THE COLLEGE; the RECORDER OF PEMBROKE COLLEGE, all *ex-officio*; Mr. BENFORD representing the Division of Engineering; Mr. MORSE representing the Honors Council; Messrs. BLOOM (to 1959), G. L. CHURCH (to 1960), and R. M. CHURCH (to 1961).

¹ The President of the University is *ex-officio* a member of all Standing Committees of the Faculty.

COMMITTEES

On the Curriculum

THE PRESIDENT, Chairman; the PROVOST OF THE UNIVERSITY; the DEAN OF THE COLLEGE; the DEAN OF PEMBROKE COLLEGE; the DEAN OF THE GRADUATE SCHOOL; the DIRECTOR OF THE HONORS PROGRAM; the SECRETARY OF THE FACULTY, all *ex-officio*; Messrs. COOLIDGE, ECHEVERRIA, and MORSE (to 1959); Messrs. G. K. ANDERSON, CORNWELL, and NACE (to 1960); Messrs. EDDS, MASSEY, and SYMONDS (to 1961).

On Student Organizations

THE DEAN OF STUDENTS OF THE COLLEGE, Chairman; the DIRECTOR OF ATHLETICS; the ASSOCIATE DEAN OF STUDENTS OF THE COLLEGE; the ASSISTANT DEAN OF PEMBROKE COLLEGE; the ADVISER ON STUDENT ACTIVITIES OF PEMBROKE COLLEGE, all *ex-officio*; Messrs. HATCH and KRAUSE (to 1959); Messrs. LEVY and TRUMBULL (to 1960); Messrs. DINNEEN and WRONG (to 1961).

On Student Organizations in Pembroke College

THE DEAN OF PEMBROKE COLLEGE, Chairman; the ADVISER ON STUDENT ACTIVITIES OF PEMBROKE COLLEGE; the DIRECTOR OF RESIDENCE OF PEMBROKE COLLEGE; the CHAIRMAN OF THE DEPARTMENT OF PHYSICAL EDUCATION OF PEMBROKE COLLEGE; the ASSISTANT DEAN OF PEMBROKE COLLEGE, all *ex-officio*; Messrs. RIDGELY (to 1959), ENGEN (to 1960), and LENZ (to 1961).

On Prizes and Premiums

MR. RICHARDS, Chairman; Messrs. JORDY (to 1959), KLING (to 1960), and PECK (to 1961).

On the Faculty Travel Fund

Messrs. J. ROSS (to 1959), Chairman, GURLAND (to 1960), and BRENNAN (to 1961).

On Schedules

THE RECORDER OF THE COLLEGE, Chairman; the RECORDER OF PEMBROKE COLLEGE, both *ex-officio*; Messrs. PFAFFMANN (to 1959), GOLDSTEIN (to 1960), and BUCHSBAUM (to 1961).

On Commencement Speakers

MR. S. BROWN, Chairman; the ASSOCIATE DEAN OF THE COLLEGE; the DEAN OF PEMBROKE COLLEGE; the INSTRUCTORS IN PUBLIC SPEAKING, all *ex-officio*; Messrs. BARNHILL (to 1959), KUCERA (to 1960), and GIDDINGS (to 1961).

COMMITTEES

On Scholarly Publications

The LIBRARIAN, Chairman; the DEAN OF THE GRADUATE SCHOOL, both *ex-officio*; Messrs. BEYER (to 1959), TAYLOR (to 1960), and E. J. BROWN (to 1961).

Faculty Members of Joint Committees

Athletic Advisory Council

The PROVOST OF THE UNIVERSITY; the DEAN OF THE COLLEGE; the DEAN OF STUDENTS OF THE COLLEGE, all *ex-officio*; Messrs. BLISTEIN (to 1959), JONAH (to 1960), and PARKER (to 1961).

On the Library

The DEAN OF THE GRADUATE SCHOOL, *ex-officio*; Messrs. WEISZ (to 1959), CHISHOLM (to 1960), and WAGGONER (to 1961).

On Consultation Between the Corporation and the Faculty

MESSRS. COLE (to 1959), PFAFFMANN (to 1960), and BRADNER (to 1961).

Honors Council

The DIRECTOR OF THE HONORS PROGRAM (Mr. MORSE), Chairman (to 1959); Messrs. ANGULO (to 1959), RUSSELL (to 1960), DOWNING (to 1961), and PERKINS (to 1962).

Graduate Council

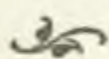
THE PRESIDENT, the PROVOST OF THE UNIVERSITY, the DEAN OF THE GRADUATE SCHOOL, all *ex-officio*; Messrs. BRAY, W. F. CHURCH, COLE, KAPSTEIN, PFAFFMANN, and TAYLOR.

Physical Sciences Council

The DEAN OF THE GRADUATE SCHOOL, the DEAN OF THE COLLEGE, both *ex-officio*; Messrs. PRAGER,¹ Chairman, COLE, DRUCKER, FARNSWORTH, RIVLIN, NACE, QUINN, SYMONDS, TRUELL, and WILLIAMS.

¹ On leave of absence, 1958-59. Mr. Cole will be Acting Chairman during Mr. Prager's absence.

History



BROWN UNIVERSITY was founded in 1764 in Warren, Rhode Island, as Rhode Island College. The seventh oldest college in America and the third in New England, it came into existence at a time when conditions in the Colony were ripe for the establishment of an institution of higher learning: commerce on land and sea was a growing source of wealth; the population included many men of wide intellectual interests; and the spirit of religious liberty prevailed in the commonwealth founded by Roger Williams.

The Charter

Under these conditions, the Charter of the College, which was granted by the General Assembly of the Governor and Company of the English Colony of Rhode Island and Providence Plantations, was one of the most liberal instruments of its kind written in the eighteenth century. The original incentive in the founding of Rhode Island College, as with other colonial colleges, was a desire to perpetuate an educated ministry, but in addition a broader purpose was defined and declared in the language of this Charter of 1764—“*preserving in the Community a Succession of Men duly qualify'd for Discharging the Offices of Life with usefulness and reputation.*”

As Rhode Island gave to the American Colonies an example of freedom of conscience within a civil state, so Rhode Island College gave to the American colleges one of the earliest examples of full freedom in teaching. The Charter declared that there “*shall never be admitted any Religious Tests but on the Contrary all members hereof shall forever enjoy full free absolute and uninterrupted Liberty of Conscience*” and “*that the Sectarian differences of opinions shall not make any Part of the Public and Classical Instruction.*” With an outlook unusually far-sighted for the eighteenth century the Charter also required “*that the Public teaching shall in general respect the Sciences.*”

In the founding of the College the Baptists took the leadership, but in their willingness to share control with members of other faiths they made a most important contribution to the cause of education. This idea was further expressed in the Charter revision of 1942, which removed all denominational restrictions for members of the Corporation.

HISTORY

Colonial Beginnings

In September, 1765, the College had its first registration—a single student, with a faculty consisting of James Manning, the first President. The second member of the faculty, David Howell, was added in 1766. In 1767 the student enrollment was 10, and in 1769 the first class could be graduated. Exercises were held at Warren with the degree of Bachelor in the Arts conferred upon seven young men.

During these early years, there was much agitation to have the College permanently located elsewhere in the Colony. Each town vied with the others in offering inducements. Finally Providence won, and in 1770 the College was moved to "College Hill" high above the town, where it has remained ever since. At that time, work was begun on the first building, The College Edifice, known since 1823 as University Hall.

Shortly after the College was moved to Providence, it was rocked by events which not only threatened the existence of New England's thriving commerce but which were destined to shape the movement for political independence. The infant College, with its slender resources, was to make an important contribution in the struggle which was soon to follow. From 1776 to 1782, during the American Revolution, the College was closed while faculty and students, "almost to a man," were engaged in the service of their country, and The College Edifice was used as a barracks and hospital for American troops and for the French soldiers of Rochambeau.

In 1790, after peace had been restored, George Washington, then President of the United States, visited the town of Providence with Thomas Jefferson and was awarded the honorary degree, Doctor of Laws. University Hall was illuminated by candles in celebration of the event, and President Washington with his friends visited the building and viewed the illumination from the College Green. It was in response to a greeting from President Manning upon this occasion that President Washington made this declaration: "You may rely on whatever protection I am able to afford in so important an object as the education of our youth."

Early Nineteenth Century Growth

In 1804, Nicholas Brown, son of one of the founders of the College, a member of the Class of 1786, and then Treasurer of the College, made a gift of a sum of money, large for those times. In recognition of this generosity, the name of the College was changed to Brown University. The benefactions of Nicholas Brown to the University continued through many years until they aggregated approximately \$160,000. As a result of his generosity, Hope College, Manning Hall, and the Library Fund came into existence. The John Carter Brown Library, founded by and named for the son of Nicholas Brown, contains the finest collection of early Americana in

the world and is one of the choicest material possessions of the University.

During this early period many men were graduated who later were to have positions of prominence and responsibility and whom today we remember for service to our country and for the distinction that they have brought to their Alma Mater. Samuel Snow (1782) was United States Consul in Canton, China. Jonathan Maxcy (1786) was the second President of Brown, later President of Union College and the first President of the University of South Carolina. Jonathan Russell (1791), one of the commissioners who negotiated the treaty of Ghent in 1814, later became a Member of Congress and Minister to Norway and Sweden. Henry Wheaton (1802), the authority of his day on international law, served as Minister to Prussia. Adoniram Judson (1807) is remembered as a brilliant and heroic missionary to Burma. William L. Marcy (1808) served as Governor of the State of New York before becoming the Secretary of War for President Polk and Secretary of State for President Pierce. Wilbur Fisk (1815), a Methodist clergyman, was the first President of Wesleyan University. Horace Mann (1819), as Secretary of the Massachusetts Board of Education, profoundly influenced public school education throughout the country. Samuel Gridley Howe (1821) was a hero in the Greek war of independence and later in America became a pioneer in humanitarian work for the blind. George D. Prentice (1823) became the famed editor of the *Louisville* (Kentucky) *Journal*.

Later Nineteenth Century Expansion

Brown, having grown from a small college to a well established university, called Francis Wayland in 1827 to be its fourth President. He was probably the most distinguished college president of his time, and his was an administration notable in the history of the University. His influence was felt both in the physical growth and development and in the improved intellectual and moral tone of the institution. The personnel was enlarged, and the material resources were greatly increased. Entrance requirements were raised; the scope of the curriculum was enlarged, and greater emphasis was given to the natural sciences and political economy. His theories of universal education were probably the most advanced of any leader since Thomas Jefferson. Wayland pioneered the elective system, and he encouraged the introduction of courses in applied science and engineering. The beginnings of the Division of Engineering at Brown go back to the days of Francis Wayland.

During the period of the Civil War, Brown again felt the influence of a national conflict. Of the 278 men who were graduated during the war, 132 enlisted for service. It was only at the end of this civil strife that the University regained its normal stride.

HISTORY

Important innovations were introduced during the next 25 years. Athletics were organized, and Brown was represented in intercollegiate sports, particularly baseball and rowing. Many new buildings were added to the campus, and the financial resources of the University were greatly increased. The Alumni Association was created during this period, enabling former students to take an ever-increasing and vital interest in the growth of the institution. The time of Commencement was changed from September to June in 1870, and in 1888 the first Master of Arts degree, in course, was awarded, followed in 1889 by the first degree of Doctor of Philosophy.

In 1889, Elisha Benjamin Andrews of the Class of 1870 became the eighth President of Brown. His administration marks another important era in Brown's history. The modern University, already emerging, developed rapidly under the initiative and contagious enthusiasm of Andrews. Pembroke College, a coordinate undergraduate college for women, was established in 1891. Nine new departments of instruction were created, and graduate study was seriously encouraged. The undergraduate enrollment was more than doubled, and the faculty was increased more than threefold, largely by the appointment of a group of promising young men who had prepared for teaching in the graduate schools of this country and abroad. These men were a remarkable group of teachers and scholars whose influence is still felt in the University.

From the time of President Wayland to the end of the nineteenth century many eminent men were graduated from Brown. Samuel Sullivan Cox (1846) became famous as an author, humorist, statesman, and diplomat. James B. Angell (1849) was President of the University of Vermont, President of the University of Michigan, and later Minister to Turkey and to China. Alexander L. Holley (1853) became a pioneer in modern engineering, particularly in the development of the iron and steel industry. Richard Olney (1856) and John Hay (1858) were both Secretaries of State. Hay was also personal secretary to President Lincoln and Ambassador to Great Britain. William W. Keen (1859), the distinguished surgeon, served in the Civil and Spanish-American wars and in World War I. Elisha Benjamin Andrews, the President of Brown, was also Chancellor of the University of Nebraska. Benjamin Ide Wheeler (1875) was the President of the University of California. Dr. Charles V. Chapin (1876) was a pioneer in the field of preventive medicine. Charles Evans Hughes (1881) was, in succession, the Governor of the State of New York, Secretary of State, Justice of the World Court, and Chief Justice of the United States. Sam Walter Foss (1882), editor and poet, and Dana Carleton Munro (1887), medieval historian, were well-known graduates of Brown. Alexander Meiklejohn (1893), Dean at Brown and President of Amherst College, was later Chairman at the Experimental College in the University of Wisconsin and Director of the

School of Social Studies in San Francisco. John D. Rockefeller, Jr. (1897), philanthropist and financier, has spent a lifetime in humanitarian endeavors.

Names of graduates in this present century will also be written indelibly into our national history. Time eventually will make its decision which of the graduates since 1900 will be listed on the distinguished honor rolls of the future.

The Founding of Pembroke College

Pembroke College in Brown University was established in 1891. The first building erected on the women's campus was dedicated in 1897 and was called Pembroke Hall in honor of Pembroke College in Cambridge University, the Alma Mater of Roger Williams. From the very beginning the aim of the coordinate college at Brown was to preserve for women the distinct social life of a separate institution, the college to be affiliated and not appended, but its graduates to be graduates of Brown University. Mary E. Woolley, a distinguished President of Mount Holyoke College, was a member of the first graduating class. The great success of Pembroke is a tribute to the foresight of President Elisha Benjamin Andrews, for whom the largest residence hall at Pembroke is named, and to the effective administrations of the Deans of Pembroke College: Louis Franklin Snow (1892-1900); Anne Crosby Emery Allinson (1900-05 and 1922-23); Lida Shaw King (1905-22); Margaret Shove Morriss (1923-50); Nancy Duke Lewis (1950-).

The Turn of the Century

Just before the turn of the century, William Herbert Perry Faunce of the Class of 1880 began his administration, 1899-1929, the longest in the history of the University. Under his direction Brown became in fact, as well as in name, a university-college—an institution primarily concerned with the liberal education of the individual student but also equipped to offer advanced and specialized study in the scholarly environment of a university.

These 30 years saw a remarkable increase in the physical plant and material resources of the University, with the endowments increasing nine-fold and the income increasing correspondingly. In 1929 the libraries of the University contained approximately 400,000 volumes. The undergraduate enrollment had increased to approximately 1300 men in The College and 500 women in Pembroke, and the faculty was over 200 in number.

During this period the University achieved a position of larger importance in the field of American education. Entrance requirements were raised, the curriculum was considerably broadened, study for Honors was inaugurated, and graduate study was given formal recognition by the establishment of

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the Graduate School. More adequate provisions were made for the administration of student life and welfare, closer relationships with the community were encouraged, and all aspects of the educational process were broadened in scope and enriched in content.

Brown in Recent Years

In 1929, Clarence Augustus Barbour, of the Class of 1888, became the tenth President of the University. During the period of his administration, the University continued to develop its educational program and to enlarge its physical and financial resources. The educational policy of the University was summed up at the beginning of his administration in the following statement: "Education proceeds best by contact between superior minds and personalities. The character of a university as an institution of higher education depends essentially upon the competence of the faculty, the quality of the students, and the adequacy of the provisions for contact between them. Out of these primary elements the educational policy of a university is constructed." With this policy as the basic principle, the University has limited the student body in size by developing a system of selective admission to the freshman class, attracted a faculty of able teachers, utilized the resources of its location in an old New England city, and encouraged investigation and research.

Henry Merritt Wriston, one of the nation's educational leaders, was inaugurated President of Brown in 1937. His administration served to strengthen Brown's contribution to the welfare of the nation. Since 1937 the endowment and physical plant of the University have been increased, the library resources have been enlarged, new departments of instruction have been added, pioneer work in freshman-sophomore curricula has been developed, and an extensive student housing program was given impetus with the construction of a dormitory-fraternity quadrangle, subsequently named for Dr. Wriston. The Corporation has followed a policy of maintaining a university-college, feeling that many of the advantages of both the small college and the large university may be secured at Brown.

Dr. Wriston's distinguished service at Brown terminated in August, 1955, with the election of his successor, Barnaby Conrad Keeney, previously Dean of the Graduate School and Dean of The College. The latter's installation took place in October, 1955, in an atmosphere of confidence for the University's continuing progress. In the final months before Dr. Wriston's retirement, a splendid tribute came from Mr. Rockefeller accompanying the first installment of a gift of \$5,000,000. This made possible the planning of a new department building and encouraged a project for another residential quadrangle, first occupied in 1957.

Of great significance was the University's successful \$1,000,777 bid for

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Dexter Asylum, the 130-year-old poor farm of the City of Providence, which thus became in September, 1956, the site of Brown's athletic plant of the future. These 39 acres, less than a quarter of a mile from the Brown Campus, will in time accommodate a new gymnasium, indoor ice rink, field house, swimming pool, playing fields for baseball, soccer, track, lacrosse, tennis courts, and intramural sports and practice areas. The new development has been named Aldrich-Dexter Field. It will release existing facilities for other purposes and will be occupied progressively as financing permits. Except for the football stadium, Brown will dispose of the Elmgrove Avenue plant as the new program proceeds.

In 1956, the Corporation looked ahead to the University's Bicentennial in 1964 with plans for proper observance. In addition to publications and special events, a \$30,000,000 development program was approved, one objective of which was to add \$20,000,000 to the endowment for Faculty salaries. The prospectus for plant included a new Biology building, a new Engineering center, a new Physics building, renovation of Hope College (Brown's second building, still in use as a dormitory), another Pembroke dormitory, and an addition to the John Hay Library. Thus, having surveyed its successes and drawn a chart for its future, the University will embark upon its third century with even greater confidence and strength.

General Regulations



Admission

ADMISSION to the freshman class at The College and at Pembroke College is limited to those applicants who, in the judgment of the Board of Admission, are best qualified to benefit from the educational opportunities which Brown University offers. In considering the qualifications of applicants, the Board seeks evidence of ability to pursue successfully the academic work of Brown University and evidence of the personal qualities desired by The College and by Pembroke College in their respective students.

New students are ordinarily admitted only in September each year. The size of the entering class is limited at The College to approximately 625 men and at Pembroke College to approximately 250 women. The total enrollment is approximately 2400 at The College and 900 at Pembroke College.

Factors Determining Admission

The decision of the Board of Admission with respect to an applicant is based upon the following factors:

1. *Secondary school record.* Much importance is attached to the applicant's academic record. Attention is given to both the selection of subjects and the quality of achievement.
2. *School recommendation.* Admission decisions are greatly influenced by the statement of the secondary school, and by statements from other sources, concerning the applicant's ability, character, and general fitness for college.
3. *Personal interview.* All candidates for admission to The College should, if possible, have a personal interview with an officer of the University or a designated alumnus. All candidates for admission to Pembroke College should, if possible, have a personal interview with an Admission Officer of Pembroke College or a designated alumna.
4. *College Entrance Examination Board Tests.* All applicants for admission to the freshman class are required to take the Scholastic Aptitude Test and three Achievement Tests of the College Entrance Examination Board in accordance with the Table on page 54.

Subject Requirements

Four years of secondary school work are normally required for admission. While Brown University believes that the educational program should be adapted to the needs and aptitudes of the individual student and that quality of academic performance is more important than subject requirements as a criterion for judging applicants, experience shows that certain specific subject requirements should be met. Beyond these, electives should be chosen from college preparatory subjects as far as possible but exceptions will be considered by the Board of Admission.

The requirements which should be fulfilled vary for the several degrees (exceptions are made in unusual cases). These requirements are as follows:

Bachelor of Arts: Four years in English, three in mathematics—equivalent to two in algebra and one in plane geometry (with the exception, however, that for Pembroke College the requirement shall be two years of mathematics and preferably three, chosen from algebra and plane geometry)—two in one foreign language, preferably three, and electives, preferably in the fields of English, foreign language, mathematics, history, and science, to make a total of 16 credits.

Bachelor of Science in Applied Mathematics: Four years in English, four in mathematics—equivalent to two in algebra, one in plane geometry, one-half in plane trigonometry, and one-half in solid geometry or advanced mathematics—two in one foreign language (preferably French or German), one in physics or chemistry (preferably physics), and five in elective subjects, preferably in the fields of English, mathematics, foreign language, history, and science.

Bachelor of Science in Chemistry: Four years in English, four in mathematics—equivalent to two in algebra, one in plane geometry, one-half in plane trigonometry, and one-half in solid geometry or advanced mathematics—two in one foreign language (preferably French or German), one in chemistry or physics (preferably chemistry), and five in elective subjects, preferably in the fields of English, mathematics, foreign language, history, and science.

Bachelor of Science in Engineering: Four years in English, four in mathematics—equivalent to two in algebra, one in plane geometry, one-half in plane trigonometry, and one-half in solid geometry—one (but preferably two) in a foreign language, one in physics or chemistry (preferably physics), and six in elective subjects, preferably in the fields of English, mathematics, foreign language, history, and science.

Bachelor of Science in Physics: Four years in English, four in mathematics—equivalent to two in algebra, one in plane geometry, one-half in plane trigonometry, and one-half in solid geometry or advanced mathematics—two in one foreign language (preferably French or German), one in physics or chemistry (preferably physics), and five in elective subjects,

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preferably in the fields of English, mathematics, foreign language, history, and science.

*Bachelor of Science (in Nursing):*¹ Four years in English, two in algebra, one in plane geometry, two in one foreign language, and seven in elective subjects, preferably in the fields of English, foreign language, mathematics, history, and science. This degree, *expressly for Pembroke College students*, is conferred in connection with the granting of a diploma by the Rhode Island Hospital School of Nursing. Applicants must also meet the requirements for admission to the School of Nursing which include taking the pre-nursing test given by the National League of Nursing Education.

Bachelor of Arts and Bachelor of Science in Applied Mathematics, in Chemistry, in Engineering, or in Physics (combined five-year program): Four years in English, four in mathematics (as outlined for the specific Bachelor of Science degree), two in one foreign language (preferably French or German), one in physics or chemistry (as outlined for the specific Bachelor of Science degree), and five in elective subjects, preferably in the fields of English, mathematics, foreign language, history, and science.

Admission Procedure

Preliminary Application

Preliminary application for admission either to The College or to Pembroke College may be made at any time before the student's senior year in secondary school. Early application is not required, but it is strongly recommended since it enables the respective college to have a continuing interest in the student's secondary school career. Those who file a preliminary application will automatically receive all necessary final application material early in the senior year. Early application, however, does not insure admission at either college.

In addition to making early application, prospective applicants should confer with their school officials as early as possible regarding the arrangement of their secondary school programs to meet the requirements for admission.

The students who have filed preliminary applications for admission are urged to take the Scholastic Aptitude Test of the College Entrance Examination Board in March or May of their junior year and to have the scores sent to the appropriate Admission Office.

Final Application—THE COLLEGE

Final application for admission to The College should be made early in the senior year. Application forms may be obtained by writing to the Board of Admission, Brown University, Providence 12, Rhode Island. When completed and returned to the Board of Admission, the application should

¹ See Appendix B, page 318.

be accompanied by an application fee of \$10 which covers a part of the processing expense and is not returnable. However, *no student should hesitate to file his application for lack of this fee*. In the case of severe financial hardship, an applicant for admission and scholarship may request in writing to have his fee waived. This request should be filed before March 1.

Final Application—PEMBROKE COLLEGE

Final application for admission to Pembroke College should be made early in the senior year and no later than February 15. Applications received after that date cannot be assured full consideration. (See Early Decision Plan—Pembroke College, page 57, for alternative application procedure.) Applicants for scholarships must file both their application for admission and the two scholarship application forms by February 15 (see page 100).

Application forms may be obtained by writing to the Admission Office, Pembroke College in Brown University, Providence 6, Rhode Island. When completed and returned to the Admission Office, the application should be accompanied by an application fee of \$15 which covers a part of the processing expense and is not refundable.

Credentials

The Admission Office at The College or at Pembroke College provides each candidate with blanks for the school record and recommendation, which the schools will complete and send to the proper Admission Office for consideration by the Board of Admission.

Personal Interview

An applicant for admission should have a personal interview with an Admission Officer, if possible. If this is not possible, the respective Admission Offices may be able to arrange an interview with an alumnus or an alumna living nearby. The lack of an interview will not, however, prejudice the chances of an applicant. Students may have an interview before filing an application. If students have taken the Scholastic Aptitude Test in their junior year, it would be helpful to have their scores on the test submitted in advance of their interview. They should *not* feel that they must wait until their senior College Board test scores and senior grades are available before arranging for an interview.

Pembroke College applicants who are in Southern New England or the Greater New York-New Jersey area (within a day's round trip to Providence) should arrange for a personal interview on campus.

Both the Admission Office in University Hall at The College and the Admission Office in Pembroke Hall at Pembroke College are open from 9 a.m. to 5 p.m. on weekdays throughout the year and, except in summer, from 9 a.m. to 12 noon on Saturdays. Student guides are usually available

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at each college to conduct visitors on tours of the campus, and detailed maps of the campus are always available in both offices.

Appointments can be made on two weeks' notice for weekdays and on three weeks' notice for Saturday mornings. During the Thanksgiving and Christmas recesses, the mid-year examination period, and the spring recess, three weeks' notice will be necessary for weekday appointments and one month's notice for Saturday mornings.

College Entrance Examination Board Tests

Every applicant for admission to the freshman class must take the Scholastic Aptitude Test and three Achievement Tests of the College En-

TABLE—Tests (C.E.E.B.)¹

	Scholastic Aptitude Test	Achievement Tests	
		Required	Recommended
Bachelor of Arts candidates	Candidates for all degrees should take the Scholastic Aptitude Test in December, January, or February. Those who take it in March will receive all possible consideration. The May test can be considered only under unusual circumstances. At Pembroke College scholarship applicants must take the test in December or January.	Any three	1 foreign language 1 biology, chemistry, or physics
Bachelor of Science in Applied Mathematics candidates		Three, including advanced mathematics and either physics or chemistry	French or German
Bachelor of Science in Chemistry candidates		Three, including advanced mathematics and either physics or chemistry	French or German
Bachelor of Science in Engineering candidates		Three, including advanced mathematics and either physics or chemistry	Any one
Bachelor of Science in Physics candidates		Three, including advanced mathematics and either physics or chemistry	French or German
Bachelor of Science (in Nursing) candidates		Any three	1 foreign language 1 biology, chemistry, or physics

¹ All candidates must write directly to the College Entrance Examination Board requesting test application blanks. Those in the Eastern, Southern, or Central states should write to the office at P.O. Box 592, Princeton, New Jersey; those in the Mountain or Pacific states should write to the office at P.O. Box 27896, Los Angeles 27, California. Applications must be made at least four weeks in advance for the January, March, and May tests (three weeks in advance for the December, February, and August tests) to avoid a fine of \$3.

Applicants who have already taken the tests should write to the College Board requesting that their scores be mailed to the Admission Office at the proper college.

trance Examination Board. The tests are given on several dates each year at many centers throughout the world.

The Scholastic Aptitude Test should be taken in either December, January, or February. All possible consideration will, however, be given to any candidate who takes this test in March (the test given in May comes after the class has been selected; only under very unusual circumstances can it be considered). Scholarship applicants at Pembroke College must take the test in December or January.

The Achievement Tests should be taken in March by those who will graduate in June. Those who graduate at mid-year may take them in December. These tests are used for placement as well as admission purposes, and the choice of individual tests will, therefore, be largely determined by the applicant's academic interests. Candidates for the degree of Bachelor of Arts or Bachelor of Science (in Nursing) may take any three tests. However, they are urged to take one test in a foreign language and, if they feel they can do well in the biology, chemistry, or physics test, they should take it; a high enough score on any of these may meet a college requirement, thereby making additional electives possible. Candidates for the Bachelor of Science degrees, except the Bachelor of Science (in Nursing), are required to take the advanced mathematics test, the test in either physics or chemistry, and a third of their own choosing. Candidates for the Bachelor of Science degrees in Applied Mathematics, Chemistry, or Physics are urged to take the third test in French or German if they have studied the language. See Table on preceding page.

Junior Year Admission

A small number of exceptionally able students will be permitted to enter The College and Pembroke College without completing the normal four years of secondary school work. This program permits students to enter directly from the junior year in secondary school and should not be confused with the Early Decision Plan of Pembroke College (see page 57). To be considered for Junior Year Admission, applicants must have superior school records and a very high degree of innate ability, and they must, in every way, be ready to meet the demands of a university environment.

Those interested in the Junior Year Admission program should write to the proper Admission Office by January of the junior year and should plan to take in May the pattern of College Entrance Examination Board Tests appropriate to their degree candidacy. An interview is required.

Admission with Advanced Standing

Brown is one of twelve colleges which participated in the original School and College Study of Admission with Advanced Standing, now called the Advanced Placement Program. The aims of this program, which is administered by the College Entrance Examination Board, are "to give able

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students challenging educational experiences in school, to lessen unnecessary duplication in college of work done in school, and to increase for these able students the opportunity to take advanced work in college." If students enrolled in secondary schools participating in this program have had the equivalent of a one-year college-level course in one or more of the subjects listed below, they may take the appropriate examinations given in May, and have the scores sent, as the case may be, either to the Admission Office at The College or the Admission Office at Pembroke College. Credit is determined after recommendation by the appropriate academic department of Brown University, which reviews the student's examination paper and score as well as other materials including a report from the student's school. To the student who qualifies is offered the choice of either distribution credit or course credit in the given subject (for information about distribution credit granted on the basis of examination, see page 72).

Subjects in which distribution credit or course credit may be granted include American History, Biology, Chemistry, European History, French, German, Latin, Literature, Mathematics, Physics, and Spanish. Proficiency in English Composition, rather than distribution or course credit, may be granted to a student who qualifies on the examination in this subject.

Selection—THE COLLEGE

Every candidate for admission to The College is given careful consideration by the Board of Admission as soon as possible after his credentials are complete. However, since there are thousands of applicants, the process takes a great deal of time; thus no candidate should expect to be notified of his status until early in May.

If, on the other hand, any applicant is accepted by another college and is required to make a commitment before early May, he should feel free to ask the Admission Office to review his case at once.

Selection—PEMBROKE COLLEGE

Every candidate for admission to Pembroke College is given careful consideration by the Board of Admission as soon as possible after her credentials are complete. Since the number of applications is very large, however, the process takes a great deal of time; thus no candidate should expect to be notified of her status until early in May.

The candidate's acceptance of admission to Pembroke College is due at the Admission Office by May 20, accompanied by the room deposit of \$50 if the applicant has been admitted as a dormitory student. This deposit is refundable until June 10. Students must live in college residence halls unless they reside with members of their family. In agreement with a number of colleges, Pembroke College does not require an acceptance of admission or

of a scholarship award before May 20, but, if the candidate can reach a decision earlier, she is encouraged to notify the Admission Office as soon as that decision has been reached.

If an applicant is accepted by another college and is required to make a commitment before early May, she should feel free to ask the Admission Office to review her case at once. Although the applicant cannot be assured an early decision, her request will be given whatever consideration is possible.

Early Decision Plan—PEMBROKE COLLEGE

Under the Early Decision Plan a student may apply for admission in the spring of her junior year and receive a decision on her application in October of her senior year. A student is eligible to apply for early consideration if (1) Pembroke College is clearly her first choice and (2) her school counselor fully recommends her for early consideration. If the school adviser feels that the candidate's application should *not* be reviewed until her senior credentials are on file, the student should apply under the standard admission plan. Such students may be those whose academic work has only recently shown a marked upswing in quality or whose program does not lend itself to a good choice of Achievement Tests in the junior year.

Candidates who request an early decision must file with the Pembroke Admission Office by June 15 a statement certifying that they will apply to no other college until they have received a decision from Pembroke College. Decisions will be mailed by October 15. If admitted, the candidate must pay a deposit of \$200 by November 1 in order to reserve a place in the entering class. This deposit is not refundable under ordinary conditions and will be applied to the charges of the first semester.

Applicants are to take the required tests of the College Entrance Examination Board in the spring of the junior year—the Scholastic Aptitude Test in March or May and three Achievement Tests in May. The table on page 54 lists the specific Achievement Tests recommended or required for admission to the several degree programs. Any required tests for which a candidate will not be ready until the senior year must be taken in March of the senior year. In granting admission, the Board of Admission assumes that the candidate will satisfactorily complete the specific course and test requirements by the end of her senior year.

All candidates living within the distance of a one-day trip to Providence must have an interview at the college before September 1. Candidates from more distant places are advised to arrange for an interview on the campus if possible.

In October the Board of Admission will notify each candidate that her application has been accepted, rejected, or held for further consideration. The candidate whose application is held will receive a final decision the

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following May. She will be free to file applications with other colleges in the meantime.

Notification as to whether or not financial aid has been granted will be mailed to scholarship applicants no later than October 15. An admitted candidate whose financial need has been established but who has not been granted financial aid may request that her scholarship application be reviewed again in the spring. Since she is not reserving a place in the class under the Early Decision Plan and is simply asking reconsideration in the spring because of her financial need, the candidate is released from her agreement with Pembroke College. She should, therefore, file alternative applications with other colleges pending the May decision from Pembroke College.

Admission of Veterans

In addition to the usual requirements a veteran should, as a prospective applicant for admission to The College, send to the Admission Office in University Hall a photostat or photoprint copy of his Certificate of Discharge (if an enlisted man) or Certificate of Service (if an officer). Arrangements for benefits under the G.I. Bill must be made by the applicant through his local Veterans Administration Office. The same regulations hold true for a veteran applying for admission to Pembroke College, with the exception that her papers should be sent directly to the Admission Office in Pembroke Hall, 172 Meeting Street.

Admission from Other Colleges—THE COLLEGE

A transfer applicant for admission to The College should provide the Board of Admission with official transcripts of all previous college work. A statement of honorable dismissal should accompany each transcript. A tentative decision can be made by the board on the basis of unofficial records provided by the applicant.

All transfer applicants are required to take the Scholastic Aptitude Test of the College Entrance Examination Board.

Because the number of transfer students who can be accepted is limited, every such applicant should have had high standing in the college from which he wishes to transfer. Advanced standing for more than two years is not granted. An applicant who has completed less than one semester at another college must nevertheless present an official statement from the college to the effect that he left in good standing.

Admission from Other Colleges—PEMBROKE COLLEGE

When space permits, Pembroke College admits, with sophomore and junior standing, a limited number of students transferring from other colleges. Transfer students must satisfy the Pembroke College require-

REGISTRATION AND ENROLLMENT

ments for freshman admission and, like other students, must live in college residence halls unless they reside with their families. College credit is allowed only for those courses which are comparable to courses at Brown University and which have been passed satisfactorily at an approved institution of collegiate rank.

The following credentials are required for each transfer applicant: (1) an official record of her secondary school achievement; (2) a copy of her ratings on the Scholastic Aptitude Test of the College Entrance Examination Board; (3) an official transcript of her college record, including a statement of honorable dismissal; (4) a catalogue of the college attended, marked to indicate the courses taken.

Admission of Special Students

A limited number of mature persons who desire to pursue special subjects and who have had the requisite training may be admitted as special students, men at The College and women at Pembroke College, without becoming candidates for a degree.

Special students are subject to the same regulations regarding attendance, examinations, and fees as candidates for degrees.

Admission of Foreign Students

Applicants living outside the continental limits of the United States ordinarily complete the same admission requirements as other candidates. The College Entrance Examination Board Tests already described are given in many foreign centers.

In addition, each student whose native language is *not* English should send a short autobiography (approximately 300 words) to the appropriate Admission Office.

Registration and Enrollment

Freshman Week

The program of Freshman Week at both The College and Pembroke College, preceding the opening of the University each September, includes aptitude tests, orientation lectures, medical examinations, conferences on course programs, and registration. All new students, both freshman and transfer, are expected to be present. Detailed instructions are mailed to each entering student.

ATTENDANCE, GRADING, EXAMINATIONS

General Information

Instructions about registration will be sent prior to the opening of each semester to members of all classes.

All students must pay their accounts to the Controller's Office *before* the close of its business day preceding the opening of each semester.

All undergraduate students previously enrolled must report to the appropriate Recorder's Office for final registration on one of the specified days preceding the opening of each semester. A receipt from the Controller's Office for the payment of charges for the semester must be presented. A fee of \$10 will be charged for late payment or late registration (for full information regarding payments, see page 84).

Changes in courses, after the registration card is filed in the Recorder's Office, will be allowed only as properly approved. A fee of \$10 will be charged for the changes unless they are due to academic failures, the establishment of proficiencies, or the results of placement tests.

Enrollment Without Academic Credit

Auditing. An auditor is a student who is enrolled in a course without credit under the following conditions: (1) the student must be properly registered for it (this includes permission from the Dean and from the instructor of the course); (2) the student must pay the usual course fee; (3) the student is entitled to all instruction in the course, including conferences, the criticism of papers, tests, and examinations.

Juniors and seniors who are meeting all requirements for graduation may be permitted to audit a fifth course without charge. Subject to faithful attendance, and with the concurrence of the instructor, the fact that the course has been audited shall be entered on the permanent record of any student electing this privilege. It is understood that the student will not write the final examination and that no credit will be given for the course.

Vagabonding. A "vagabond" is a student who, with the permission of the instructor involved, visits a given course occasionally or regularly without payment of fee. It is understood that such a student shall be entitled to participation in classes and activities, including discussions, conferences, and papers, *only* at the pleasure of the instructor.

Attendance, Grading, Examinations

Attendance

All students are expected to attend every session of the classes in which they are registered, including the physical education program and the

ATTENDANCE, GRADING, EXAMINATIONS

chapel services. These regulations are modified for students who meet certain requirements regarding academic averages.

For the dates of recesses and holidays see the University Calendar, page 7.

Grading System

At the end of each semester final grades are given in semester courses. A tentative grade is given at the end of the first semester in year courses (indicated by a dash between course numbers); at the end of the second semester, examinations in such courses cover the work of the two semesters, and a final grade for both is assigned at that time. An official report is sent to the parent or guardian of each student.

There are four passing grades: *A*, *B*, *C*, *D*. *D* is not considered a satisfactory (quality) mark.

E is assigned to those who have failed; or to those whose absence from a final examination is not excused by the Dean; or to those who, in a laboratory course, have not completed half the work.

F is assigned at the end of the first semester in a year course or a two-semester sequence to those who are not allowed to continue in the second semester of that course.

A student who receives the mark *E* or *F* in a required course must repeat the course unless the substitution of an equivalent course is recommended by the department concerned, or unless the Committee on Academic Standing, in conference with the department concerned, allows the deficiency to be made up by work at an approved summer school. A student who receives the mark *E* or *F* in an elective course may substitute some other course or may take an equivalent amount of work at an approved summer school.

I is assigned to those who have passed a final examination, whose work is passing so far as done, and to whom the instructor, because of unusual circumstances, permits time beyond the end of the semester to complete the required work of the course. At the time a grade of *I* is submitted, an indication is given of what the grade should be if the work is not completed, the unfinished work having been counted as zero; if and when the work is completed, provided it is before mid-semester of the following semester, a new grade is submitted to the Recorder.

Abs. is assigned to a student who has been absent from a final examination. A student receiving the grade of *Abs.* must apply to the Recorder for a special examination (see page 62). The absence from the final examination must be excused by the Dean. If the student does not take the special examination, the grade of *Abs.* becomes an *E* unless an extension is granted by the Committee on Academic Standing.

A student whose work is incomplete and who was absent from the examination is assigned the mark *I*, *Abs.*

If a student is withdrawn from a course after mid-semester because of unsatisfactory work that is lower than *D*, the mark *E* for that course will be entered in the student's record. If a student is withdrawn for a similar

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reason before mid-semester, the mark *E* will be recorded if so recommended by the department concerned.

D is not considered a satisfactory mark. The action of the Committee on Academic Standing in placing students on "warning" or "probation" or in dismissing students is based on the amount of work of *D* grade as well as on actual failures.

A student must maintain the minimum standards set by the Faculty and Corporation for graduation. A student whose grades fall below these standards will be subject to dismissal from college.

Academic averages are based on the following: *A* = 4; *B* = 3; *C* = 2; *D* = 1; *E* and *F* = 0.

Examinations

Final Examinations. Examinations are held in all courses numbered under 200 at the close of each semester unless omitted by vote of the Committee on the Curriculum. Final examinations covering the work of both semesters are given at the end of the second semester in year courses.

For the dates of final examination periods see the University Calendar, page 7.

Special Examinations. These examinations are given only with the approval of the Dean to students absent from final examinations. A fee of \$5 is charged for each examination; it may be waived, however, for any student submitting a medical excuse satisfactory to the Dean.

Special examinations on the work of the first semester are given during a special examination period, in the fifth week of the second semester. A student eligible for such a special examination must file an application with the Recorder, *not later than the second Wednesday of the second semester.*

Special examinations on the work of the second semester are given in the week preceding the opening of the academic year. A student eligible for such a special examination must file an application with the Recorder, *not later than August 15.*

Placement and Achievement Tests in Foreign Language. Placement tests in the foreign languages are given on the first day of Freshman Week in the fall and during the first week of classes in each semester. Achievement tests in foreign language are given on the first day of Freshman Week in the fall and during the final examination period of each semester.

Distribution Tests. Examinations for Bachelor of Arts candidates who wish to satisfy distribution requirements by test (see page 72) are given during Freshman Week each fall and also early in the second semester. Candidates for any one of the Bachelor of Science degrees may take the anticipatory examinations. Bachelor of Science candidates who pass these examinations will not satisfy the requirements for electives in the Humanities

and Social Studies, but they may satisfy the prerequisites for a more advanced course in the field of the distribution course and they will receive an additional grade point to be used in computing the graduation average.

Students who have audited or vagabonded Distribution Courses, and other students properly qualified, may apply for permission to take the final examinations in these courses as distribution tests.

Academic Status

Dean's List

The Dean of The College and the Dean of Pembroke College, at their discretion, may place on the Dean's List each semester those students in Semesters III through VIII whose academic performance for the previous semester is of high quality (3.25 average or better).

Warning, Probation, Dismissal

An undergraduate with an unsatisfactory scholastic record will be placed in one of three categories—*Warning, Probation, Dismissal*—except under extenuating circumstances concerning the merit of which the Committee on Academic Standing shall be the sole judge.

Action by the Committee on Academic Standing will depend upon the extent of the student's deficiency. The general record of the student is taken into account in making decisions. Quality grades and academic average are given special attention.

Warning serves to caution students that their record is below the standard required for graduation. A student with more than one failure is subject to probation or dismissal.

Probation notifies students that unless their record improves, they may be given a dismissal at the next marking period. Probation is viewed with seriousness by the University officers, and, during the period of probation, no first or second year student will be allowed to be absent from classes without excuse. No student on Probation at The College may receive financial assistance.

Dismissal may be given at any time for a very unsatisfactory academic record, regardless of whether the student has previously been placed on warning or probation. A student whose academic average falls below 1.0 will be subject to dismissal.

INDEPENDENT STUDY PLANS

Discipline

Cases of discipline are of two kinds: (1) those relating to conduct and (2) those relating to academic standing. Cases of the first kind are dealt with by the Administrative Officers and may require such action as placing under college discipline, suspension, or dismissal. The privilege of enrollment in Brown University may be withdrawn by The College or by Pembroke College at any time from a student who does not conform to the regulations and traditions of the University or who does not make a satisfactory adjustment to the University environment. Cases of the second kind, relating to academic standing, are dealt with by the Committee on Academic Standing.

Students who wish to marry while undergraduates must properly notify the appropriate Dean and give assurance that their plans are known and approved by their parents or guardians; otherwise, they will be subject to dismissal from college.

Independent Study Plans

Honors Program

Properly qualified students may elect in concentration and related fields an independent study program, instead of the regular concentration program, leading to a Bachelor's degree. Honors study provides such students with freedom from certain routine academic requirements, closer association with the faculty, and exceptional opportunities for critically-guided independent work. In turn it requires of students acceptance of a large measure of responsibility, development of intellectual initiative and self-reliance, and considerable achievement in the chosen field of study.

Candidates select that field of concentration which best satisfies their own needs and, with the help of their Honors supervisors, arrange a definite program of study covering the field. Such a program is not necessarily limited to any one department or division of the University. Students who have a clear idea of what they want to study may arrange a program that cuts across traditional departmental lines. A departmental program, however, will meet the needs of most students.

GENERAL REGULATIONS

Eligibility. Any student with a cumulative average of 3.0 or above is eligible to apply for an independent study program. On special recommen-

INDEPENDENT STUDY PLANS

dation of their major department, the application of students with a somewhat lower average will be considered.

Date of Enrollment. Students who choose such a program will normally enroll at the end of their fourth semester. In some cases they may delay enrollment until the fifth, or even sixth, semester, depending upon the requirements of the various departmental programs.

Supervision of Honors Students. Upon enrollment, candidates must file a program of study covering their work for Honors. This program must be approved by the supervisor in the student's major field of study and by the Director of the Honors Program. Each Honors student will be assigned by an Honors supervisor in the major field to a member of the faculty who will be in immediate charge of the student's plan of study for Honors.

Plans of Honors Study. Candidates will normally take at least ten semester courses (excluding elementary courses) within their field of concentration, whether this be departmental or interdepartmental. The plans of Honors study vary from field to field. In all departments preparation of a Senior Thesis constitutes part of the work of the student's final two semesters before graduation. Some departments provide special Honors courses exclusively for Honors students; some offer tutorial courses in which independent study of special topics under individual guidance is the rule; some make arrangements for independent supplementary reading or laboratory work or special reports. In each case some special Honors work is included in each semester of a student's candidacy.

The various departmental or interdepartmental plans of Honors study are as equal as possible in scope and standards. All plans of Honors study are subject to approval or rejection by the Honors Council and the Director of the Honors Program.

If the demands of the Honors program make it desirable, a candidate for Honors may be excused from not more than two courses required for distribution. Applications for exemption from distribution requirements, with a full statement of the plan of study, should be presented by the students to the department of their major concentration, and, if approved by this department, should then be presented by their department supervisors to the Honors Council for final approval. Moreover, on recommendation of the department supervisor, the Honors Council may authorize a candidate for Honors to substitute for the normal distribution course (or courses) another course (or courses) more suited to the individual's needs.

Recommendation for Honors. The successful candidates are recognized by the award of Honors, High Honors, or Highest Honors in their field of study. Highest Honors are awarded only to students of exceptional performance and promise. Recommendations for Honors in any of these three grades

INDEPENDENT STUDY PLANS

must have the written approval of the Department or Departments concerned. Honors are voted by the Faculty and presented at Commencement.

Examinations. The work of every candidate for Honors will be reviewed by the department or departments concerned during the student's course of study.

Before the end of the senior year, every candidate for Honors is examined in the work of the concentration field. The examination, conducted by a committee of the department or departments concerned, will normally include both written and oral portions. Students failing to attain the standing requisite for Honors are nevertheless given credit for their concentration work toward their degree, in accordance with the regular requirements for graduation, provided there is a regular concentration program in the fields involved. Upon the failure of a student to fulfill the conditions for graduation with Honors in an Honors Program for which no corresponding regular concentration exists, the Honors Council shall notify the student and the Department or Committee concerned and also the Dean of The College or of Pembroke College of this fact, with the understanding that if the student has met all other requirements for graduation, and if it is deemed appropriate, the Committee on Academic Standing may recommend that the Faculty vote a degree for the student.

Discontinuance of Candidacy. Students may withdraw voluntarily from candidacy for Honors at any time. Candidates who are found not qualified for unusual achievement in the field chosen, or not taking advantage of the special opportunities offered, will be required to discontinue candidacy for Honors. Candidates leaving the Honors Program before their completion of study are required to make up the equivalent of any course exemptions which they have been granted.

HONORS IN DEPARTMENTAL AND INTERDEPARTMENTAL FIELDS

Honors work is normally available in every departmental field in which concentration is possible. Nearly every department includes a statement of the specific nature of Honors work in its field in the descriptive material at the head of its announcement of courses. In other cases Honors programs are arranged on an individual basis. More detailed information can be obtained from the supervisor of Honors students in the department concerned.

Interdepartmental programs of Honors study will be arranged wherever feasible for students whose interests and abilities warrant them. Such programs will be arranged to suit the candidate's needs by the supervisors of Honors students in the candidate's major fields of study.

Interested students should consult with the Honors supervisor in their field of concentration or with the Director of the Honors Program (Professor R. W. Morse, Department of Physics). The Honors supervisors are:

IDENTIFICATION AND CRITICISM OF IDEAS

Field of Concentration	Professor	Field of Concentration	Professor
<i>American Civilization</i>	W. G. McLOUGHLIN	<i>Linguistics</i>	W. F. TWADDELL
<i>Applied Mathematics</i>	R. T. SHIELD	<i>Mathematics</i>	D. A. BUCHSBAUM
<i>Art</i>	G. E. DOWNING	<i>Music</i>	W. DINNEEN
<i>Biology</i>	R. J. GOSS	<i>Modern Languages:</i>	
<i>Botany</i>	G. L. CHURCH	<i>French</i>	A. J. SALVAN
<i>Chemistry</i>	W. W. RUSSELL	<i>German</i>	A. HOLSKE
<i>Classics</i>	H. N. COUCH	<i>Italian</i>	L. H. GORDON
<i>Economics</i>	C. C. BOSLAND	<i>Russian</i>	See Russian Studies
<i>Engineering</i>	R. M. HAYTHORN- THWAITE	<i>Spanish</i>	A. D. KOSSOFF
<i>English:</i>		<i>Modern Languages</i>	H. KELLENBERGER
<i>American Literature</i>	A. D. VAN NOS- TRAND	(combination of any above)	
<i>English Expression</i>	C. M. WEBSTER C. H. PHILBRICK	<i>Philosophy</i>	J. W. LENZ
<i>English Literature</i>	R. W. KENNY	<i>Physics</i>	W. L. NYBORG
<i>Geology</i>	A. W. QUINN	<i>Political Science</i>	W. T. PERKINS
<i>History</i>	C. H. KIRBY	<i>Psychology</i>	N. M. LEVY
<i>International Relations</i>	W. T. PERKINS	<i>Russian Studies</i>	E. J. BROWN
		<i>Sociology</i>	V. H. WHITNEY

Independent Study Outside Honors

Students who have made the Dean's List average in three consecutive semesters, together with such third semester students as maintain this average during their freshman year, may petition the Honors Council to pursue, in the next semester, an Independent Study Program. Normally such a program will carry credit equivalent to one semester course, but students who have demonstrated ability to profit from such a program may be granted permission to do more than a quarter of their work in this way. The student's program must have a faculty sponsor and the proposal must state: (a) the nature and extent of the work to be pursued; (b) the manner of procedure; (c) facilities (lectures, library, and laboratory facilities) to be used at Brown and elsewhere; (d) a detailed schedule for completing reports, papers, projects, etc. The faculty sponsor is responsible for the scrutiny of the proposal and the evaluation of the work done, including the assignment of a grade. He is not expected to give regular tutorial instruction. The Honors Council will study each proposal with the help and advice of the interested departments, and those students whose projects are approved will be named to a list of College Scholars.

Identification and Criticism of Ideas

In the fall semester of 1953-54 Brown University launched a five-year experimental program to develop a group of new courses for the freshman

REQUIREMENTS FOR DEGREES

and sophomore years. This program was made possible by a grant from the Carnegie Corporation of New York in the amount of one quarter million dollars. The courses bear the common designation, "The Identification and Criticism of Ideas," and are identified by the symbol IC before the course number. They were at first open only to students in the upper half and then to those in the upper two-thirds of the entering class.

During the five years of the experimental program, these courses formed an alternate pattern to the regular distribution courses for meeting the distribution requirements for the Bachelor of Arts degree. The faculty has now combined these patterns into one pattern of distribution requirements for all candidates for the Bachelor of Arts degree who enter in September, 1958, and thereafter (see page 70). Thus all Bachelor of Arts candidates are required to take some course work of this nature.

Counseling

Each student upon entrance is assigned to a counselor. Counselors are members of the faculty, each of whom advises a small number of students. Together, student and counselor formulate the program of study best suited to the student's intellectual needs and capacities. Counselors are available to students at regularly scheduled office hours during the academic year.

In addition to the faculty counselors, a group of carefully selected upper-class students, both at The College and at Pembroke College, work closely with the freshman students. The counseling system in general is supervised by the respective Deans.

At the beginning of the junior year, the student normally commences a concentration program, and thereafter receives educational advice and direction from members of the department in which the concentration has been elected.

Requirements for Degrees

Quantity Requirements

The course requirements for the baccalaureate degrees with the exception of the Bachelor of Arts and Bachelor of Science combined (Five Year Program) and the Bachelor of Science (in Nursing) are four semester courses each semester for eight semesters, a total equivalent to thirty-two semester courses; however, students enrolled in either the Naval or Air Force Reserve Officers Training Corps program may be required to take additional courses (see statement under the requirements for the specific degree).

The combined course requirements for the degree of Bachelor of Arts

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and the degree of Bachelor of Science are four semester courses each semester for ten semesters, a total equivalent to forty semester courses.

The course requirements for the degree of Bachelor of Science,¹ in conjunction with study at the Rhode Island Hospital School of Nursing, are four courses each semester for six semesters, a total equivalent to twenty-four semester courses at Pembroke College, and two years and four months at the School of Nursing.

Quality Requirements

In order to meet the quality requirements for graduation, candidates for all baccalaureate degrees must obtain a final cumulative average of 1.75 or better based on all grades received. In addition, candidates for the Bachelor of Arts degree must earn a 2.0 average in their program of concentration, and candidates for the Bachelor of Science in Physics must earn a 2.0 average in their ten required Physics courses.

General Requirements

In addition to the course requirements, all candidates for degrees must complete the prescribed work in physical education, swimming, and the orientation lectures.

Ordinarily, a minimum residence requirement of two academic years must be fulfilled.

BACHELOR OF ARTS

LANGUAGE REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test or to be acquired by the successful pursuit of a course² in college. Students may not enter the fifth semester until they have completed this requirement. If students do not demonstrate proficiency at time of entrance, they must begin course work in English composition during the freshman year unless they are enrolled in suitable distribution courses. In no case, if they have not established proficiency, may they begin the third semester without enrolling in an English composition course.
- B. A working knowledge of one foreign language—Greek, Latin, French, German, Italian, Russian, Spanish—to be demonstrated by passing an achievement test or by obtaining a grade of *C* or better in a language course on the fourth-semester (or higher) level. Each student who fails to pass this test at entrance shall enroll during the first semester in a foreign language course and shall continue with course work in that language until the requirement is met. A student who receives a *D* in a course on the fourth-semester level may repeat the course once without credit and satisfy the foreign language requirement if the work warrants a mark of *C* or better. A student not proficient in a

¹ See Appendix B, page 318.

² See description of English 1-2 on page 162.

REQUIREMENTS FOR DEGREES

foreign language will be refused registration at the beginning of the next academic year after auditing the four-level course once, or at the beginning of the seventh semester, whichever comes first.

DISTRIBUTION REQUIREMENTS¹

Distribution courses are planned both as the foundation for further work in the field and as entities in themselves. There are two types of courses specially designed to meet the distribution requirements set forth below. These are designated as D and IC courses.

The typical D course deals with some period or area of the field of study involved. Methods of instruction vary with the size and nature of the courses. No D course may be taken after Semester V without permission of the Dean, unless such course or specific section of such course is specially designated by a Department, with the approval of the Committee on the Curriculum, as open to upperclassmen.

The typical IC course is built about a central theme or classic. The object of the course is to identify and to subject to critical examination the principal ideas of the classic or theme selected. No IC course may be taken after Semester IV, except with permission of the Committee on Academic Standing.

Beginning in September, 1958, students will meet the following requirements for distribution:

General Requirements

1. Four distribution credits shall be completed in each of the following three areas: Sciences and Mathematics, Humanities, and Social Studies. A distribution credit is earned through a course credit for an approved semester course or by examination.

Note: Students in ROTC programs shall earn a total of eleven distribution credits and must meet the specific distribution requirements in the areas, with a minimum of three credits in each area.

2. Each student shall complete at least two, and no more than eight, distribution credits in IC courses.
3. No student may be permitted to complete more than two distribution credits in any one Department.
4. No student may have course credit for both D and IC courses, or for more than one IC course, offered in a single subject unless these courses may be used for distribution credit in different areas.

Specific Requirements by Areas and Fields

1. Sciences and Mathematics: *Astronomy, Biology, Botany, Chemistry, Geology, Physics, Psychology, Mathematics*²
 - a. Each student shall earn two distribution credits in one department or in an approved interdepartmental sequence.

¹ For distribution requirements for students who entered prior to September, 1958, see Appendix C on page 325.

² With the permission of the Dean, a student may include Applied Mathematics or Engineering in this list.

REQUIREMENTS FOR DEGREES

- b. Each student must earn at least one distribution credit in each of two of the following four fields: Biology, Chemistry, Mathematics, Physics.
2. Humanities: *Art, Literature (Classics, English, Modern Languages), Music, Philosophy, Religious Studies*

Each student shall earn two distribution credits in an approved two semester sequence in a literature or an approved two semester sequence in Philosophy and the remaining two in a field or fields other than the one selected.

3. Social Studies: *Economics, History (ancient, medieval, modern), Political Science, Sociology*

Each student shall earn two distribution credits in an approved two semester sequence in History and the remainder in another field or fields.

DISTRIBUTION COURSES

The following is a list of distribution courses offered during the academic year 1958-59:

Sciences and Mathematics¹

Astronomy D1
Biology (see Biology 1, 2)
Chemistry D1; D2
Geology D1
Physics D1
Psychology D1; IC 1-2; IC 3-4
Mathematics D1; IC 1-2

Social Studies

Economics D1; IC 1-2
History
 Classics D1, D2; IC 1, 2
 History D1, D2; IC 1, 2; IC 3, 4;
 IC 5, 6
Political Science D1; IC 1, 2; IC 3, 4
Sociology D1; IC 1, 2

Humanities

Art (see Art 1, 2)
Literature
 Classics D5, D6; IC 3, 4
 English D15, D16; IC 1-2; IC 3-4;
 IC 7-8; IC 9-10; IC 11-12; IC
 13-14; IC 15-16; IC 17-18; IC
 19-20
 European IC 1-2; IC 5-6
 French D11-D12; IC 1-2
 German D11, D12
 Italian D107, D108
 Spanish D11, D12
Music D1
Philosophy D1, D2; IC 1-2
Religious Studies D1; IC 1, 2

COURSES ACCEPTABLE FOR DISTRIBUTION CREDIT

Courses other than those of the D and IC type may be taken to fulfill the Distribution Requirements. The Committee on the Curriculum has designated the courses listed below as acceptable for distribution credit, subject to the requirements as specified in the two preceding sections entitled *General Requirements* and *Specific Requirements by Areas and Fields*, and also subject to any prerequisites set by Departments for those courses. The course sequences other than D and IC which may be taken to satisfy the specific requirement for a two semester sequence in Literature, Philosophy, and History are underlined. No other sequences may be counted for this purpose without approval of the appropriate Department and the Dean.

¹ Chemistry D1 or D2 and Geology D1 is the only interdepartmental sequence which has been approved for meeting Specific Requirement 1a, in the area of Sciences and Mathematics.

REQUIREMENTS FOR DEGREES

Sciences and Mathematics

Astronomy 1, 2, 17	Geology 1, 2, 4 ¹
Biology 1, 2	Physics 2, 3, 4
Botany 1, 2, any continuing course	Psychology 6, 81
Chemistry 5, 11, 12	Mathematics 2, 5N, 9-10

Humanities

Art 1, 2, 4, 6, 7, 8, 109

Literature

Classics 61, 62; Latin 11, 12; 105, 106; Greek 5, 6; 105, 106; 125, 126

English 17; 73-74; 105-106; 133-134; 171; 172; 186, 187; any two of 171, 172, 187

Modern Languages—French, any two of 10, 101, 102; German 131, 132; 143, 144; Russian 29, 30; 31, 32; Spanish 107, 108

Music 2, 3, 4, 105

Philosophy 55 or 169; 58 or 153; 101, 102; 151

Religious Studies 21, 22, 111, 112

Social Studies

Economics—any course except 71, 161

History—any two semester sequence; 151, 152; 177, 186; Classics 117, 118; 121, 122

Political Science 113, 121, 123—no more than one

Sociology 101, 102, 106, 127, 138—no more than one

DISTRIBUTION CREDIT BY EXAMINATION

A student may satisfy certain distribution requirements by the successful passing of examinations. IC courses may not be anticipated by examinations. Examinations given for the purpose of satisfying distribution requirements may be taken during Freshman Week and during a special period early in the second semester. The passing of an examination in meeting a distribution requirement does not give the student course credit but permits electing a course in lieu of the distribution course, thereby increasing the number of free electives. This course elected may be an advanced course for which the distribution course is a prerequisite, or it may be an additional course permitted in the field of concentration. Certain distribution requirements may be met by high scores on appropriate College Entrance Examination Board achievement tests, or on other approved tests. For each distribution requirement met by examination, the total number of points used in determining the student's graduation average will be increased by one.

CONCENTRATION REQUIREMENTS

Each department, with the approval of the Committee on the Curriculum, prescribes its concentration program (s). The prescribed concentration programs consist of eight semester courses¹ beyond the elementary level, except in interdepartmental concentrations.

¹ Courses in a student's concentration program may not be used to meet distribution requirements.

REQUIREMENTS FOR DEGREES

During the fourth semester each candidate for the degree of Bachelor of Arts must prepare, in consultation with a departmental advisor, a plan of studies including a coordinated and progressive program of courses in concentration in some field of interest.

Quality requirement: The quality requirement in concentration is an academic average of 2.0 or better for all courses in a student's concentration program. Courses completed by transfer or at Summer School will not be used in computing this average.

Maximum number of courses in field of concentration: Courses may be taken in a department of concentration up to a total of twelve semester courses, not including D or IC courses or language achievement courses. A student whose concentration program involves courses in two departments, or who is concentrating in one of several fields offered by a single department or division, may include additional electives in the department or departments concerned, the specific courses to be approved by the concentration advisor and the Dean. Interdepartmental concentration programs involving work in more than two departments are unlimited in this respect.

Additional reading and conference courses: In order to assist students to understand the relationship of the several courses in their programs, additional reading may be prescribed, and students may be required in their junior year to attend, and in the senior year to participate in, a conference without academic credit, the nature and number of meetings of which will be determined by the department or the faculty committee in charge of the program.

Comprehensive Examination: At the end of the senior year each student shall take a comprehensive examination of not less than four nor more than nine hours designed to afford the opportunity to demonstrate an understanding of his or her concentration. The examination shall be graded Pass or Fail and must be passed before a student may graduate. A student who fails the comprehensive examination may be permitted to take a second comprehensive examination at a later date with the approval of the department concerned and the Committee on Academic Standing. A third comprehensive examination may not be given. On application to the Deans and with the approval of the department concerned, permission may be granted to students who have completed seven courses in concentration programs by May of any year to write their comprehensive examinations at that time.

INTERDEPARTMENTAL CONCENTRATION PROGRAMS

Seven programs of Interdepartmental Concentration are available: American Civilization, Ancient and Medieval Culture, Human Biology, International Relations, Mathematics and Economics, Mathematics and Physics, and Philosophy and Religion. A detailed statement of each program is given below.

In order to assist students in synthesizing the several courses in their programs, they may be required in their junior year to attend, and in the senior year to participate in, a conference without academic credit, the nature and number of meetings of which will be determined by the faculty committee in charge of the program.

For a student who takes an IC course in place of a distribution course which is specified as a prerequisite in any of the programs, the prerequisite may be modified by the department concerned.

REQUIREMENTS FOR DEGREES

I. AMERICAN CIVILIZATION

Courses: History 151, *The Establishment of the American Colonies*; History 51, 52, *American History since 1763*, or History 161, 162, *The History of American Economic Life*; English 41-42, *American Literature*; American Civilization 191, conference course to be taken in the senior year; and two of the following: Art 109, *American Art*; Economics 131, *Labor Problems*; History 173, *The Social and Intellectual History of the United States, 1789-1860*; History 174, *The Social and Intellectual History of the United States, 1860 to the Present*; History 177, *History of Religion in America*; History 186, *History of Science in America*; Philosophy 125, *History of Philosophy in America*; Political Science 124, *American Political Theory*; Spanish 115, *Literature and Society in Colonial Spanish America*.

Recommended Electives: English 141-142, *American Prose Fiction before 1900*; English 143-144, *American Poetry*; English 172, *The Twentieth Century Novel, English and American*; English 187, *Twentieth Century American and European Drama*; History 152, *The American Revolution and the Forming of the United States, 1751-1788*; Political Science 115, 116, *American Constitutional Development*; Spanish 116, *Spanish-American Literature of the Nineteenth and Twentieth Centuries*.

2. ANCIENT AND MEDIEVAL CULTURE

Qualification: A minimum average of 2.0 in those distribution courses of the participating Departments which are taken by a candidate for the concentration; at least one semester course of Latin, taken in college, beyond the elementary level.

Prescribed Courses: Ancient Culture—Classics 61, *Greek Literature, exclusive of the Drama, in English*; Classics 118, *Classical and Hellenistic Archaeology*; Classics 122, *Roman History to 337 A.D.*; Medieval Culture—History 101, 102, *Europe in the Middle Ages*; Art 4, *Medieval Art*; Philosophy 101, *Ancient and Mediaeval Philosophy*; and one of the following: Religious Studies 111, *History of Christianity to the Reformation*; Religious Studies 198, *Topics in History of Religions*.

Recommended Electives: Classics 62, *The Greek Drama in English*; Classics 117, *Prehistoric and Archaic Greek Art*; Classics 121, *Greek History to 146 B.C.*; Latin 201, *Seminar in Latin*; English 105-106, *Chaucer*; French 239, *Old French Literature*; German 153, *Middle High German*; Italian 161, 162, *Dante's Divina Commedia*.

3. HUMAN BIOLOGY

Qualification: Students will be allowed to take this program if they have received a C or better in all prerequisite courses in Biology, Psychology, and Sociology.

Courses: Biology: required—17, *Human Heredity*, or 6, *Genetics*; choose two of following—5, *Comparative Anatomy of Vertebrates*, 7, *Embryology*, 10, *Introductory Physiology*, 15, *Bacteriology*. Psychology: required—101, *Statistical Methods in Psychology*; choose one of the following—104, *Psychological Testing*, 107, *Normal and Abnormal Personality*, 112, *Social Psychology*. Sociology: required—101, *Human Origins*; choose two of the following—102, *Cultural Anthropology*, 104, *The Community*, 125, *Population and Migration*, 127, *Races and Minority Groups*. Mathematics: required—2, *Analytic Geometry and Calculus*. In addition two seminars are required—Biology 51, *Junior Orientation Seminar* (no course credit), and Biology 190, *Senior Seminar*.

REQUIREMENTS FOR DEGREES

4. INTERNATIONAL RELATIONS

Prerequisites: Completion, with a minimum average of 2.0, of four semester courses (IC or D) in economics, history, or political science. At least one of these courses must be in economics. A student who has taken classics for distribution in the Social Studies may be admitted to the program if willing to take an approved semester course in history.

Courses: Economics 105, *Economic Analysis and Contemporary Problems*; Economics 154, *International Economics*; History 119, 120, *Europe since 1870*; Political Science 117, *International Politics*; Political Science 120, *Problems of International Policy* (to be taken in the senior year); and two of the following: Economics 107, *Theories and Programs of Economic Reform*, Political Science 106, *Government of the U.S.S.R.*, Political Science 113, *Far Eastern Government and Politics*, Political Science 118, *International Organization*, Political Science 122, *American Foreign Relations*, Sociology 125, *Population and Migration* (Sociology prerequisite waived).

Recommended Electives: Economics 111, *Money and Banking*; History 51, 52, *American History since 1763*, or History 161, 162, *History of American Economic Life*; History 131, 132, *Russian History*; Political Science 121, *Parliamentary Governments of Continental Europe*; Political Science 123, *British Parliamentary Democracy*; Sociology 137, *Social Organization*; Sociology 139, *Social Classes*; Economics 107, Political Science 106, 113, 118, 122, and Sociology 125 if not included in the concentration program.

5. MATHEMATICS AND ECONOMICS

Prerequisites: Mathematics 2, *Analytic Geometry and Calculus*, or its equivalent, or Mathematics IC 1-2, *A Modern Introduction to Analytic Geometry and Calculus*; Economics DI, *Elements of Economics*, or Economics IC 1-2, *Political Economy*, or Economics IC 3-4, *Economics and Public Policy*, or Economics IC 5-6, *The Intervention of Government in Economic Activity*. A grade of C or better in all prerequisite courses is required for joint concentration in Mathematics and Economics.

Courses: Mathematics 21-22, *Analytic Geometry and Calculus*; Mathematics 151, *Linear Equations and Matrices*; Mathematics 105, *Differential Equations*; either Mathematics 161, *Mathematical Statistics*, or Economics 161, *Statistical Method*; Economics 101, 102, *Advanced General Economics*; and Economics 192, *An Introduction to Mathematical Economics*.

Recommended Electives: Mathematics 121-122, *Advanced Calculus*; Mathematics 171, *Mathematical Theory of Investment*; Economics 71, *Accounting*; Economics 111, *Money and Banking*; Economics 154, *International Economics*; Economics 118, *Public Finance*; Economics 145, *Corporations and Government Control*.

Honors: Candidates for Honors in Mathematics and Economics jointly will normally include Economics 193-194, *Seminar on Economic Problems*, throughout their senior year. This course will culminate in a senior thesis concerned with mathematical economics or econometrics.

6. MATHEMATICS AND PHYSICS

Prerequisites: Mathematics 2, *Analytic Geometry and Calculus*, or Mathematics IC 1-2, *A Modern Introduction to Analytic Geometry and Calculus*; Physics 3, *Fundamental Physics* (or 2, *General Physics*).

REQUIREMENTS FOR DEGREES

Courses: Mathematics 21-22, *Analytic Geometry and Calculus*; Mathematics 105, *Differential Equations*; Mathematics 108, *Introduction to Partial Differential Equations* (to be taken in the senior year); Physics 4, *Fundamental Physics* (or 37, *Basic Principles of Laboratory Physics*); 38, *Intermediate Mechanics and Thermodynamics*; and two additional courses chosen from: 37; 111, *Atomic Physics*; 114, *Intermediate Electricity and Magnetism*; 116, *Nuclear Physics*; 121, *Radiation Physics A*; 122, *Radiation Physics B*; 125, *Advanced Mechanics and Thermodynamics*.

7. PHILOSOPHY AND RELIGION

Courses: Philosophy (four courses): 101, *Ancient and Mediaeval Philosophy*; 58, *Ethics*; 151, *Philosophy of Religion*; and either 102, *Modern Philosophy*, or 122, *Recent and Contemporary Philosophy*. Religious Studies (four courses): either 111, *History of Christian Thought*, or 110, *History of Judaism*; either 112, *History of Christian Thought: The Modern Period*, or 113, *Types of Modern Religious Thought in the West*; either 41, *Christian Ethics*, or 114, *Problems in Religious Thought*; and one of the following: 21, *Old Testament Literature, History, and Religion*; 22, *New Testament Literature, History, and Religion*; or 33, *Ancient Greek and Roman Religions*.

Recommended Electives: Philosophy 102 and 122; and Religious Studies 21, 22, 33, 41, and 114.

ELECTIVE REQUIREMENTS

Electives are required sufficient in number to complete the quantity requirement of thirty-two semester courses; however, a student who entered in September 1955 or thereafter and who is a candidate for the Bachelor of Arts degree and who has completed one year of a Reserve Officers Training Corps program will be required to present for graduation a total of thirty-four semester courses, but will not by reason of that fact be required to pay more than the normal tuition charges for a complete academic program in any semester.

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test at or before the beginning of the first semester or to be acquired by the successful pursuit of a course¹ in college. Students may not enter their fifth semester until they have completed this requirement.
- B. A working knowledge of one foreign language—German or Russian—to be demonstrated by passing an achievement test, conducted by the Division of Modern Languages, or by obtaining a grade of *C* or better in a course in one of the languages cited on the fourth-semester (or higher) level. Each student who fails to establish achievement by test shall enroll in a foreign language course as soon as possible and in any case not later than the third semester, and shall continue therein until the achievement requirement is met. A student who receives a *D* in a course on the fourth-semester level may repeat the course once without credit and satisfy the requirement if the work warrants a grade of *C* or better.

¹ See description of English 1-2 on page 162.

REQUIREMENTS FOR DEGREES

- C. Twenty semester courses approved by the Division of Applied Mathematics in Mathematics, Applied Mathematics, the Physical or Biological Sciences, Engineering or Economics, with a minimum of twelve in Mathematics and Applied Mathematics.
- D. Electives to make a total of thirty-two semester courses with the requirement that at least six be in the Humanities and Social Studies jointly, with at least two in the Humanities and two in the Social Studies.

In addition to the program based on the requirements detailed above, the Bachelor of Science in Applied Mathematics also includes special programs with options in Engineering and Physics respectively. These permit the candidate to complete the major part of the Applied Mathematics curriculum with sufficient work in the option to constitute an adequate basic training also in that field.

SPECIAL PROGRAMS

For the degree with Engineering option, requirements A and B remain the same. C is modified to require a minimum of eleven semester courses in Mathematics and Applied Mathematics, a one-semester course in Physics, a one-semester course in Chemistry, and nine semester courses in Engineering. Of the Engineering courses, one must be a one-semester course in Heat or Thermodynamics and one must be Engineering 40 (Electrical Machinery), Engineering 59 (Mechanics of Materials and Introduction to Structures), or Engineering 72 (Thermodynamics).

For the degree with Physics option, requirements A and B remain the same. C is modified to require a minimum of twelve semester courses in Mathematics and Applied Mathematics, a two-semester course in Chemistry and a one-semester course in Engineering, together with six semester courses in Physics, one of which must be a one-semester course in Heat or Thermodynamics.

For both the Engineering and Physics options, requirement D remains the same. However, in view of the additional requirements certain students may have difficulty in arranging for six electives in the Humanities and Social Studies. If students need more than four semester courses to complete English and Language requirements, they may be permitted to reduce these electives to four, with at least two in the Humanities and two in the Social Studies.

It is also possible for a candidate for the degree of Bachelor of Science in Applied Mathematics to follow a program which includes a sequence of courses in Economics. The program would normally include fourteen courses in Mathematics and Applied Mathematics, a one-semester course in Mechanics, a one-semester course in Fluid Dynamics, and six semester courses in Economics.

BACHELOR OF SCIENCE IN CHEMISTRY

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test at or before the beginning of the first semester or to be acquired by the successful pursuit of a course¹ in college. Students may not enter their fifth semester until they have completed this requirement.

¹ See description of English 1-2 on page 162.

REQUIREMENTS FOR DEGREES

- B. A reading knowledge of French and of German. This requirement may be met for either language by presenting two years of credit for that language upon entrance. Students not presenting entrance credits in these languages are required to take a year course in French and a year course in German in addition to German 3S. Russian may be substituted for French.
- C. Twenty semester courses in Chemistry, Mathematics, and Physics, with a minimum of ten semester courses in Chemistry, four semester courses in Mathematics, and two semester courses in Physics.
- D. Electives to make a total of thirty-two semester courses. Candidates for this degree who are also enrolled in a Reserve Officers Training Corps program must take as many extra courses or semesters as are necessary to meet the stated requirements and to allow not less than six electives in the Humanities and Social Studies and a reasonable number of electives in the Sciences outside of the principal science studied.

BACHELOR OF SCIENCE IN ENGINEERING

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test at or before the beginning of the first semester or to be acquired by the successful pursuit of a course¹ in college. Students may not enter their fifth semester until they have completed this requirement. If proficiency is established, a course other than Engineering or a Physical Science must be elected in place of English.
- B. Two semester courses in Chemistry (17, 18); three in Mathematics (9–10; 29); and two in Physics (61, 62).
- C. Seven semester courses of electives, two of which must be in the Humanities and two of which must be in the Social Studies.
- D. Sixteen semester courses in Engineering.

FURTHER REQUIREMENTS

Students electing the aeronautical, electrical, or mechanical engineering option are required to take machine shop work. Students electing the civil engineering option are required to take training in surveying.

Candidates for this degree who are also enrolled in a Reserve Officers Training Corps program must take as many extra courses or semesters as are necessary to meet the stated requirements. For students who entered in September 1955 and thereafter no fee will be charged for two of any additional courses which must be taken beyond thirty-two to satisfy this requirement.

BACHELOR OF SCIENCE IN PHYSICS

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test at or before the beginning of the first semester or to be acquired by the successful pursuit of a course¹ in college. Students may not enter their fifth semester until they have completed this requirement.

¹ See description of English 1–2 on page 162.

REQUIREMENTS FOR DEGREES

- B. Reading knowledge of one foreign language—French, German, Italian, Russian—to be demonstrated by an achievement test conducted by the Division of Modern Languages. Achievement tests will be given during Freshman Week and at the end of each semester. All students who do not meet the language requirement at entrance shall enroll during the first semester in a foreign language course and shall continue therein until the requirement is met. In addition to demonstrating achievement in one foreign language, each student must pass two semesters of a *second* language (taken from the list above) at Brown or present two years of credit in this language on entrance. In the latter case the student must take the Brown placement test and place at least in a two-level course. One of the two languages offered must be German or Russian.

In certain physics courses of the senior year foreign language material will be used freely. Assignments of foreign language material will also be made in connection with the senior thesis.

- C. Ten semester courses in Physics, namely: 3, 4, 37, 38, 111, 114, 121, 122, 125, 198.
- D. Four semester courses in Mathematics, including a course in partial differential equations.
- E. Two semester courses in Chemistry.
- F. Two semester courses in Astronomy, Biological Sciences, Chemistry, Engineering, or Geology. A course in electronics is strongly recommended.
- G. Two semester courses in Philosophy.
- H. Two semester courses in the Social Studies.
- I. Two semester courses in the Humanities other than Philosophy.
- J. A senior thesis (to be prepared in connection with part of course 198).
- K. A comprehensive examination to be passed at the end of the senior year.

Note: Candidates for this degree who are also enrolled in a Reserve Officers Training Corps program must take as many extra courses or semesters as are necessary to meet the stated requirements. For students who entered in September 1955 and thereafter no fee will be charged for two of any additional courses which must be taken beyond thirty-two to satisfy this requirement.

COMBINED FIVE-YEAR PROGRAM LEADING TO A BACHELOR OF ARTS DEGREE AND A BACHELOR OF SCIENCE DEGREE

Students who wish to earn both a Bachelor of Arts degree and Bachelor of Science degree in Applied Mathematics, Chemistry, Engineering, or Physics may do so in a five-year program in which the work for both degrees proceeds concurrently. Programs of students who elect this five-year plan will usually be arranged so that those who wish may change to a Bachelor of Arts degree candidacy alone prior to the fourth year.

SPECIFIC REQUIREMENTS

- A. The Bachelor of Arts requirements in English and in foreign language.
- B. The Bachelor of Arts requirements for distribution in Humanities and Social

REQUIREMENTS FOR DEGREES

Studies. The purposes of distribution in the Sciences are considered as satisfied by the elementary science work the student takes to earn the Bachelor of Science degree.

- C. All requirements for the Bachelor of Science degree for which the student is a candidate. The advanced work in science for the Bachelor of Science degree satisfies the purpose of concentration in the usual Bachelor of Arts program.
- D. A minor of at least three reasonably related courses above the introductory (D or IC) level. The selection must be approved by the appropriate Dean and by the department in which the student is working for the Bachelor of Science degree. This minor is normally to be completed in the Humanities, Social Studies, or Biological Sciences. A minor in any other area must be approved by the Committee on Academic Standing.
- E. Electives to make a total of forty semester courses.

Note: ROTC may not be combined with this five-year program for both the Bachelor of Arts and the Bachelor of Science degrees.

BACHELOR OF SCIENCE (IN NURSING)¹

(This degree is expressly for Pembroke College students)

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition—to be demonstrated by a proficiency test at or before the beginning of the first semester or to be acquired by the successful pursuit of a course² in college. A student may not enter her fifth semester until she has completed this requirement.
- B. The equivalent of the prescribed courses in either Pattern A or Pattern B below:

PATTERN A

- 1. Biology 1, 2, 5, 10, 15, and 20
- 2. Chemistry D1 (with a grade of C or better) or D2, and Chemistry 5 and 4¹
- 3. Education 103
- 4. Psychology D1 or IC, 81, and 107
- 5. Sociology D1 or IC and 105

PATTERN B

- 1. Humanities—four semester courses (distribution courses)
- 2. Social Studies—four semester courses including a year of History and at least a semester of Sociology
- 3. Sciences—Biology 1, 2, 5, 10, and 20
Chemistry D1 and 11, or Chemistry D2 and 5
Psychology D1 or IC
- 4. Four additional semester courses in Sociology or four additional semester courses in Psychology

¹ See Appendix B on page 318.

² See description of English 1-2 on page 162.

SUMMER SCHOOL CREDIT

- C. Additional courses to make a total equivalent to twenty-four semester courses.
- D. A program of study at the Rhode Island Hospital School of Nursing for two years and four months.

Regulations Governing Degrees

Candidates for degrees who have maintained a satisfactory standing in their studies may, with the consent of the Committee on Academic Standing, take work in addition to the regular number of courses prescribed.

Students who at the beginning of their seventh semester lack less than eight semester courses of completing their course requirements may, with the consent of the Committee on Academic Standing, distribute their work over the last two semesters.

Students who lack less than four semester courses of completing their course requirements may, with the consent of the Committee on Academic Standing, be excused from taking more than the required number of courses.

Degrees with Distinction

In addition to the regular degrees of Bachelor of Arts and Bachelor of Science, the same degrees are awarded with one or another of three grades of distinction, *cum laude*, *magna cum laude*, and *summa cum laude*. The award is based on the complete University scholastic record of the student. The basis for the award of the three grades of distinction is as follows:

cum laude, an average standing of 3.100

magna cum laude, an average standing of 3.400

summa cum laude, an average standing of 3.750

If students have been in residence less than six semesters, they will be awarded their degree *cum laude* if they have an average standing of 3.400 or *magna cum laude* if they have an average standing of 3.750.

On the basis of performance on the Comprehensive Examination a Department may recommend to the Committee on Academic Standing that the grade of distinction be raised, lowered, or withheld.

*Summer School Credit*¹

An undergraduate who wishes to take summer school work must obtain *in advance* the approval of the appropriate Dean and the Chairmen of the

¹ The regulations regarding summer school credit apply also to entering students, with the exception that they must send a written request for the required approval of courses to the appropriate Admission Office, preferably before July 1.

FOREIGN STUDY

Departments concerned or their authorized representatives. The latter will approve the content of the courses which should be in substance equal to courses offered by Brown University. The Recorder of The College and the Recorder of Pembroke College are authorized to determine equivalent quantity credit for summer courses.

The total summer credit offered toward a degree shall not exceed three semester courses or twelve semester hours except by special permission of the Committee on Academic Standing; in general, the Committee will not approve more than two semester courses in any one summer. The grades received for summer school courses will not be computed in determining the graduation average (see page 69). Credit for summer school courses will be given only for courses in which a grade of *C* or better is earned.

Except with the permission of the Committee on Academic Standing and the Department concerned, no concentration or distribution course may be taken as a summer course.

Foreign Study

Students may arrange for foreign study, with the approval of the appropriate Dean and the Committee on Academic Standing, during the junior year by joining one of the groups recognized by the Council on the Junior Year Abroad of the Institute of International Education or during the summer in certain recognized summer sessions.

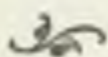
To qualify students should include in their college program of studies sufficient work in the language of the country in which they are interested to allow them to participate in courses given in that language and must establish themselves as students in good standing at Brown with cumulative averages of at least 2.50. Students planning a junior year abroad should make careful arrangements in advance with the Chairman of the Department in which they intend to concentrate to be sure that their program of foreign study is acceptable as a part of their total program of concentration. Work equivalent to *C* grade or better done in a foreign university will be accepted toward a Brown University degree, but such grades will not be included in the calculation of the student's graduation average. A student interested in foreign study should consult the Dean in Semester III.

A student who wishes to study abroad for junior year credit but who does not make arrangements through one of the American sponsoring institutions must (1) have a cumulative average of *B* (3.0) for the first three semesters (the fourth semester required average will be left to the

FOREIGN STUDY

discretion of the Dean), (2) present a written program of the work proposed, (3) have this program approved by an appropriate person in each department involved, who will state what credit will be given, (4) have the whole proposal approved by the Dean, and (5) after returning take written examinations set by each department concerned and attain quality grades. A maximum of one year's credit may be so attained.

Financial Information



THE TUITION paid by the students covers part of the cost of their instruction and the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the remainder.

The University reserves the right to change the charges whenever it is deemed advisable, the new rates to apply to all students. Published notice of any change will normally be given in advance.

Student Charges—The College

Tuition Fee. The undergraduate comprehensive tuition fee is \$625 a semester. This fee applies to all students carrying four semester courses. The tuition fee for students electing less than four courses is \$156.25 for each semester course. The tuition fee for extra courses above four is \$156.25 for each semester course or its equivalent.

Room Rental. The room rental fee in The College is \$190 a semester. Reservations in the dormitory system are made for the college year and no refund of room rental will be allowed unless the student who withdraws provides a satisfactory substitute. All students not living at home are required to live in University student residences.

Board. The board charge in The College is \$220 a semester for eighteen meals per week or \$235 a semester for twenty meals per week. These rates are established as low as possible consistent with quality and good service. The University reserves the right to change the rate according to the costs. An extra charge may be made for students requiring a special diet. All men living in University student residences have their meals in the Sharpe Refectory. Any non-resident student may arrange for a board contract entitling him to eat five lunches (or dinners, if he prefers this type of contract) five days a week in Sharpe Refectory. The charge for the non-resident luncheons is \$70 a semester and for the non-resident dinners, \$90 a semester.

House Fee for Non-resident Students. A charge of \$10 a semester is made to all non-resident students who are not married or affiliated with a fraternity. This fee entitles the student to the use of Plantations House.

STUDENT CHARGES

Application Fee. Final application for admission to The College should be accompanied by a fee of \$10, which is not returnable.

Dormitory Reservation Deposit. With each room application filed for a dormitory room a \$10 deposit is required. This deposit will apply to the room rental charge for the first effective semester. The deposit will be refunded to any student who cancels his room lease before August 15. Deposits will not be refunded after August 15.

Student Deposit. Each regular student, prior to registration for the first semester after admission or after readmission, is required to deposit \$15. This deposit serves for the duration of the student's enrollment in the University as a guaranty of payment of his account; it is not an account against which the student himself may make charges; it will be refunded in full upon the student's graduation or withdrawal from college, unless the University is forced to draw from it to clear his account, in which case any unused balance will be refunded.

Special Examinations. A fee of \$5 is charged for each special examination; it may be waived, however, for any student submitting a medical excuse satisfactory to the Dean.

Registration Fees. A charge of \$10 will be made to each student who does not complete preliminary or final registration, including the payment of tuition and other fees, at the prescribed time.

A charge of \$10 will be made for each change in registration after the preliminary registration period has ended unless the change is required by action or regulations of the Faculty or of the Committee on Academic Standing.

Student Recreation Fee. A penalty of \$10 is charged in the succeeding semester to any undergraduate who has failed to fulfill the requirements of the Physical Education program unless excused from such requirements by the Dean of The College. This penalty is relieved each subsequent semester until the student recreation requirement has been fulfilled.

Student Charges—Pembroke College

Comprehensive Charge. Resident students pay \$625 for tuition, and, depending upon dormitory assignment, \$290 or \$425 for room and board, which as a total makes a comprehensive charge of \$915 or \$1050 a semester for resident students; non-resident students pay a comprehensive charge of \$635, covering the tuition of \$625 and a fee of \$10 for the use of West House. The comprehensive charge applies to students who carry a program of four semester courses. The student who is not registered for the normal program of four semester courses adjusts the comprehensive charge either

STUDENT CHARGES

by deducting \$156.25 for each semester course short (\$78.13 for a half course) or by adding \$156.25 for each extra semester course (\$78.13) for a half course).

Special Examinations. A fee of \$5 is charged for each special examination; it may be waived, however, for any student submitting a medical excuse satisfactory to the Dean.

Registration Fees. A charge of \$10 will be made to each student who does not complete registration, including the payment of her comprehensive charge, at the prescribed time. This late registration fee applies also to students who do not complete preliminary registration within the prescribed periods officially announced and posted.

A charge of \$10 will be made for each change in registration after the preliminary registration period is over, unless the change is required by action or regulations of the Faculty or of the Committee on Academic Standing.

Application Fee. An application for admission to Pembroke College must be accompanied by a fee of \$15, which is not refundable.

Residence Charges. The comprehensive charge for students living in the cooperative house (Bates House) is \$915 a semester, including a food allowance of \$90; in all other residence halls, \$1050 a semester.

West House Fee. A fee of \$10 a semester is charged all non-resident students for the use of West House, which serves as a campus residence for these students.

Student Deposit. Each regular student, prior to registration for the first semester after admission or after readmission, is required to deposit \$15 with the Cashier. This deposit serves for the duration of the student's enrollment in the University as a guaranty of payment of her account; it is not an account against which the student herself may make charges. It will be refunded in full upon the student's graduation or withdrawal from college, unless the University is forced to draw from it to clear her account, in which case any unused balance will be refunded.

Room Advance Payment. An advance payment of \$50 is required of every applicant for a dormitory room. This payment must be made by upperclass students at the time application for a room assignment is filed and it will not be refunded under ordinary circumstances to students who withdraw after July 1. Entering students who apply for dormitory rooms must make the advance payment at the time when they accept their admission to Pembroke College, but it will be refunded in case of withdrawal before June 10. Students non-resident in the first semester who wish to live in a dormitory in the second semester must make the room advance payment of \$50 when they apply officially for a room and it will be refunded only to those students who withdraw their applications before the second semester officially opens.

Nursing. The fees paid to the Rhode Island Hospital School of Nursing

PAYMENT OF CHARGES

by the candidates for the Bachelor of Science (in Nursing) degree during their two years and four months there are given in Appendix B, page 318.

Payment of Charges

As a means of education in sound business practices, including accuracy and punctuality, the University deals directly with students. No bills for the regular charges will be sent by the University. The charges are due and payable in advance of final registration each semester. Payment of charges may be made in installments if an application for use of the deferred payments plan is properly executed in advance of registration. The extended terms require a minimum payment of one fourth of the semester charges at or before registration and the balance in equal monthly installments for not more than three months. A service charge of \$2 for each installment is made on all deferred accounts. A late payment charge of \$5 is made, in addition to the service charge, if an installment is not paid on or before the date due. The specific arrangements for paying by installments are made at The College through the Dean of Admission and Financial Aid and at Pembroke College through the Director of Placement.

In accordance with an established schedule of refunds filed in the Controller's Office, adjustments of tuition charges will be made for any students at The College and at Pembroke College who during the first five weeks of the semester withdraw or drop a course with permission of the appropriate Dean. Refunds on unexpired portions of board charges are also made according to the schedule but there are no refunds on room rental charges unless the respective college is able to reassign the student's room for the remainder of the semester.

A student suspended or dismissed from the University, or withdrawing when under investigation for misconduct, is not entitled to any refund of tuition or of room rental charges.

No student may withdraw in good standing from either The College or Pembroke College unless all current financial obligations to the University have been met.

A student who has an unadjusted indebtedness to the University shall not be allowed to register for the following semester except with special permission of the appropriate Dean. Until all accounts are satisfactorily settled no diploma, certificate, transcript, letter of honorable dismissal, or recommendation will be granted. Students whose accounts become delinquent are subject to disciplinary action.

Students, former students, and graduates, who request transcripts of their academic records, are subject to the advance payment of a fee of \$1

FINANCIAL AID

for each copy issued after the first one, to which they are entitled without charge.

Financial Aid

Through a comprehensive program of scholarships, grants, remissions, loans, and student employment the University helps many students with limited funds to meet their college expenses. Financial aid is based on the principle that well qualified students with promise of future usefulness must not be denied the opportunity to gain a university education because of financial difficulties. This program is administered at The College through the Office of Financial Aid, but all inquiries concerning scholarships, loans, and student employment should be addressed to the Board of Admission, Brown University, Providence 12, Rhode Island. At Pembroke College all inquiries concerning scholarships, loans, and employment for entering students should be addressed to the Admission Office, Pembroke College, Providence 6, Rhode Island; upperclass students are referred to the Dean's Office for information concerning scholarships and to the Placement Office for information concerning loans and student employment.

Scholarships—The College

Each year the University grants at The College a considerable number of scholarships ranging from \$100 to \$2000 a year. The competition for these funds is, of course, keen but over 25% of each entering class receives financial aid. Awards are made on the basis of financial need, scholastic achievement, character, and promise of future usefulness.

Any student who will need financial aid to complete four years at The College should apply for aid before admission because a majority of the scholarship funds are committed to those who win awards as freshmen. It should be noted that an aid application in no way affects a student's chances of admission.

Applicants for admission may obtain scholarship applications by writing to the Director of Financial Aid or by indicating an interest in scholarship aid on the admission application. Brown is a member of the College Scholarship Service, a cooperative activity of over one hundred and sixty colleges which believe that scholarships should be awarded to properly qualified students only after careful consideration of the financial need of the students and their families.

The Service provides for the duplication and distribution of a common application form, thus eliminating the need for students and their parents to fill out separate forms for each of the colleges to which they may be applying for financial aid. (Colleges may, however, require short, supplementary applications.) The form, called the *Parents' Confidential Statement*, may be obtained from any member college.

The completed form should be returned by the student directly to the College Scholarship Service—*not to the college*—at least one week before the deadline set by the college. The College Scholarship Service does not itself determine or award scholarships; this is done by the individual colleges. The Service duplicates the form photographically and sends copies of it to the colleges listed by the student at a cost to the student of \$2 per copy. The whole procedure is very similar to that used by the College Entrance Examination Board in handling admission tests.

Only one form need be filed with the College Scholarship Service by any one student. If a student wishes to have a copy sent to a college not originally listed on his form or if he or his parents wish to modify the form already on file, the Service should be notified, and it will in turn notify the colleges.

Scholarship applications should be returned by March 1 and will be given consideration very soon after the decisions regarding admission have been reached; applications filed after March 1 will be given every possible consideration, but it should be understood that almost all of the funds will have been awarded soon after the deadline. These awards are continued during subsequent years provided they are justified by the general college record of the recipient and continuing financial need. It is necessary, however, that renewal applications be filed each year in the spring. Awards are subject to review at any time by the Committee and, in some cases, may be partially converted to loans. The Committee reserves the right at any time to suspend or reduce a student's award if either his academic standing or personal conduct warrants.

Some of the funds are restricted to students with special qualifications, as, for example, those limited to students from particular areas, schools, or cities. No deserving student with limited funds should hesitate to apply, however, since a majority of the awards come from unrestricted funds and are awarded only on the regular scholastic, financial, and personal criteria.

ENDOWED SCHOLARSHIPS

Scholarships and other forms of financial aid have been made possible by gifts to the University for the establishment of scholarship funds. They represent the thoughtful interest of alumni and friends of the University who have manifested in this way their interest in education, their faith in the University, and their desire to be of service to the young men for whom it carries on its work.

The list of endowed scholarship funds follows:

THE EMILY F. ABBEY ENDOWMENT FUND established in 1943 by Emily F. Abbey Gill.

THE HARRY B. ABRAMSON FUND established in 1947 by Mrs. Claus B. Abramson in memory of her son, Harry B. Abramson, 1925.

FINANCIAL AID

THE AID FUND established in 1868 by Miss Lydia Carpenter and other friends of the University.

THE E. BENJAMIN ANDREWS SCHOLARSHIP FUND OF THE CLASS OF 1898 established in 1911 in honor of E. Benjamin Andrews, 1870; President of the University, 1889-98.

THE ANONYMOUS SCHOLARSHIP FUND established in 1942 by an anonymous donor.

THE FRANCES R. ARNOLD SCHOLARSHIP established in 1863 by Mrs. Frances R. Arnold.

THE SAMUEL T. ARNOLD MEMORIAL AID FUND established in 1957 by Thomas J. Watson, Jr., 1937, Trustee.

THE SAMUEL T. ARNOLD SCHOLARSHIP FUND established in 1956 by friends, classmates, alumni, and organizations in memory of Samuel T. Arnold; A.B., 1913; Ph.D., 1916; faculty member (Chemistry Department), 1913-56; Dean of The College, 1937-46; Dean of the University, 1946-49; Provost, 1949-56.

THE RUFUS BABCOCK SCHOLARSHIP established by Mrs. Caroline Vassar Babcock Jones in memory of her father, the Reverend Rufus Babcock, 1821; Trustee, 1828-75.

THE WILLIAM UPSON BAILEY SCHOLARSHIP FUND established in 1951 by bequest of Mrs. L. M. Bailey in memory of her son, William Upson Bailey, 1946.

THE MARY ELIZABETH BALDWIN SCHOLARSHIP FUND (Wickford, Rhode Island) established in 1947 by Mrs. Susan B. McCoid in memory of her sister, Mary Elizabeth Baldwin.

THE BANIGAN SCHOLARSHIPS established in 1896 by Joseph Banigan.

THE GEORGIANA BARNES SCHOLARSHIP FUND established in 1956 by bequest of Georgiana Barnes.

THE E. LEO BARRY SCHOLARSHIP FUND established in 1953 by gift of Monroe E. Hemmerdinger, 1937, in memory of E. Leo Barry, former University swimming coach.

THE BARTLETT SCHOLARSHIP FUND established by Mrs. Slater Bartlett.

THE CHARLES L. BARTLETT FUND established in 1940 by bequest of Charles L. Bartlett, 1882; A.M., 1890.

THE GEORGE P. BECKFORD FUND established in 1936 by bequest of George P. Beckford, 1895.

THE TRUMAN BECKWITH SCHOLARSHIP FUND established in 1897 by bequest of Abby G. Beckwith in honor of Henry Truman Beckwith, 1838.

THE DAVID WINTON BELL AID FUND established in 1957 by the David Winton Bell Memorial Fund in memory of David Winton Bell, Class of 1954.

THE WILLIAM H. BENNETT FUND established in 1930 by bequest of Ellen D. C. Bennett in memory of her husband, Dr. William H. Bennett, 1868; A.M. hon., 1884.

THE GEORGE W. BERRIMAN SCHOLARSHIP FUND established in 1919 by bequest of George W. Berriman, 1920.

THE BRUCE M. BIGELOW SCHOLARSHIP FUND established in 1954 by over 500 friends, classmates, alumni, and organizations in memory of Bruce M. Bigelow; Ph.B., 1924; Ph.D., 1930; faculty member (History Department), 1930-54;

FINANCIAL AID

- Director of Admission, 1932-43; Professor of History, 1947-54; Vice President, 1945-54.
- THE CAPTAIN ARTHUR H. BIJUR SCHOLARSHIP established in 1945 by Nathan I. Bijur in memory of his son, Captain Arthur H. Bijur, 1941.
- THE JAMES FLETCHER BLACKINTON SCHOLARSHIP established by Mrs. Mary D. Blackinton in honor of her husband, James F. Blackinton, 1847; A.M. hon., 1867.
- THE ARTHUR H. BLANCHARD SCHOLARSHIP FUND established in 1953 by bequest of Caroline P. Blanchard in memory of Arthur H. Blanchard, 1899.
- THE LEONARD CARPENTER BLISS SCHOLARSHIP established in 1928 by Elmer Jared Bliss in memory of his father, Leonard Carpenter Bliss.
- THE GEORGE W. BRADBURN SCHOLARSHIP FUND established in 1948 by Mrs. W. Dorothea Bradburn in memory of her husband, George W. Bradburn.
- THE S. S. BRADFORD SCHOLARSHIPS established in 1863 by Shadrach Standish Bradford; Trustee, 1863-65; Fellow, 1865-74.
- THE BENJAMIN BRAMAN FUND established in 1911 by bequest of Chloe Braman in memory of the Reverend Benjamin Braman, 1854.
- THE JOHN S. BRAYTON FUND established in 1929 by Harriet H. Brayton in memory of her father, John S. Brayton, 1851; LL.D. hon., 1893; Fellow, 1898-1904.
- THE BRECKENRIDGE SCHOLARSHIP FUND established in 1941 by Mr. and Mrs. Harlin A. Breckenridge.
- THE JOSEPH BROWN SCHOLARSHIP established in 1861 by Mrs. Eliza B. Rogers in honor of her grandfather, Joseph Brown; A.M. hon., 1770; Trustee, 1769-85; Professor, 1784-85.
- THE NICHOLAS BROWN SCHOLARSHIPS established in 1858 by bequest of Nicholas Brown, 1786, for whom the University was named.
- THE WILLIAM BUCKNELL SCHOLARSHIP established by William Bucknell.
- THE CHESTER THOMAS CALDER SCHOLARSHIP established in 1940 by bequest of Mrs. Ida B. T. Calder in memory of Chester T. Calder, 1911.
- THE DR. ELBRIDGE CARPENTER SCHOLARSHIP FUND established in 1925 by Anna J. B. Carpenter in memory of Dr. Elbridge Carpenter.
- THE HAROLD P. CARVER SCHOLARSHIP FUND established in 1944 by Mr. Harold P. Carver, 1930.
- THE ALEXIS CASWELL SCHOLARSHIP established by Alexis Caswell, 1822; D.D. hon., 1841; LL.D. hon., 1865; Professor, 1828-63; President, 1868-72.
- THE ABBY WHEATON CHACE SCHOLARSHIP FUND established in 1893 by bequest of George I. Chace, 1830; LL.D. hon., 1853; Professor, 1833-72.
- THE GEORGE IDE CHACE SCHOLARSHIP FUND established in 1893 by bequest of George I. Chace, 1830; LL.D. hon., 1853; Professor, 1833-72.
- THE HEZEKIAH S. CHACE SCHOLARSHIP established in 1860 by Hezekiah S. Chace.
- THE CLARK SCHOLARSHIP established in 1863 by bequest of Moses B. Ives, 1812; Trustee, 1822-57; Treasurer, 1825-57.
- THE SCHOLARSHIP—CLASS OF 1838 established in 1874.
- THE CLASS OF 1895 SCHOLARSHIP FUND established in 1914.
- THE CLASS OF 1902 SCHOLARSHIP established in 1938.
- THE CLASS OF 1903 SCHOLARSHIP established in 1929.
- THE CLASS OF 1907 SCHOLARSHIP established in 1923.

FINANCIAL AID

- THE CLASS OF 1908 AWARD established in 1933.
- THE CLASS OF 1912 SCHOLARSHIP established in 1938.
- THE CLASS OF 1914 FUND established in 1954.
- THE CLASS OF 1921 ENDOWMENT FUND FOR SCHOLARSHIPS established in 1942.
- THE CLASS OF 1925 SCHOLARSHIP established in 1940.
- THE CLASS OF 1933 SCHOLARSHIP FUND IN MEMORY OF JAY BARRETT BOTSFORD established in 1938 in memory of Jay Barrett Botsford, Instructor and Professor, 1920-38.
- THE CLASS OF 1949 SCHOLARSHIP established in 1951.
- THE GARDNER COLBY SCHOLARSHIP established in 1862 by Gardner Colby; Trustee, 1855-79.
- THE KATE B. COLBY SCHOLARSHIP established in 1945 by bequest of Charles H. Hunkins in memory of his sister, Kate B. Colby.
- THE ELIOT LOOMIS COLLINS SCHOLARSHIP FUND established in 1909 by Clarkson A. Collins, 1876, in memory of his son, Eliot L. Collins, 1910.
- THE KING COLLINS MEMORIAL SCHOLARSHIP FUND established in 1953 by bequest of Mrs. Elizabeth King Collins in memory of her son, King Collins, 1914.
- THE JENNIE L. COMSTOCK SCHOLARSHIP established in 1926 by George F. Comstock, 1879, in memory of his wife, Jennie L. Comstock.
- THE CROCKER SCHOLARSHIP FUND established in 1863 by bequest of Moses B. Ives, 1812; Trustee, 1822-57; Treasurer, 1825-57.
- THE JOHN P. CROZER SCHOLARSHIP established in 1866 by Mrs. Margaret C. Bucknell in memory of her father, John P. Crozer.
- THE REV. JOSIAH N. CUSHING SCHOLARSHIP FUND established in 1912 by Samuel H. Tingley in memory of the Reverend Josiah N. Cushing, 1862; D.D. hon., 1881; Ph.D. hon., 1898.
- THE ISAAC DAVIS SCHOLARSHIP established in 1861 by Isaac Davis, 1822; LL.D. hon., 1860; Trustee, 1838-51; Fellow, 1851-79.
- THE ALBERT DAY SCHOLARSHIP established in 1864 by Lieutenant Governor Day of Connecticut; Trustee, 1853-73.
- THE ALBERT CLIFTON DAY FUND established in 1920 by bequest of Mary E. Day.
- THE ROBERT HARVEY DAY SCHOLARSHIP FUND established in 1946 by bequest of Mrs. John L. T. Boomer in memory of her brother, Robert Harvey Day, 1896.
- THE FREDERIC DENISON SCHOLARSHIPS established in 1953 by bequest of Fredrica Denison in memory of her father, the Reverend Frederic Denison, 1847.
- THE DR. WILLIAM HOWARD DOANE SCHOLARSHIP FUND established in 1954 by gift of the Marguerite T. Doane Charitable Foundation.
- THE EDGAR J. DOE AND FLORENCE E. DOE SCHOLARSHIP FUND established in 1938 by bequest of Mrs. Linn E. Wheeler in memory of her husband, Edgar J. Doe, 1864.
- THE SAMUEL J. DREYER SCHOLARSHIP established in 1957 by Samuel J. Dreyer, 1922.
- THE JAMES H. DUNCAN SCHOLARSHIP established in 1860 by the Honorable J. H. Duncan, 1849.
- THE SAMUEL WHITE DUNCAN SCHOLARSHIP established in 1900 by Mary Duncan Harris in honor of the Reverend Samuel W. Duncan, 1860; Fellow, 1889-98.

FINANCIAL AID

THE DYER-GURNEY-REED SCHOLARSHIP FUND established in 1916 by Charles F. Reed, 1885; A.M., 1890.

THE EATON SCHOLARSHIP FUND established in 1907 by bequest of Caroline B. Eaton confirming the will of her husband, the Reverend William Hadley Eaton, 1845; D.D. hon., 1867; Trustee, 1875-96.

THE ROMEO ELTON SCHOLARSHIP established in 1864 by the Reverend Dr. Romeo Elton, 1813; Professor, 1825-43; Trustee, 1820-51.

THE FAIN FAMILY ASSOCIATION FUND established in 1948 by the Fain Family Association.

THE L. FAIRBROTHER SCHOLARSHIP established in 1865 by Mrs. Lewis Fairbrother.

THE LESTER L. FALK SCHOLARSHIP established in 1934 by a member of his family in memory of Lester L. Falk, 1906.

THE ALEXANDER FARNUM SCHOLARSHIP FUND established in 1910 by bequest of the Reverend Augustus Woodbury; D.D. hon., 1888.

THE PERRY EDSON FAUNCE SCHOLARSHIP established in 1923 by Mrs. William Herbert Perry Faunce in memory of her son, Perry E. Faunce, 1919.

THE ERWIN J. FRANCE FUND established in 1951 by bequest of Helen S. France in memory of her father, Erwin J. France, 1876.

THE WILLIAM FRANKLIN FUND established in 1957 by bequest of Susan B. Franklin in memory of her father, William Franklin.

THE ANNIE FREEDMAN MEMORIAL FUND established in 1952 by Joseph Freedman, 1926, in memory of his mother, Annie Freedman.

THE EVERT W. FREEMAN FUND established in 1955 by bequest of Evert W. Freeman.

A FRIEND'S SCHOLARSHIP FUND established in 1907 by an anonymous donor.

THE WILLIAM GASTON SCHOLARSHIP FUND established in 1899 by the widow and children of Governor William Gaston, 1840, of Massachusetts; L.L.D. hon., 1875.

THE MARY JANE BEMENT HUBBELL GEORGE MEMORIAL FUND established in 1950 by bequest of Daniel F. George, 1894, in memory of his mother, Mary Jane Bement Hubbell George.

THE GLOVER SCHOLARSHIP FUND established by Henry R. Glover in memory of his father, the Reverend Samuel Glover, 1808, and his brother, Samuel Glover, Jr., 1839.

THE NANCY GOODNOW FUND established in 1903 by bequest of Nancy Goodnow.

THE CORNELIA E. GREEN SCHOLARSHIP established in 1863 by Mrs. Cornelia E. Green.

THE CHARLES WARREN GREENE FUND established in 1939 by bequest of Elizabeth L. Chandler in memory of her father, Dr. Charles W. Greene, 1863; A.M. Hon., 1872.

THE GROSSMAN FUND established in 1955 in honor of Henry Barrett Huntington, Professor 1902-1945, by Jacob Grossman and John Grossman, 1935.

THE JAMES ALEXANDER HALL SCHOLARSHIP FUND established in 1937 by the Brown Engineering Association in honor of James A. Hall, 1908; Professor, 1912-36.

THE HALL-MERCER SCHOLARSHIP FUND established in 1940 by bequest of Alexander G. Mercer.

THE ALBERT HARKNESS SCHOLARSHIP FUND established in 1910 by bequest of Albert Harkness, 1842; LL.D. hon., 1869; Professor, 1855-92; Fellow, 1904-07.

FINANCIAL AID

THE EDWIN A. W. HARLOW FUND established in 1906 by Edwin A. W. Harlow.
THE ROBERT H. HARLOW FUND established in 1909 by bequest of Robert H. Harlow.
THE JOSEPH C. HARTSHORN SCHOLARSHIPS established by the Reverend Joseph C. Hartshorn, 1841; Trustee, 1872-89.

THE ANNIE M. HARVEY BEQUEST established in 1943 by bequest of Annie Mason Harvey.

THE JOHN HESS FUND FOR STUDENTS established in 1919 by bequest of Iban Hess, 1867.

THE GEORGE WOODLEY HOGG SCHOLARSHIP FUND established in 1912 by an anonymous donor in memory of George W. Hogg, 1894.

THE JOHN HOPE SCHOLARSHIP FUND established in 1955 by bequest of Samuel M. Higgins, 1894, in memory of his classmate, John Hope; A.B., 1894; A.M. hon., 1907; LL.D., 1935.

THE HELEN F. HOPKINS SCHOLARSHIP FUND established in 1951 by Richard F. Hopkins, 1935, in memory of his mother, Helen F. Hopkins.

THE FRANCIS EDWIN HOPPIN SCHOLARSHIP established in 1928 by Mrs. Robert Ives Gammell in memory of her father, Francis E. Hoppin, 1839.

THE EDITH LEE HORTON SCHOLARSHIP established in 1933 by bequest of Edith L. Horton.

THE DAVID W. HOYT SCHOLARSHIP FUND established in 1912 by the Alumni Association of the Providence English High School in memory of David W. Hoyt, 1855; A.M. hon., 1872.

THE ROWLAND R. HUGHES MEMORIAL SCHOLARSHIP established in 1957 by a group of friends in memory of Rowland R. Hughes, Ph.B., 1917; LL.D. hon., 1955; Trustee, 1943-1957.

THE HENRY DWIGHT HUNT SCHOLARSHIP FUND established in 1951 by bequest of Henry Dwight Hunt.

THE GABRIEL J. JACK FUND established in 1948 by bequest of Mrs. Barbara Jackowitz in memory of her son, Gabriel J. Jack, 1906.

THE JACKSON MEMORIAL FUND established in 1943 by bequest of Florence E. Jackson in honor of her father, Joseph Jackson, 1868; A.M., 1879.

THE JACKSON SCHOLARSHIPS established by bequest of Henry Jackson, 1817; D.D. hon., 1854; Trustee, 1828-63.

THE JAMES RICHARD JEWETT SCHOLARSHIP FUND established in 1942 by James R. Jewett, Instructor and Professor in Semitic Languages and History, 1890-95.

THE JOHNSON SCHOLARSHIP established in 1948 by bequest of Alfred S. Johnson, 1890.

THE BENJAMIN HUTCHINSON JUDAH SCHOLARSHIP FUND established in 1900 by Charles L. Hutchinson in memory of his nephew, Benjamin H. Judah.

THE HENRY P. KENT SCHOLARSHIP established in 1864 by Henry P. Kent.

THE CHARLES H. KLEIN MEMORIAL FUND established in 1955 by Mrs. Ana Mae Klein in memory of her son, Charles H. Klein, a member of the Class of 1958.

THE HENRY CLIFFORD KNIGHT SCHOLARSHIPS established by Miss Amelia S. Knight in memory of her brother, Henry C. Knight, 1875.

THE WEBSTER KNIGHT SCHOLARSHIP FUND established in 1933 by bequest of C. Prescott Knight, 1885, in honor of his brother, Webster Knight, 1876; Trustee, 1923-33.

FINANCIAL AID

- THE GEORGE LAWTON SCHOLARSHIP established in 1865 by George Lawton.
- THE J. L. LINCOLN SCHOLARSHIP FUND established in 1897 by bequest of Abby G. Beckwith in honor of John L. Lincoln, 1836; LL.D. hon., 1859; Professor, 1845-91.
- THE WILLIAM EASTON LOUTTIT SCHOLARSHIP FUND established in 1950 by W. Easton Louttit, Jr., 1925, in memory of his father, William Easton Louttit.
- THE CHARLES B. LUTHER FUND established in 1932 by bequest of Charles B. Luther, 1883.
- THE DANIEL WANTON LYMAN FUND FOR STUDENTS established in 1890 by bequest of Daniel W. Lyman, 1865.
- THE MICHAEL J. LYNCH SCHOLARSHIP established in 1929 by Mrs. Lynch in memory of her husband, Michael J. Lynch, 1904.
- THE HENRY LYON SCHOLARSHIP established in 1914 by the Reverend William H. Lyon, 1868; D.D. hon., 1896.
- THE HERBERT E. MAINE SCHOLARSHIP established in 1942 by bequest of Clara Norton Maine in honor of her husband, Herbert E. Maine.
- THE SETH MANN SCHOLARSHIP FUND established in 1920 by bequest of Adelaide E. Mann in memory of her father, Seth Mann, II, 1839.
- THE FRANK STEAD MANTON SCHOLARSHIP established in 1942 by bequest of Edith Manton in honor of Frank S. Manton.
- THE GEORGE MARSDEN SCHOLARSHIP FUND established in 1946 by bequest of George Marsden, 1900.
- THE EARL P. MASON SCHOLARSHIP established in 1860 by Earl P. Mason; Trustee, 1866-76.
- THE EDWIN B. MAYER SCHOLARSHIP FUND established in 1949 by bequest of Edwin B. Mayer, 1909.
- THE ROBERT JAMES YORKSTON MECKEL MEMORIAL FUND established in 1914 by Mary Wehmeyer in memory of her nephew, R. J. Y. Meckel, 1912; A.M. 1913.
- THE AUSTIN MERRICK SCHOLARSHIP established by Mrs. Olive E. Merrick.
- THE E. BRUCE MERRIMAN SCHOLARSHIP FUND established in 1955 by Mrs. E. Bruce Merriman in memory of her husband, E. Bruce Merriman, 1894.
- THE DONALD G. MILLAR SCHOLARSHIP FUND established in 1951 by Donald G. Millar, 1919; Trustee, 1944-.
- THE PARDON MILLER SCHOLARSHIP established in 1861 by Mrs. Ann Eliza Miller.
- THE MUMFORD SCHOLARSHIP established by Mrs. Louisa D. Mumford.
- THE ELLEN READ NEWELL SCHOLARSHIP FUND established in 1910 by George W. Newell in memory of his wife, Mrs. Ellen R. Newell.
- THE NEWPORT SCHOLARSHIP established by William Sanford Rogers, nephew of William Rogers, 1769, the first student of Rhode Island College.
- THE J. EUGENE AND ANNIE E. OSGOOD TRUST FUND established in 1945 by bequest of J. Eugene Osgood.
- THE WILLIAM OVERTON SCHOLARSHIP established in 1924 by the Alumni Association of Central Falls High School in memory of William Overton, 1887.
- THE LYMAN PARTRIDGE SCHOLARSHIP FUND established by Dr. Herbert G. Partridge, 1892, in memory of his father, the Reverend Lyman Partridge, 1863.
- THE J. MILTON PAYNE FUND established in 1926 by bequest of J. Milton Payne, 1882.
- THE GEORGE K. AND H. A. PEVEAR SCHOLARSHIP established by G. K. Pevear and H. A. Pevear.

FINANCIAL AID

- THE WILLIAM B. PECK SCHOLARSHIP established in 1957 by William B. Peck, 1897.
- THE WILLIAM T. PECK SCHOLARSHIP FUND established in 1925 by friends of William Thane Peck, 1870; A.M., 1873; Sc.D. hon., 1894; Trustee, 1906-39.
- THE S. DRYDEN PHELPS SCHOLARSHIP FUND established in 1896 by bequest of the Reverend S. Dryden Phelps, 1844; Trustee, 1879-95.
- THE FREDERICK WINTHROP PHILLIPS MEMORIAL established in 1926 by bequest of Charles Frederick Phillips in memory of Frederick W. Phillips, 1882.
- THE PRESIDENT'S SCHOLARSHIP established in 1859 by Barnas Sears, 1825; President 1855-67.
- THE THOMAS H. QUIGLEY SCHOLARSHIP FUND established in 1956 by bequest of Thomas G. Quigley, 1911.
- THE QUINCY MANSION SCHOLARSHIP FUND established in 1923 by the former students and faculty of the Quincy Mansion School in memory of Mrs. Ruth S. Willard and Horace Mann Willard, 1864; Sc.D. hon., 1893.
- THE AUGUSTUS P. RECCORD FUND established in 1957 by bequest of Mae A. Record in memory of her father, the Reverend Augustus P. Reccord, 1892; D.D. hon., 1922.
- THE ABBOTT B. RICE FUND established in 1924 by Abbott B. Rice, 1884.
- THE RICHARDS SCHOLARSHIP established in 1893 by the Reverend William Coolidge Richards, 1837.
- THE RICHMOND SCHOLARSHIP established in 1950 by bequest of Dr. George N. Richmond, 1892.
- THE ROGERS HIGH SCHOOL SCHOLARSHIP established by bequest of William Sanford Rogers, nephew of William Rogers, 1769, the first student of Rhode Island College. Formerly called the Newport Rogers High School Scholarship.
- THE ROWLEY MEMORIAL SCHOLARSHIP (ROWLEY, MASSACHUSETTS) established in 1949 by Malcolm Smith, 1925, in memory of his parents, Willard Prescott Smith and Annie McClelland Smith.
- THE SCHOLARSHIP REPAYMENT FUND established by gifts from former recipients of scholarships at the University.
- THE JACOB SHARTENBERG SCHOLARSHIP established in 1930 by bequest of Jacob Shartenberg.
- THE GEORGE J. SHERMAN SCHOLARSHIP FUND established in 1860 by George J. Sherman.
- THE CARLETON F. SIMS SCHOLARSHIP FUND established in 1932 by bequest of Mrs. Laura B. Sims in memory of her son, Carleton F. Sims, 1913.
- THE CHARLES P. SISSON 1911 SCHOLARSHIP FUND established in 1952 by Mrs. Charles P. Sisson in memory of her husband, Charles P. Sisson, 1911; Trustee, 1925-47.
- THE SLATER SCHOLARSHIP established in 1860 by Horatio N. Slater, 1854.
- THE GEORGE CARROLL SMITH SCHOLARSHIP FUND established in 1943 by bequest of Alice McKeen Purinton Smith in memory of her husband, George C. Smith, 1876; A.M., 1890.
- THE JAMES Y. SMITH SCHOLARSHIP established in 1863 by Governor J. Y. Smith.
- THE KENDALL KERFOOT SMITH SCHOLARSHIP established in 1930 by Elemius W. Smith, Emma Louise Smith, Priscilla M. L. Smith, Harold Crocker Smith, Regi-

FINANCIAL AID

- nald H. Smith, and Cecil H. Smith in memory of Kendall Kerfoot Smith; Professor, 1915-29.
- THE STANLEY B. SOVATKIN SCHOLARSHIP established in 1942 by Edward J. Sovatkin in memory of his son, Stanley B. Sovatkin, 1938.
- THE ANNA KAVIN SPEAR SCHOLARSHIP FUND established in 1955 by Alfred Spear in memory of his mother, Anna Kavın Spear.
- THE OSCAR S. STRAUS FUND established in 1927 by bequest of Oscar S. Straus; Litt.D. hon., 1896.
- THE RUTH ETTA TEMKIN SCHOLARSHIP FUND established in 1948 by Samuel Temkin, 1919, Trustee, 1950-, in memory of his wife, Ruth Etta Temkin, 1929.
- THE JOSEPH THAYER SCHOLARSHIP FUND established in 1898 by Edward C. Thayer in memory of his father, Joseph Thayer, 1815.
- THE CHARLES THURBER SCHOLARSHIP established in 1863 by Charles Thurber, 1827; Trustee, 1853-86.
- THE THURSTON SCHOLARSHIP established by the Honorable Benjamin F. Thurston, 1849; LL.D. hon., 1888; Trustee, 1888-90.
- THE JAMES HUMPHREY THURSTON SCHOLARSHIP established in 1922 by bequest of James H. Thurston, 1896.
- THE WILMARTH HEATH THURSTON SCHOLARSHIP FUND established in 1922 by bequest of James H. Thurston, 1896, in memory of Wilmarth H. Thurston, 1877.
- THE WILMARTH H. AND CAROLINE C. THURSTON MEMORIAL SCHOLARSHIP FUND established in 1940 by bequest of Caroline C. Thurston.
- THE UNIVERSITY SCHOLARSHIPS established at various times from University funds.
- THE UNIVERSITY SCHOOL SCHOLARSHIP established in 1939 by the University School, the chartered successor of the English and Classical School and the University Grammar School, which supervised the college preparatory work of several generations of young men in and about the City of Providence.
- THE ISABELLA M. WARDWELL FUND established in 1941 by bequest of Isabella M. Wardwell.
- THE JAMES WARING FUND established in 1923 by bequest of James Waring.
- THE GEORGE EDDY WARREN SCHOLARSHIP FUND established in 1938 by Mrs. Frances Knowles Warren in memory of her husband, George E. Warren, 1889.
- THE ANN E. WATERS SCHOLARSHIPS established in 1865 by Mrs. Ann E. Waters.
- THE WALTER G. WEBSTER SCHOLARSHIP FUND established in 1898 by the Reverend Walter G. Webster, 1878.
- THE EPHRAIM WHEATON SCHOLARSHIP established in 1862 by James Wheaton in memory of his grandfather, Ephraim Wheaton.
- THE JAMES WHEATON SCHOLARSHIP established by bequest of James Wheaton.
- THE WHEELER SCHOLARSHIP FUND established in 1895 by bequest of Rebecca B. Wheeler.
- THE ARNOLD WHIPPLE SCHOLARSHIP established in 1861 by Mrs. Phebe Whipple.
- THE WHITE SCHOLARSHIP FUND established in 1893 by bequest of Mrs. Abby S. A. White in honor of her husband William W. White, 1857.
- THE LUTHER WHITE SCHOLARSHIP FUND established in 1914 by Mabel Adaline White in memory of her father, Judge Luther White, 1864.
- THE WILLIAM J. WHITTLE, CLASS OF 1934 SCHOLARSHIP, established in 1953 by bequest of Ernest J. Whittle.

FINANCIAL AID

THE CHARLETTE B. WILBOUR FELLOWSHIP IN ORATORY established in 1947 by bequest of Miss Theodora Wilbour in memory of her mother, Charlette B. Wilbour.
THE FRED HOMER WILLIAMS SCHOLARSHIP FUND established in 1911 by Fred H. Williams, 1877; Trustee, 1922-28.

THE FRED HOMER WILLIAMS (BROOKLINE, MASSACHUSETTS) HIGH SCHOOL SCHOLARSHIP FUND established in 1927 by Fred H. Williams, 1877; Trustee, 1922-28.

THE FRED HOMER WILLIAMS (MILLIS, MASSACHUSETTS) HIGH SCHOOL SCHOLARSHIP established in 1930 by Fred H. Williams, 1877; Trustee, 1922-28.

THE VIRGIL HOMER WILLIAMS SCHOLARSHIP established in 1928 by Fred H. Williams, 1877; Trustee, 1922-28; in memory of his father, Virgil H. Williams.

THE FRANK EDWARD WINSOR SCHOLARSHIP FUND established in 1940 by Mrs. Winsor in memory of her husband, Frank E. Winsor, 1891; C.E., 1892; A.M., 1896; Sc.D. hon., 1929; Trustee, 1934-39.

THE ALVA WOODS SCHOLARSHIPS established in 1859 by Alva Woods; A.M. hon., 1826; D.D. hon., 1828; Professor, 1824-28; Trustee, 1843-59; Fellow, 1859-87.

GIFT SCHOLARSHIPS

Scholarships also available for 1958-59 have been given by:

The Alcoa Foundation

American Cyanamid Company

An Anonymous Alumnus (The Midwest Scholarships)

An Anonymous Educational Trust

The Brown Daily Herald

The Brush Development Company (The Charles Francis Brush Physics Scholarship)

The Chemical Club of New England

Class of 1936

General Motors Corporation

Henry J. Hart, 1902

The Proctor and Gamble Fund

The Providence Engineering Society

Fanny Barrows Reed (The Henry Francis Barrows Scholarship)

The Alfred P. Sloan Foundation

U. S. Rubber Company Foundation

United Steelworkers of America, C. I. O. (Providence Subdistrict)

The Western Electric Company

Westinghouse Educational Foundation

BROWN CLUB PRIZE SCHOLARSHIPS

Each year ten or more scholarships are made available by Brown Clubs to members of the entering class who reside or attend school in the territory of the Brown Club concerned. The scholarships usually cover full tuition and are awarded to students who combine in the highest degree scholastic ability, desirable qualities of character and personality, capacity for leadership, and promise of future usefulness.

FINANCIAL AID

The clubs which have made awards in recent years include:

THE BROWN CLUB OF BOSTON
THE BROWN CLUB OF CHICAGO
THE CONNECTICUT VALLEY BROWN CLUB
THE BROWN CLUB OF EASTERN MICHIGAN
THE HARTFORD BROWN CLUB
THE LACKAWANNA (N.J.) BROWN CLUB
THE LONG ISLAND BROWN CLUB
THE NEW BEDFORD BROWN CLUB
THE BROWN CLUB OF NEW YORK
THE NORTH SHORE BROWN CLUB
THE BROWN CLUB OF RHODE ISLAND
THE BROWN CLUB OF TEXAS (The James Q. Dealey Scholarship)
THE BROWN CLUB OF WASHINGTON, D. C.
THE BROWN CLUB OF WESTCHESTER
THE BROWN CLUB OF WESTERN PENNSYLVANIA
THE WORCESTER COUNTY BROWN CLUB

Corporation Scholarships—The College and Pembroke College

In 1958-59 sixty-four tuition scholarships will be available to undergraduates through the following corporations and individuals who have each made generous contributions of \$1250 or more to support the University's financial aid program:

Anonymous Donors

(four scholarships, one in memory of Samuel T. Arnold)

American Silk Spinning Company

B. A. Ballou Company

B-I-F Industries

Lyman G. Bloomingdale

Bostitch, Inc.

Brier Manufacturing Company (for students at The College only)

Brown and Sharpe Foundation

(four scholarships)

Alfred G. Burnham Donor Fund

Congdon and Carpenter Company

Thomas P. Corcoran

Cranston Print Works Company

(two scholarships)

Crescent Company and Potter and Johnston Company

Federal Products Foundation

Fram Corporation (for students at The College only)

Fribourg Foundation

M. A. Gammino

FINANCIAL AID

Jacques A. Gerard
Gilbane Building Company
Robert H. Ives Goddard
The Honorable Theodore Francis Green
The Russell Grinnell Fund (two scholarships)
R. F. Haffenreffer Family Foundation
Hassenfeld Brothers, Inc.
Industrial National Bank
International Business Machines Corporation
(eight scholarships)
Meyer Jaffe
Kennecott Wire and Cable Company
Horace A. Kimball and S. Ella Kimball Foundation
Robert L. Knight
Manufacturers Mutual Fire Insurance Company
Mather & Company
Narragansett Improvement Company
Narragansett Wire Company
Newman-Crosby Steel Company
Nicholson File Foundation
Old Colony Bank
George R. Ramsbottom
Mr. and Mrs. Samuel A. Rapaporte, Jr.
Rhode Island Hospital Trust Company
Harry A. Schwartz
The Sealol Corporation (for students at The College only)
The Speidel Corporation
Edward H. Weeks
(two scholarships)

These corporations and individuals are among the first to show effectively their awareness of the interdependence of industry and private collegiate education. Brown University and indeed all colleges are grateful to them for their interest and generous support.

Scholarships—Pembroke College

Pembroke College offers to its students a limited number of scholarships with stipends varying in amount. An application for any one of these scholarships should be made on a special blank provided for the purpose. Upperclass students must return this blank to the Office of the Dean of Pembroke College by June first of the year for which scholarship aid is requested. Entering students must file this blank with the Admission Office at Pembroke College by February fifteenth and they must also file by that date the Parents' Confidential Statement in Support of Application for Financial Aid with the College Scholarship Service of the College Entrance Examination Board (Box 176, Princeton, New Jersey). Students applying

for admission under the Early Decision Plan must file the application blank with the Admission Office at Pembroke College by July fifteenth and the Parent's Confidential Statement in Support of Application for Financial Aid with the College Scholarship Service of the College Entrance Examination Board by July fifteenth.

Scholarships are awarded to those students who best meet the following requirements: good character; full admission to the freshman class or membership in good standing in one of the three upper classes; an academic record (for the preceding two semesters) giving proof of more than average ability; need of financial assistance, but sufficient financial resources available to supplement scholarship aid adequately. Scholarship aid may be withdrawn during the college year if the recipient falls below the standard of academic work and good conduct expected of her.

ENDOWED SCHOLARSHIPS

The list of endowed scholarship funds available to Pembroke College students follows:

THE MARY C. ARNOLD SCHOLARSHIP established in 1918 by bequest of Mary C. Arnold.

THE THREE WILLIAM FULLER AYER SCHOLARSHIPS established in 1913 by Dr. Oliver H. Arnold in memory of William Fuller Ayer.

THE MARY ELIZABETH BALDWIN SCHOLARSHIP FUND established in 1947 by Mrs. Susan B. McCoid in memory of her sister, Mary Elizabeth Baldwin, for a resident of Wickford, a graduate of North Kingstown High School or its successor; preferably to be recommended by the minister of St. Paul's Episcopal Church at Wickford, Rhode Island, and the superintendent of schools for that community.

THE JESSIE M. BARBOUR SCHOLARSHIPS established in 1957 by a bequest under the will of Jessie M. Barbour, Pembroke, 1903.

THE SARAH DYER BARNES SCHOLARSHIP FUND established in 1956 by Sarah Dyer Barnes to be awarded to a worthy Pembroke College student in need of financial assistance.

THE FLORENCE B. BEITENMAN SCHOLARSHIP initiated in 1944 by a bequest under the will of Florence B. Beitenman and further established by subsequent Alumnae Association gifts; first consideration to be given to an acceptable applicant from Reading High School, Reading, Pennsylvania, or, if there be no such applicant, an applicant from Pennsylvania (if no applicant from Pennsylvania, the scholarship is to be awarded at the discretion of the Scholarship Committee).

THE BERTHA ABBY NICHOLS BISSELL OF THE CLASS OF 1895 SCHOLARSHIP established in 1957 by the bequest under the will of Horace G. Bissell.

THE ELIZA CROCKER BLISS SCHOLARSHIP established in 1928 by Mrs. Bertha L. Hinson and Mrs. F. Agnes Wilson, in memory of their mother. Preference will be given: first, to young women graduating from the high school in Foxborough, Massachusetts; then, to young women residing in Edgartown, Massachusetts.

THE ISABELLE SCOTT BOLLARD SCHOLARSHIP initiated in 1946 by the Alumnae Club of New York and further established by subsequent Club gifts, in memory of

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Isabelle Scott Bollard, Class of 1909, for a resident of metropolitan New York-New Jersey area who has financial need, a good scholastic record, a fine character, and a well rounded personality.

THE GEORGE W. BRADBURN SCHOLARSHIP FUND established in 1948 by Mrs. W. Dorothea Bradburn in memory of her husband, George W. Bradburn.

THE EMELYN B. BRAND HOME GARDEN CLUB SCHOLARSHIP established by William C. H. Brand in 1956 to be awarded to a senior at Pembroke College who shall have excelled and attained the highest ranking in botanical subjects.

THE ALEXANDER AND JANE A. BROUGH SCHOLARSHIP established in 1948 under the will of Louise M. J. Brough, the income to be given to a Pembroke College student "on the basis of character, excellence in intellectual attainment, and good health."

THE ELIZABETH L. BUFFUM BROWNELL SCHOLARSHIP established in 1921 by Mary Arnold Brownell in memory of her mother.

THE DR. ELBRIDGE CARPENTER SCHOLARSHIP FUND established in 1925 by Anna J. B. Carpenter in memory of Dr. Elbridge Carpenter. Preference will be given to a resident of West or East Greenwich, Rhode Island.

THE CLASS OF 1897 SCHOLARSHIP established in 1948 under the will of Louise M. J. Brough to be awarded to such member of the Junior or Senior Class of Pembroke College considered "most worthy to receive the same taking into consideration character, personality, and promise of future usefulness."

THE CLASS OF 1903 SCHOLARSHIP established in 1929 for a descendant of a member of the Class of 1903.

THE CLASS OF 1913 MEMORIAL FUND established in 1937. "The Class of 1913 wishes the income of the 1913 Memorial Fund to be given each year as a scholarship to be known as the 1913 Scholarship; also that preference be given a daughter of the Class of 1913, if so requested."

THE CLASS OF 1919 SCHOLARSHIP established in 1950 by the bequest of Susan Aldrich Watrous.

THE CLARA ELIZABETH COMSTOCK SCHOLARSHIP established in 1918 by Louise Dearborn Gage.

THE DANIELS SCHOLARSHIP established by Harriet Daniels in memory of David Daniels, 1824, and Francis Adolphus Daniels, 1862.

THE ROBERT HARVEY DAY SCHOLARSHIP FUND established in 1946 by bequest of Mrs. John Luther Thurston Boomer of Fall River, Massachusetts, in memory of her brother, Robert Harvey Day, 1896, "to be awarded annually to some man or woman undergraduate student of Brown University who is a descendant of James William Day. In the event that there is no such applicant, the scholarship may be awarded at the discretion of the Committee on Scholarships."

THE SARAH E. DOYLE MEMORIAL FUND established in 1926 by the bequest of Miss Ellen G. Hunt.

THE SARAH E. DOYLE SCHOLARSHIP established in 1894 for graduates of the Providence English High School.¹

THE SAMUEL J. DREYER SCHOLARSHIP established by Samuel J. Dreyer in 1957 to be awarded to a deserving Brown or Pembroke student from Canton or Stark County (Ohio).

¹ Now the Central High School.

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THE LUCILIUS AND ANNE CROSBY EMERY SCHOLARSHIP established in 1934 by Anne Crosby Emery Allinson in honor of her parents.

THE LOUISE D. GAGE SCHOLARSHIP established in 1931 under the will of Louise D. Gage.

THE JOSEPHINE HAZARD SCHOLARSHIP established in 1921 by the bequest of Josephine White.

THE HATTIE COWELL HOLT SCHOLARSHIP FUND established in 1941 by Hattie M. Holt in memory of her mother, "the income thereof to be used to aid some worthy graduate of Cranston High School, and in the event that at any time no such worthy graduate of Cranston High School shall be enrolled as a student at Pembroke College, I direct that the income of said fund be awarded to some worthy graduate of the Providence Classical High School."

THE JOHN HOPE SCHOLARSHIP FUND established in 1955 by bequest of Samuel M. Higgins, 1894, in memory of his classmate, John Hope, A.B., 1894, A.M. hon., 1907, LL.D., 1935, to be awarded "to deserving students, male or female, of the colored race attending Brown University or Pembroke College."

THE HOWARD SCHOLARSHIP established in 1899 by Honorable James Leland Howard.

THE DAVID W. HOYT SCHOLARSHIP FUND established in 1912 by the Alumni Association of the Providence English High School,¹ for a graduate from that school, in memory of David W. Hoyt, 1855, A.M. hon., 1872.

THE HARRIETT ROGERS JEWETT AND HARRIETT LEONARD JEWETT FUND SCHOLARSHIP established in 1932 under the will of Howard Clifton Jewett, "the income to be used for the benefit of non-smoking, upright and needy students."

THE RUTH BURROUGHS KENT SCHOLARSHIP established in 1950 in memory of Ruth Burroughs Kent by members of her family.

THE SUSAN E. KING SCHOLARSHIP established in 1917. Preference will be given to a member of the First Baptist Church in Providence.

THE EDITH KNIGHT SCHOLARSHIP established in 1936 by bequest of Jessie C. Knight to be given each year to the woman student in Pembroke College attaining the highest rank in music.

THE BERTHA MAINE SCHOLARSHIP established in 1941 under the will of Clara H. Maine, the income to be used toward the payment of tuition of such worthy student or students of Pembroke College as the Committee in charge of scholarships shall deem advisable.

THE CLARA HORTON MAINE SCHOLARSHIP established in 1941 under the will of Clara H. Maine, the income to be used toward the payment of tuition of such worthy student or students of Pembroke College as the Committee in charge of scholarships shall deem advisable.

THE DONALD G. MILLAR SCHOLARSHIP FUND established in 1951 by Donald G. Millar, 1919; Trustee, 1944-.

THE ALICE D. MUMFORD SCHOLARSHIP established in 1922 by former pupils and friends of Alice D. Mumford. Preference will be given: first, to a graduate of the Providence English High School;¹ then, to a graduate of a Providence high school.

THE ANGELINE E. NICHOLS SCHOLARSHIP established in 1946 by Angeline E. Nichols. Preference will be given to residents of Coventry and West Greenwich, Rhode Island.

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THE WILLIAM OVERTON SCHOLARSHIP established in 1924 by the Alumni Association of the Central Falls High School, for a graduate of that school, in memory of William Overton, 1887. Preference will be given to a member of the freshman class of Brown University or of Pembroke College in Brown University.

THE MARIA STORRS PECK SCHOLARSHIP established in 1908 by her sisters.

THE PEMBROKE SCHOLARSHIP anonymously given in 1936.

THE ALICE PHILLIPS SCHOLARSHIPS established in 1924 by Walter C. Hamm.

THE HELEN F. PIERCE SCHOLARSHIP established in 1938 under the will of Helen F. Pierce, to be awarded annually to some worthy Protestant young woman.

THE ISABELLA POTTER SCHOLARSHIP established in 1921 by the bequest of Josephine White.

THE QUINCY MANSION SCHOLARSHIP FUND established in 1923 by the former students and faculty of the Quincy Mansion School in memory of Mrs. Ruth S. Willard and Horace Mann Willard, 1864; Sc.D. hon., 1893.

THE EUNICE M. P. RAZEE SCHOLARSHIP established in 1937 under the will of Alice A. Razee, to be awarded annually to a student in Pembroke College who shall intend to become a teacher and shall, in the opinion of the Faculty, possess and combine character, ability, and scholarship.

THE KENDALL KERFOOT SMITH SCHOLARSHIP established in 1930 by Elemius W. Smith, Emma Louise Smith, Priscilla M. L. Smith, Harold Crocker Smith, Reginald H. Smith, and Cecil H. Smith in memory of Kendall Kerfoot Smith, Professor, 1915-29.

THE EMMA BRADFORD STANTON SCHOLARSHIP established in 1937 by the Alumnae Association in honor of Miss Stanton, 1896, the former Registrar.

THE SARAH SUTTON SCHOLARSHIP established in 1896 by one of her daughters.

THE HELEN E. TALCOTT SCHOLARSHIP FUND established in 1930 by bequest of Helen E. Talcott.

THE SARAH E. TAYLOR SCHOLARSHIP FUND established in 1955 by bequest of Sarah E. Taylor of the Class of 1904.

THE RUTH ETTA TEMKIN SCHOLARSHIP FUND established in 1948 by Samuel Temkin, 1919, Trustee, 1950-, in memory of his wife, Ruth Etta Temkin, 1929, the income "to be used for deserving and needy students of Brown University, preferably those at Pembroke College."

THE ELI THAYER MEMORIAL SCHOLARSHIP established in 1910 by Oread Collegiate Institute Association in memory of the Hon. Eli Thayer. Preference will be given to a descendant of a former student of the Institute.

THE JOSEPH THAYER SCHOLARSHIP established in 1898 by Edward C. Thayer in memory of his father, Joseph Thayer, 1815. Preference will be given: first to a resident of Uxbridge, Massachusetts; then, to a resident of any other town or city of Massachusetts.

THE VIRGINIA PIGGOTT VERNEY MEMORIAL SCHOLARSHIP established by Gilbert Verney in 1956 in memory of his wife, Virginia Piggott Verney, 1928.

THE ISABELLA M. WARDWELL FUND established in 1941 by bequest of Isabella M. Wardwell, "the income therefrom to be applied preferably for the benefit of young men and young women of the Town of Bristol, Rhode Island.

THE ISABELLA M. WARDWELL TRUST established in 1942 by bequest of Isabella M. Wardwell, "the income therefrom to be used for the aid and assistance of students

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of Pembroke College under the direction of and in the manner determined from time to time by the Dean of Pembroke College."

THE J. ANNETTE WILLIAMS SCHOLARSHIP established in 1929 by Fred H. Williams in memory of his wife. Preference will be given: first, to young women graduating from the Millis High School, Millis, Massachusetts; then, to young women graduating from the high school in Foxborough, Massachusetts.

THE NANCY BRIGGS WILLIAMS SCHOLARSHIP established in 1922 by Fred H. Williams. Preference will be given: first, to young women graduating from the high school in Foxborough, Massachusetts; then, to young women residing in Foxborough; then, to young women residing in Attleboro, Massachusetts.

THE ZILPHA WILLIAMS SCHOLARSHIP established in 1921 by the request of Josephine White.

GIFT SCHOLARSHIPS

Gift scholarships, in addition to those available only for a specified year, are available annually to Pembroke College students, as follows:

THE RHODE ISLAND STATE FEDERATION OF WOMEN'S CLUBS SCHOLARSHIP given each year for a young woman from Rhode Island.

THE RHODE ISLAND WOMEN'S CLUB SCHOLARSHIP established as **THE CHURCHILL MEMORIAL FUND** for a young woman from Rhode Island.

THE PROVIDENCE SECTION OF THE NATIONAL COUNCIL OF JEWISH WOMEN SCHOLARSHIP awarded annually to a deserving young woman who is a resident of Rhode Island.

THE ROGER WILLIAMS CHAPTER OF B'NAI B'RITH WOMEN SCHOLARSHIP awarded annually to a young woman from Greater Providence (not available to freshmen). The award shall be based on financial need, academic standing, and adherence to the principles of B'nai B'rith.

THE ROSENHIRSCH SCHOLARSHIP FUND given each year by Mrs. Gertrude Zisson in memory of her father and mother, Harry and Clara Rosenhirsch.

FRESHMAN SCHOLARSHIPS

The following scholarships are available only to members of the incoming freshman class at Pembroke College. Further information may be obtained from the Admission Office in Pembroke Hall, 172 Meeting Street, or, in the case of the Regional Scholarships, from the proper Regional Chairmen.

HONOR SCHOLARSHIPS. The scholarships listed below are awarded as an academic honor to students of distinguished ability, character, and promise. Financial need is not a requirement for Honor Scholarships. The stipend varies from \$100 if the winner has no financial need to as close as possible to maximum need as estimated by the College Scholarship Service of the College Entrance Examination Board.

THE MARGARET S. MORRISS SCHOLARSHIP. This award is made at the discretion of an alumnae scholarship committee and the Dean of Pembroke College.

THE MARY E. WOOLLEY SCHOLARSHIP. This award is made at the discretion of an alumnae scholarship committee and the Dean of Pembroke College.

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EIGHT REGIONAL SCHOLARSHIPS. These awards are made at the discretion of an alumnae scholarship committee and the Dean of Pembroke College to freshmen entering from the following regions: 1) Rhode Island; 2) Eastern New England; 3) Western New England; 4) Metropolitan New York and New Jersey; 5) Middle Atlantic States; 6) The South; 7) Mid-West; 8) West.

UNIVERSITY SCHOLARSHIPS. A limited number of University Scholarships are awarded to incoming freshmen of ability, character, and promise who need financial assistance to meet the expenses of college. These awards are made by the Pembroke College Scholarship Committee. The stipend varies according to the financial need of the recipient as estimated by the College Scholarship Service of the College Entrance Examination Board.

Loan Funds

The College. To supplement possible income from employment and financial aid, many students at The College are also permitted to borrow from the various University loan funds; for those whose needs are small and unexpected there are several emergency funds with no interest charge. Other funds have been established to help students finance a considerable part of their college education.

In passing on loan applications, consideration is given to character, scholastic standing, financial need, industry, and evidence of the ability and desire to meet obligations. These long-term loans have no interest charge while the student is in residence. After the student leaves college, he may repay the principal over a period of years usually on a monthly basis and with an annual interest charge of 4 per cent. If the student attends graduate school or if he enters the Service as an enlisted man, there is no interest charged for a maximum of three years. Repayment schedules are determined in these cases by individual circumstances.

Students who after graduation are actively engaged in the ministry or the teaching profession may apply to the University for special remissions to cancel up to one-half of their total loan indebtedness; they may also apply for special extensions of up to five years for repayment of the remaining half of the loan principal.

Arrangements for loans should be made during the summer whenever possible. The Student Loan Funds for men are listed below:

THE ALUMNI LOAN FUND established by the Alumni Association in 1900.

THE SAMUEL T. ARNOLD MEMORIAL LOAN FUND established in 1958 by the Class of 1957.

THE GEORGE HALE BACON MEMORIAL FUND established by George A. Bacon, 1867, in honor of his father, George H. Bacon.

THE CHARLES OF THE RITZ FUND established in 1958 by the Charles of the Ritz Foundation, Richard B. Salomon, 1932, President.

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THE HERBERT FRANKLIN DAVISON LOAN FUND FOR STUDENTS IN CHEMISTRY established in 1927 in honor of Herbert Franklin Davison, 1905; Professor, 1918-26.

THE ALEXANDER GRAHAM STUDENT LOAN FUND established in 1948 by the XYZ Club in memory of Alexander Graham, 1906.

THE STEPHEN W. GRIFFIN FUND established in 1941 by bequest of Ella F. Griffin in memory of Stephen W. Griffin.

THE WILLIAM GROESBECK GODDARD MEMORIAL FUND established in 1907 by Robert Hale Ives Goddard, 1858; Fellow, 1893-1916; in honor of William G. Goddard.

THE WALTER S. HACKNEY FUND established in 1918 by bequest of Walter S. Hackney.

THE HANNAH J. HARPER MEMORIAL FUND established in 1952 by bequest of Seth H. Chace, 1893.

THE JAMES STANTON KENYON MEMORIAL FUND established in 1912 by Elizabeth Burrows Kenyon Wilkinson and Mary Stanton Kenyon in memory of their father, James S. Kenyon.

THE NEW ENGLAND SOCIETY STUDENT LOANING FUND established in 1949 by the New England Society in the City of New York.

THE AARON LUCIUS ORDWAY MEMORIAL FUND established in 1906 by Samuel Hanson Ordway, 1880; LL.D. hon., 1917; Trustee, 1913-17; Fellow, 1917-34; in memory of his father, Aaron L. Ordway.

THE PROVIDENCE ENGINEERING SOCIETY EDUCATION FUND established in 1957 by the Providence Engineering Society.

THE STUART FUND established in 1950 by Mr. and Mrs. Milton M. Stuart.

THE THOMAS J. WATSON STUDENT LOAN FUND established in 1937 by Thomas J. Watson.

Pembroke College. A loan fund established by the Rhode Island Society for the Collegiate Education of Women, together with the Pembroke College Loan Fund, makes it possible for upperclass students to borrow substantial sums under the conditions described for loans at The College. Further information may be obtained from the Placement Office at Pembroke College.

Student Employment

The College. Brown has always been proud of the many students at The College who have earned a part of their college expenses through student employment. To help such students find jobs the Office of Financial Aid makes every effort to refer properly qualified men to potential employers. Through part-time employment over one-third of the students at Brown earn from \$50 to \$500 during the academic year. Employment of this type need not seriously affect a student's time for academic and personal activities if intelligently planned. Many of the most active student leaders work several hours a day, and work schedules up to seventeen hours a week should cause no trouble. Many freshmen have successfully taken such employment, but, of course, in some cases it is preferable not to seek student employment in the first year or at least in the first semester. Fresh-

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men who do plan to work should file a preliminary application with the Director of Financial Aid during the summer; in the fall after a student's schedule has been arranged, an interview is desirable to determine the type of employment best suited to the individual's previous experience, academic program, and financial need. Whenever possible the University employs students for suitable work in the various departments and agencies, and in the city there are many opportunities for ambitious and deserving students. In addition, many undergraduates are successfully placed in a variety of summer jobs.

Pembroke College. Students at Pembroke College who wish to earn money during their college course may find part-time employment both on the campus and in the community through the college Placement Office in Pembroke Hall. While there are fewer opportunities for women than for men, a large proportion of the Pembroke students defray part of their expenses through such employment. The Placement Office also helps students in obtaining summer work.

Placement

The College. The University maintains a Senior Placement Office, the facilities of which are available to members of the senior class at The College to assist them in obtaining positions following graduation. Information regarding employment opportunities in industry is presented, and interviews with representatives of interested concerns are arranged, either in the Senior Placement Office or at the source. Underclassmen are free to consult with the Placement Director regarding matters of vocational choice and guidance.

Pembroke College. The Placement Office in Pembroke Hall serves to assist seniors and alumnae in securing positions. For members of all classes information concerning occupations and suitable preparation for them is readily available on reference shelves. Opportunities are provided for discussion and consultation. Every senior is urged to register in the office and her credentials are kept permanently on file to be furnished to employers as needed. Interviews with employers are frequently arranged on the campus and openings are brought to the attention of both seniors and graduates.

Courses of Instruction



THE SEMESTER COURSE is the unit of credit. This is defined as one fourth of a student's normal program of academic work for one semester and for purposes of evaluation may be considered the approximate equivalent of four semester hours.

A dash between course numbers (for example, English 41-42) indicates a year course in which the grade at the end of the first semester is normally a temporary one; the final grade submitted at the end of the course covers the work of the entire year and is recorded as the final grade for both semesters. A comma between course numbers (for example, History D1, D2) indicates a two-semester course, the first semester of which is normally prerequisite to the second semester; two independent grades are submitted, one at the end of each semester.

Courses numbered 1 to 99 are open only to undergraduates. Courses numbered 100 to 199 are open to undergraduates and graduate students, with *B* as the graduate pass-mark. Courses numbered 200 to 299 are open to graduate students and, by special arrangement, to undergraduates.

The University publishes a Course Announcement each spring for the following academic year. Reference should be made to this booklet for the courses offered each semester and for the times at which they are given. In general, courses are assigned to recitation groups, each group consisting of three fifty-minute periods a week. A schedule of these groups arranged according to days and hours appears on the inside back cover of this catalogue.

American Civilization

Members of related departments compose the Staff.

The field of American Civilization is designed to offer students at Brown University the opportunity to study intensively the history and culture of the United States. With the collections of Americana in the John Carter Brown Library and in the John Hay Library, Brown has extraordinary facilities for this type of study.

Undergraduates who elect this field of concentration will take the following courses: History 51, 52, *American History since 1763*, or History 161, 162, *The History of American Economic Life*; History 151, *The Establishment of the American Colonies, 1607-1751*; English 41-42, *American*

AMERICAN CIVILIZATION

Literature; American Civilization 191, *Problems in American Civilization*; and two of the following: Art 109, *American Art*; Economics 131, *Labor Problems*; History 173, *The Social and Intellectual History of the United States, 1789-1860*; History 174, *The Social and Intellectual History of the United States, 1860 to the Present*; History 177, *History of Religion in America*; History 186, *History of Science in America*; Philosophy 125, *History of Philosophy in America*; Political Science 124, *American Political Theory*; Spanish 115, *Literature and Society in Colonial Spanish America*. (recommended electives: English 141-142, English 143-144, English 172, English 187, History 152, Political Science 115, 116, Spanish 116.) Honors students will take, in addition to the required courses, one additional course to be chosen from those listed in italics above, and also American Civilization 192, which will consist of the preparation of an Honors thesis. Honors students will take American Civilization 191 in the first semester of their senior year; regular students may take this course in either semester of their senior year.

The undergraduate program is under the direction of an interdepartmental committee composed of William G. McLoughlin, Jr., Assistant Professor of History (Chairman), Guy H. Dodge, Professor of Political Science, Hyatt H. Waggoner, Professor of English, William H. Jordy, Associate Professor of Art, David S. Lovejoy, Assistant Professor of History, Vincent A. Thomas, Associate Professor of Philosophy, and Charles H. Watts, II, Associate Professor of English.

For information on graduate study in this field see the catalogue of the Graduate School.

191. *Problems in American Civilization*

The purpose of this course is to explore a few continuing problems in American Civilization from the colonial period to the present. Students will read primarily in original sources and meet in groups of five to ten under the direction of an instructor. Messrs. McLOUGHLIN, JORDY, LOVEJOY, MARKS, and others.

192. *Honors Thesis*

Preparation of a thesis on a topic in American Civilization, under the direction of an instructor. Mr. McLOUGHLIN and others.

201, 202. *Seminar*

Seminar on approaches to selected problems in American Civilization. Required of all graduate students in the field of American Civilization. Messrs. McLOUGHLIN, JORDY, and WAGGONER.

Applied Mathematics

PROFESSORS GRENANDER,¹ LEE, PRAGER,² RIVLIN (Chairman), STERNBERG, TRUELL; Associate Professors FREIBERGER, HOLT, MEYER, CRAGGS (Visiting), MORGAN, NEWELL,² SHIELD; Assistant Professor REID; Research Associates, Messrs. ANDERSON, CHICK, DOBBS, DUGUID, MORLAND, MUKI, TEUTONICO; Visiting Lecturer, Mr. CHARTRES; Research Assistants, Messrs. ARNOLD, BERGER, CORNELIUSSEN, COWPER, DUTY, DOWNIE, EINSPRUCH, GREEN, D. HO, H. HO, HOWE, PITULA, RAPHAEL, TAYLOR, STRACK, VARLEY, WALDMAN, WITTERHOLT, WOO, YIM, and YOSHIDA, and Mesdames LACEFIELD and PAUL, and Misses KALKMAN, YAMANTURK, and YOUNGE

In the Fall of 1954 Brown University instituted courses leading to the degree of Bachelor of Science in Applied Mathematics. This program consists of a sequence of mathematics and applied mathematics courses throughout four years, and basic courses in science, engineering, or economics. It is administered by the Division of Applied Mathematics with the cooperation of the other Departments concerned. The curriculum is an outgrowth of the graduate work in applied mathematics which has been conducted continuously at Brown University since 1941.

For those students particularly interested in the applications of mathematics to physics or engineering, special options are available within the Bachelor of Science in Applied Mathematics degree as detailed in the section listing specific degree requirements (page 76).

3-4. Introduction to Applied Mathematics

Analytic, numerical, and graphical methods. Introduction to vectors. Statics and Elementary Dynamics. Application of mathematics to other branches of science. Mr. SHIELD.

20. Introduction to Methods of Applied Mathematics

Numerical methods: interpolation, numerical integration, and treatment of ordinary differential equations. Application of computing machines. Prerequisite: Mathematics 29 or Mathematics 105. Mr. LEE.

25. Advanced Dynamics and Vibrations I

Basic theorems of motion of a particle and of systems of particles. Motion of a rigid body with a fixed point. Generalized coordinates and Lagrange's equations. Free and forced oscillations of a particle and of systems with a

¹ Semester I only, 1958-59.

² On leave of absence, 1958-59.

APPLIED MATHEMATICS

finite number of degrees of freedom. Prerequisite: Mathematics 29 and Physics 38 or Engineering 7. Mr. TRUELL.

26. *Advanced Dynamics and Vibrations II*

More advanced discussion of topics treated in Applied Mathematics 25, including general kinematics and dynamics of a rigid body, variational principles, and general theorems of small oscillations of conservative systems. Vibrations and wave motion of taut strings, bars, and beams. Prerequisite: Applied Mathematics 25. Mr. TRUELL.

137. *Boundary Value Problems I*

Vector field theory. Solutions of Laplace's equations. Hydrodynamics of perfect fluid and electrostatics. Prerequisite: Applied Mathematics 25, Mathematics 126, and Engineering 52. Mr. STRACK.

138. *Boundary Value Problems II*

Complex potential for the motion of irrotational incompressible fluids in two dimensions. Wave propagation. Heat conduction. Classification of second order linear partial differential equations. Prerequisite: Mathematics 127 and Applied Mathematics 137. Mr. STRACK.

PRIMARILY FOR GRADUATE STUDENTS¹

203, 204. *Differential and Integral Equations of Mathematical Physics* (also Mathematics 237, 238).

207, 208. *Special Topics in Mathematics*

Topics for 1958-59: I, Advanced Topics in Probability; II, to be arranged. Mr. GRENANDER.

209, 210. *Numerical Analysis*. Mr. CHARTRES.

211, 212. *Mathematical Methods of Applied Science*. Mr. MORGAN.

213, 214. *Advanced Mathematical Methods of Applied Science*. Mr. CRAGGS.

223, 224. *Theory of Vibrations*. Mr. FREIBERGER.

233, 234. *Elasticity*. Messrs. RIVLIN and STERNBERG.

235, 236. *Advanced Elasticity*. Messrs. STERNBERG and RIVLIN.

241, 242. *Fluid Dynamics*. Mr. MEYER.

245, 246. *Dynamics of Compressible Fluids*. Mr. HOLT.

262. *Mathematical Optics*. Mr. PAPADOPOULOS.

281, 282. *Seminars in Applied Mathematics*. The STAFF.

291, 292. *Research in Applied Mathematics*. The STAFF.

¹ For course descriptions see the catalogue of the Graduate School.

Art

Professor DOWNING (Chairman); Associate Professor JORDY; Assistant Professors LOERKE, FELDMAN, MCGEE, CARPENTER; Teaching Associate, Mr. WALLACE.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. Students concentrating in art will take Art D1, or IC 1-2, or IC 3-4, or 1 and 2; Art 21-22 or 31, 32; *two* of the following: Art 4, 6, 7, 8, 109; *one additional* of the following: Art 4, 6, 7, 8, 108, 109, 191; Art 197; and two other courses in art.

RHODE ISLAND SCHOOL OF DESIGN. Through a coöperative arrangement between the School and the University the following courses are given at the School: Art 31, 32, 33, 34, 133, 134. The written permission of the chairman of the department is required for these courses. Permission depends upon satisfying prerequisites which vary according to the particular program of work the student proposes to take at the School. In some cases, permission depends upon an aptitude test in drawing and design administered by the School. Arrangements for this test are made through the Department of Art.

HONORS. Each candidate for Honors in art will take Art 195, 196, reading in the course on a selected topic and summarizing the results in a senior thesis.

1. *Introduction to the Visual Arts*

Study of fundamental issues in the art of our time (late 19th century to the present). The revolution in Modern Art compared to the revolution in Greek Art. Groups of lectures will alternate with groups of section meetings, on a regular 3-hour per week schedule. In addition, each student will schedule one studio meeting per week for elementary visual exercises. Mr. LOERKE and STAFF.

2. *Introduction to the Visual Arts*

Topical study of the visual arts: Art and Man; Art and Nature; Art and the Supernatural; Time, Space, and Art. Groups of lectures will alternate with groups of section meetings, on a regular 3-hour per week schedule. No studio work. Mr. LOERKE and STAFF.

4. *Medieval Art*

The visual arts, c. 300-c. 1400, as they describe the interplay between three component elements in European civilization: the classical heritage, Christianity, and the contribution of the Northern peoples. Mr. LOERKE.

ART

6. *Renaissance Art*

The meaning of the Renaissance in the architecture, sculpture, and painting of Western Europe, c. 1400-c. 1600. The revision of the classical and the medieval heritages in the arts of the emergent modern world. Prerequisite: Art DI or IC 1-2 or IC 3-4. Mr. CARPENTER.

7. *Baroque Art*

The architecture, sculpture, and painting of Western Europe, c. 1600-c. 1790, with emphasis on the work of such major figures as Caravaggio, Rembrandt, and Poussin. The relationship between visual art and other aspects of the intellectual, religious, and social life of the 17th and 18th centuries. Prerequisite: Art DI or IC 1-2 or IC 3-4 or written permission of the instructor. Mr. CARPENTER.

8. *Modern Art*

Painting and sculpture in Western Europe and the United States, c. 1850-the present. Evolving conceptions of truth, and of the place of art and of the artist in modern life: Realism, Impressionism, Expressionism, and Abstract Art in Europe; recent Abstract Expressionism in the United States. Mr. DOWNING.

21-22. *Introductory Design, Drawing, and Painting*

Elementary studio work in the use of the language of the visual arts. Messrs. FELDMAN and MCGEE.

108. *Topics in Modern Art*

Prerequisite: Art 8 and written permission of the instructor. Mr. DOWNING.

109. *Modern Architecture*

Studies in 19th and 20th century architecture, with special emphasis on the United States. The interaction between American and European building; the relation of modern architecture to modern society. Mr. JORDY.

117. Same as Classics 117. See page 134.

118. Same as Classics 118. See page 134.

121. *Problems in the Practice of Art*

Prerequisite: written permission of the instructor. Art 121 may be repeated with the consent of the Department. Messrs. FELDMAN and MCGEE.

123. *Painting*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. LITTLER.

125. *Printmaking and Mosaic*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. FELDMAN.

191. *Topics in Art History*

- a. Problems in American architecture. Prerequisite: Art 109 and written permission of the instructor. Mr. JORDY.
- b. Reading and reports on other approved topics, carried on by individual students under the direction of individual members of the Staff. Prerequisite: written permission of the Department. The STAFF.
- c. Problems in Medieval Art. In the visual arts, two phenomena appear to characterize the work of the 12th century in Europe: a resurgence of the plastic sense, and a new scale. In 1958-59, this seminar will study the nature and implication of these visual facts. Prerequisite: written permission of the instructor. Mr. LOERKE.
- d. Problems in Baroque Art. Topic for 1958-59: realism in 17th century painting. The problem of the nature of realism; the special qualities of 17th century realism; the theory of art as imitation of nature; the realism of the Renaissance and of the 19th century as compared to that of the 17th century. Prerequisite: Art 7 and written permission of the instructor. Mr. CARPENTER.

195-196. *Honors Thesis*

The content of this course will be determined by the needs of individual students, each working under a designated member of the faculty. The STAFF.

197. *Senior Seminar*

Open only to senior concentrators in art. Prerequisite: written permission of the Department. The STAFF.

COURSES AT THE RHODE ISLAND SCHOOL OF DESIGN

31, 32. *Foundation Design*

Lectures and laboratory work in design as practiced in modern industry and the fine arts. Not open to freshmen. Art 31 is prerequisite to Art 32. No credit for 31 unless 32 is also taken. Prerequisite: written permission of the Chairman of the Department.

33. *Advanced Design*

Prerequisite: written permission of the Chairman of the Department.

ASTRONOMY

34. *Advanced Design*

Prerequisite: Art 33 and written permission of the Chairman of the Department.

133. *Advanced Design*

Prerequisite: Art 34 and written permission of the Chairman of the Department.

134. *Advanced Design*

Prerequisite: Art 133 and written permission of the Chairman of the Department.

Note: The work in Art 33, 34, 133, and 134 will be determined by the needs of individual students, and will be arranged in consultation with the Director of Admissions of the Rhode Island School of Design. This work may be directed toward one of several fields, including Architecture, Painting, Advertising and Industrial Arts, Costume Illustration, Ceramics, and Textile Design.

Astronomy

Professor SMILEY (Chairman).

DISTRIBUTION REQUIREMENT. See pages 70-72. Astronomy 1 or 2 may be taken as an independent course to satisfy a distribution requirement in the Sciences in Pattern A provided Astronomy D1 has not been taken previously.

CONCENTRATION. In addition to the elementary course (Astronomy D1 or 1, 2), Astronomy 17, 107, 108, 173-174, and three semester courses of the four following: Mathematics 22, 105, Physics 4, 37.

D1. *Descriptive Astronomy*

An examination of the principal objects of the solar system and of the stellar universe, the fundamental theories concerning them, with something of the means and methods which led to the known facts and accepted theories. Prerequisite: Physics D1 or IC 1-2. Mr. SMILEY.

1. *The Solar System*

A study of the members of the solar system, their properties and motions, and of the historical development of modern concepts and theories concerning them. Lectures, supplemented by visits to Ladd Observatory. The normal election sequence is Astronomy 1, 2; but students in good scholastic standing may elect the courses in the other order. Mr. SMILEY.

2. *The Stellar System*

A study of the stars, nebulae, the galactic system, and external galaxies, with special emphasis on the instruments and methods used by the astronomer. Lectures, supplemented by visits to Ladd Observatory. The normal election sequence is Astronomy 1, 2; but students in good scholastic standing may elect the courses in the other order. Mr. SMILEY.

17. *Elementary Astrophysics*

The application of physical theories and optical instruments to the determination of physical properties of celestial bodies. Prerequisite: Astronomy DI or 1, 2. Mr. SMILEY.

107, 108. *Practical Astronomy*

Theory of astronomical instruments, with practice in their use; determination of time, geographical position, and similar problems. Elective by written consent of the instructor. Mr. SMILEY.

173-174. *Selected Topics in Theoretical Astronomy*

An introduction to the fundamental problems of dynamical astronomy with special reference to the problem of n bodies, Hamiltonian systems, perturbation theory, and some problems of modern quantum-mechanics. Elective by written consent of the instructor. Mr. SMILEY.

Bibliography

Professor JONAH (Chairman); Associate Professor BROWN; Assistant Professor RICHARDS; Instructors, Messrs. ADAMS and MOORE.

201. *Bibliographical Organization*

A study of the development of man's record of manuscripts, books, periodicals, films, etc. Students will examine national, international, and special types of bibliographies. Subject bibliography will receive secondary consideration. Mr. BROWN.

Biology

Professors WILSON (Chairman), STUART, CHASE, MONTAGNA, FENTON, EDDS (Executive Officer), SHERMAN, and WEISZ; Associate Professors LEDUC, GOSS, and KENWORTHY; Assistant Professors BRESLER, HAGY, ELLIS, and LEDERBERG; Lecturer, Mr. LOWNES; Instructor, Mr. BRENNER; Research Associate, Mr. STRAILE; Assistants, Messrs. CASTON, FORBES, GALBRAITH, HUNTER, MANN, NAKANE, PINCHUCK, ROCKWELL, and SAMIS, and Misses HENRY, KATORSKI, KELSO, SHERWOOD, and SIMONEAU, and Mesdames CHO and JONES; Research Assistants, Mr. HUGHES and Mesdames ADAMS, DUNN, GREGORY, HALE, SMITH, STAGG, STENBERG, and YUN; Trainees, Messrs. AINSWORTH, BECK, CURTIS, FALKOW, and LEE, and Misses GOULD and SAVAGE.

PREREQUISITES. Biology 1, 2, is a satisfactory prerequisite for advanced courses in biology. This course also satisfies the admission requirement of medical and dental schools for a one-year course in general biology.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the elementary courses, Biology 1, 2, the concentration program in biology will include the following courses: Biology 5, 6, 7, 8, 10, and 15, and two other semester courses from the 100 group.

HUMAN BIOLOGY. The Department of Biology together with the Departments of Psychology and Sociology conduct an interdepartmental concentration program in Human Biology. The aim of the program is the study of those environmental forces which act upon man's evolutionary development. Environmental forces in the broadest sense include social, biological, and physical factors. Mathematical and statistical interpretations of relationships involving man are emphasized. The courses included in the program are listed on page 74.

NURSING. To help in meeting the need for graduate nurses with an academic background, Brown University has joined with the Rhode Island Hospital School of Nursing to offer qualified young women at Pembroke College a five-year program (first six semesters to be completed at Pembroke College and the last two years and four months to be completed at the School of Nursing). This program is planned to provide a liberal education and preparation for positions in professional nursing. See page 80.

HONORS. All senior candidates for Honors in biology must elect Biology 195.

1, 2. *Principles of Experimental and Comparative Biology*

The fundamental biological principles and the phenomena on which they are based. During the first semester, the central theme is the cell, the common denominator of living systems, both plant and animal. The principal topics are: the nature of protoplasm, nutrition and metabolism, and the three aspects of self-perpetuation—steady state control, reproduction and development, and genetic and evolutionary mechanisms of adaptation. Special attention is paid to the biology of man. The approach is experimental, reflecting the trend of modern research. Lectures, laboratory, and seminars.

During the second semester, organismic biology is emphasized. The comparative method is used to study the structures and functions of plants, of invertebrates, and of vertebrates; the relationships of organisms to their environment; and the origin, the embryonic, and the evolutionary development of living organisms. Lectures, laboratory, and seminars.

Individual library and laboratory projects by the student are encouraged throughout, sources being provided by both textbooks and original writings in the biological literature. Messrs. WEISZ and KENWORTHY, and STAFF.

5. *Comparative Anatomy of Vertebrates*

The structure and significance of the organs of vertebrates with particular reference to function. Six hours of attendance. Prerequisite: Biology 1, 2. Mr. MONTAGNA.

6. *Genetics*

Study and discussion of variation, the laws of inheritance as found in animals and plants, and of their application in human relations including the observational, experimental, cytological, statistical, and developmental approaches. Six hours of attendance. Prerequisite: Biology 5 or written consent of the instructor. Mr. CHASE.

7. *Embryology*

The origin of the individual and the developmental process from the egg to the formation of the body and the establishment of the principal organ systems. A comparative study of the morphology and physiology of the reproductive process. Six hours of attendance. Prerequisite: Biology 5. Mr. EDDS.

8. *Histology*

A survey of the microscopic anatomy of the tissues and organs of vertebrates. Six hours of attendance. Prerequisite: Biology 5. Mr. Goss.

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10. *Introductory Physiology*

Vital activities of living cells and tissues and the associated physico-chemical phenomena; the physiological significance of factors such as water and other electrolytes, hydrogen and other ions, surface forces, colloidal state, osmotic pressure, membrane permeability, and electrical forces. Six hours of attendance. Prerequisite: Chemistry DI; Biology 1, 2 or Botany 1, 2. Mr. SHERMAN.

15. *Bacteriology*

A general discussion of bacteria in all their relations, with special attention to laboratory methods of studying bacteria, including the isolation and determination of unknown species. Six hours of attendance. Prerequisite: Biology 5 and 10; for students concentrating in Botany, Biology 5 and Botany 105, 106.

17. *Human Heredity*

Discussion of modern methods of studying human inheritance, facts of human genetics, effects of environment and heredity upon the individual and populations, and the value of genetic counseling. Six hours of attendance. Not open to freshmen. Mr. HAGY.

20. *Community Aspects of Professional Nursing*

An introduction to the field of nursing, stressing the philosophy of nursing-for-health; historical aspects and general trends; changing health problems of the nation; the present day National Health Program. Open only to and required of candidates for the degree of Bachelor of Science (in Nursing).

51. *Human Biology Junior Seminar*

An introduction to materials and methods found in common in the courses of the Human Biology Program. A weekly, no-credit seminar open only to and required of Human Biology concentrators during Semester V. Mr. BRESLER.

103-104. *Cytology*

The structure of the cell and of protoplasm considered in relation to general functions; cytogenetics, and the cytology of nuclear phenomena. Prerequisite: Biology 7, 8. Mr. WILSON and Miss LEDUC.

107-108. *Experimental Morphogenesis*

Experimental embryology and regeneration. Six hours of attendance. Prerequisite: Biology 7, 8. Mr. EDDS.

111, 112. *Modern Trends in Biological Theories and Research Methods*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. BRENNER.

113. *Experimental Biology*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. R. HARRISON.

121. *General Physiology*

Excitation, contraction, reflexes, circulation, physiology of the heart, respiration, internal secretion. Prerequisite: Biology 5, 10. Mr. SHERMAN.

122. *Physiological Chemistry*

Metabolism of carbohydrates, fats, and proteins; enzymes; gastrointestinal tract; nutrition; internal secretion. Prerequisite: Biology 5, 10. May be repeated for credit by any student who took Biology 122 under Mr. DYER in Semester II, 1957-58. Mr. FENTON.

152. *Advanced Bacteriology*

A more detailed discussion of certain bacterial phenomena—growth, death, metabolism, genetics, action of antibiotics. Antigens, antibodies, and their reactions. Brief consideration of some pathogenic bacteria. Prerequisite: Biology 15.

190. *Human Biology Senior Seminar*

A reconsideration and correlation of the information previously acquired in the Human Biology Program. The general theme of this seminar will be the "Origin and development of an ethnic group." Open only to and required of Human Biology concentrators during Semester VIII. Mr. BRESLER.

195. *Honors Thesis*

At least one semester required of senior candidates for Honors in biology.

203. *Research in Zoology*

Research arranged to meet the needs of individual students.

205. *Physiological Genetics*

The nature of the gene and its action in the developmental and physiological processes of the organism. Prerequisite: Biology 6 or equivalent. Mr. CHASE.

206. *Histochemistry*

The application of chemical tests to tissues to identify, *in situ*, cellular products, lipids, carbohydrates, nucleoproteins, enzymes, pigments, and

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other chemical substances. Prerequisite: Biology 103-104 or equivalent.
Mr. MONTAGNA.

207, 208. *Seminar in Genetics*

Half-course. Elective for approved graduate students. Mr. CHASE.

209, 210. *Seminar in Cytology*

Half-course. Elective for approved graduate students. Mr. WILSON and Miss LEDUC.

211, 212. *Seminar in Experimental Embryology*

Half-course. Elective for approved graduate students. Mr. EDDS.

221, 222. *Radiobiology*. Mr. SHERMAN.

223. *Advanced Physiological Chemistry*. Mr. FENTON.

224. *Methods in Physiological Chemistry*. Mr. FENTON.

225, 226. *Research in Physiological Chemistry*

Credit to be arranged. Mr. FENTON.

227, 228. *Seminar in Physiological Chemistry*

Half-course. Mr. FENTON.

231, 232. *Research in Physiology*. Mr. SHERMAN.

233, 234. *Seminar in Physiology*

Half-course. Elective for approved graduate students. Mr. SHERMAN.

251, 252. *Immunology*. Mr. STUART.

253, 254. *Research in Bacteriology and Immunology*

261, 262. *Seminar in Bacteriology and Immunology*

Half-course. Elective for approved graduate students.

Biology Colloquium

A weekly meeting of the Staff and graduate students for discussion of research problems and fields of current biological interest.

Botany

Professors SNELL, CHURCH (Chairman); Assistant Professor DYER; Assistant, Miss DICK.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to Botany 1, 2, the following seven courses—105, 106, 113, 121, and Biology 6 and 15—and one of the three following—Botany 162, 164, 166. In preparation for Botany 112, at least one year of college chemistry is recommended.

1. *Plant Growth and Behavior*

The factors essential to growth; growth rates; growth accelerators and inhibitors and their modes of action; correlation mechanisms; influences of environmental factors on survival and success of the individual; differentiation; developmental patterns and their modification. Six hours of attendance. Mr. DYER.

2. *The Evolution of Plant Communities*

The major groups of plants will be studied in terms of their capacity to grow under various climatic and physiographic conditions. The constant adjustment between changes in the environment and changes in the hereditary constitution of populations will be stressed. Six hours of attendance. Mr. CHURCH.

9. *Dendrology*

The nature of trees from every biological point of view, structure and functions, the products of trees, diseases and insect pests, importance to the human race as individuals and forests, including certain elements of forestry and conservation; the laboratory and field trips will consist of the identification of trees in summer and winter condition, and possibly identification of some woods. Six hours of attendance. No prerequisite. Mr. SNELL.

105. *Evolution of the Spore-bearing Plants*

The life cycles of the algae, liverworts, mosses, ferns, and fern allies. Field trips will include identification and ecological studies of local species. Six hours of attendance. Offered in alternate years. Mr. CHURCH.

106. *Development of Structure in Seed Plants*

A study of the dynamics of the vegetative and reproductive anatomy of higher plants as controlled by hereditary and environmental factors. The analysis of cytological mechanisms leading to the formation of new species. Six hours of attendance. Offered in alternate years. Mr. CHURCH.

112. *Plant Metabolism*

Photosynthesis, respiration, and fermentation; enzyme action; translocation; roles of essential elements. Eight hours of attendance. Prerequisite: Botany 1. At least one year of college chemistry is recommended. Mr. DYER.

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113. *Taxonomy of the Seed Plants*

A systematic study of the flora of North America in terms of the climatic and physiographic regions, including field work. Eight hours of attendance. Offered in alternate years. Mr. CHURCH.

121. *Mycology*

The fungi, including the slime molds and slime bacteria, but not the bacteria proper. Lectures on the morphology and taxonomy of the fungi; laboratory work in morphology and identification; field trips to study the fungi in their natural habitats. Six hours of attendance. Mr. SNELL.

162. *Advanced Plant Physiology*

Intensive study of various topics with emphasis on recent advances and special projects. Six hours of attendance. Prerequisite: Botany 112. Mr. DYER.

164. *Biosystematics*

An analysis of the factors affecting the distribution of plants in space and time in the light of modern studies in taxonomy, cytogenetics, and population dynamics. Laboratory work will be devoted to individual projects. Six hours of attendance. Prerequisite: Botany 113 and Biology 6. Mr. CHURCH.

166. *Advanced Mycology and Pathology*

Topics to fit individual needs. Six hours of attendance. Prerequisite: Botany 121. Mr. SNELL.

231, 232. *Seminar in Botany*

No course credit. The STAFF.

291, 292. *Reading and Research*. The STAFF.

Chemistry

Professors COLE (Chairman), CLAPP¹ (Executive Officer), RUSSELL; Visiting Professor KETELAAR; Associate Professors BUNNETT, CARPENTER, EDWARDS, GREENE, NACE, ROSS; Assistant Professor KAY; Instructors, Messrs. KING, NEUMER; Research Associates, Messrs. CHATTERJEE, LOVELUCK, MILES, MORI, and WILSON, and Mesdames KADABA and ROSS; Assistants, Messrs. ALEXANDER, BATTAGLIA, CHOW, IACONA, KELLY, KIM, KONZELMAN, LEE, MEIGHAN, MILLIKEN, MOLTA, PETRONE, and WILLIAMS,

¹ On leave of absence, Semester II, 1958-59.

and Miss OSBORN; Research Assistants, Messrs. GELOTTE, INABA, JOHNSTON, OUDEMANS, PATTERSON, and VAN HETEREN, and Mesdames EICHENBAUM, PALMER, and RICHARDS.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. The requirements for concentration in chemistry are Chemistry 12, 13-14, 15, 136, and three advanced elective courses in chemistry. It is assumed that students concentrating in chemistry will have passed the distribution examination in chemistry upon entrance or will have satisfied the prerequisites for Chemistry 11. Students intending to elect physical chemistry should anticipate the prerequisite of differential and integral calculus.

Requirements for the degree of Bachelor of Science in Chemistry are given in the section "Requirements for Degrees," page 77.

HONORS. Candidates for Honors should enroll in the Honors program at the close of the sophomore year. The program will normally include Chemistry 97-98 or Chemistry 86 in the senior year and the Honors Seminar in the junior and senior years.

D1. *Elements of Chemistry; An Introduction to Physical Science*

Elements of Chemistry are presented, including the kinetic molecular theory, atomic theory, and chemical equilibrium. This presentation is followed by a discussion of the methods of physical science including some case histories. Lectures with experimental demonstrations, recitation, and three hours of laboratory attendance. Distribution course in the Sciences to be followed by Geology D1. Students intending to take a continuing course in chemistry should register for Chemistry D2 and not for Chemistry D1. Mr. ROSS.

D2. *Structure and Chemical Behavior of Matter*

Chemical and physical behavior of matter interpreted in terms of the structure and properties of atoms and molecules. Lectures and four hours of laboratory attendance. This course is for students who intend to take a continuing course in chemistry but do not intend to concentrate in chemistry. Prerequisite: Physics D1 or equivalent. Mr. CARPENTER.

5. *General Chemistry and Qualitative Analysis*

Descriptive study of the metals and certain other elements and their compounds. Consideration of several fundamental principles of chemical behavior, especially that of chemical equilibrium. Lectures with experimental demonstrations, and four hours of laboratory attendance comprising the

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analytical separation and detection of the principal cations and anions by semi-micro methods. Prerequisite: Chemistry D2 or equivalent. Mr. KAY.

11, 12. *Fundamentals of Chemistry, I and II*

Chemistry of covalent compounds of carbon, silicon, nitrogen, phosphorus, and a limited number of other elements. Laboratory work includes basic techniques common to all branches of chemistry, syntheses of representative compounds and determination of their properties. Introductory course for all candidates for the degree of Bachelor of Science in Chemistry and for the degree of Bachelor of Arts with concentration in chemistry. Four hours of lecture and recitation, and six hours of laboratory attendance. Prerequisite: entrance credit in chemistry, Chemistry D1 or D2, or equivalent. I, Mr. CLAPP; II, Mr. NACE.

13-14. *Fundamentals of Chemistry, III and IV*

An introduction to the physical and quantitative principles of chemistry, the relation of these principles to the development of modern chemical theory and to the solution of chemical problems. The physical properties of representative chemical systems will be determined in the laboratory. Second year course for all candidates for the degree of Bachelor of Science in Chemistry and for the degree of Bachelor of Arts with concentration in Chemistry. Lectures plus seven hours of laboratory attendance. Prerequisite: Chemistry 12, Physics 2 or 4, and Mathematics 10 or 21. Mr. COLE.

15. *Fundamentals of Chemistry, V*

A study of the chemical elements, their compounds, and the reactions in which these substances take part, exemplifying the fundamental principles of chemical behavior. The laboratory work will include quantitative studies and equilibria of inorganic systems. Lectures plus five hours of laboratory attendance. Prerequisite: Chemistry 13-14. Mr. EDWARDS.

17, 18. *General Chemistry*

An introduction to modern chemical theory. A study of the properties of substances in terms of atomic and molecular structures, and the periodic system. Four hours of lecture and recitation, and four hours of laboratory attendance. Required of candidates for the degree of Bachelor of Science in Engineering. I, Mr. GREENE; II, Mr. KING.

28. *Elementary Quantitative Analysis*

The theory and practice of typical gravimetric and volumetric analytical procedures. Lectures, recitations, problems, and laboratory analyses of salt

mixtures, minerals, alloys, and industrial products. Two hours of lecture plus six hours of laboratory attendance. Prerequisite: Chemistry 5. Mr. RUSSELL.

41, 42. *Organic Chemistry*

A study of organic chemistry from the point of view of the constitution and properties of the different classes of organic compounds; preparation of representative compounds; experimental determination of their properties. Lectures plus five hours of laboratory attendance. A grade of C or better in Chemistry 41 is a prerequisite for Chemistry 42. Mr. NEUMER.

63-64. *Physical Chemistry*

Lectures plus five hours of laboratory attendance. Prerequisite: Physics 2, Mathematics 10 or 21, Chemistry 28. Mr. COLE.

80. *Chemical Literature*

Classification of chemical literature, use of the library, reports on special topics. Required of all candidates for the degree of Bachelor of Science in Chemistry and of all students concentrating in chemistry. No course credit. The STAFF.

86. *Advanced Laboratory Techniques in Chemistry*

Laboratory work designed to give the student training in advanced types of laboratory technique. Ten hours of attendance. Elective for qualified students by consent of the Staff. The STAFF.

97-98. *Experimental Problems*

Special projects in the various fields of chemistry supervised individually by members of the Staff. Reading and literature work required. Weekly meetings with the Staff devoted to reports from literature and progress on problems. Prerequisite: permission of the Staff. The STAFF.

106. *Advanced Inorganic Chemistry*

Topics of current interest, such as acid-base theories, non-aqueous solvent systems, coordination compounds, and other subject matter varying from year to year. Three hours of lecture plus five hours of laboratory attendance. Mr. GREENE.

117. *Properties of the Covalent Bond*

Offered in the Graduate Summer School for Teachers, 1958, and also during the academic year, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. CLAPP.

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119. *Equilibrium and Ionization Phenomena*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. SHERMAN.

136. *Quantitative Analysis*

A study of the fundamental operations in the analysis of inorganic and organic substances, comprising consideration of the theory and practice of gravimetric, volumetric, and colorimetric methods on macro, semi-micro, or micro scale. Ores, ferrous and non-ferrous alloys, and organic compounds will be analyzed. Two hours of lecture plus eight hours of laboratory attendance. Third year course for all candidates for the degree of Bachelor of Science in Chemistry. Elective for others. Prerequisite: Chemistry 14 and 15, or Chemistry 28, 41, and 63-64. Mr. RUSSELL.

137. *Instrumental Methods in Quantitative Analysis*

A study of the more important instrumental methods in quantitative analysis, comprising consideration of the theory and practice of electrical, optical, and other physico-chemical methods, and based largely on the analytical implications of phenomena studied in physical chemistry. Numerous analyses will be carried out in order to familiarize the student with the instruments and to develop technique and confidence. Two hours of lecture plus eight hours of laboratory attendance. Fourth year course for all candidates for the degree of Bachelor of Science in Chemistry. Elective for others. Prerequisite: Chemistry 136, or Chemistry 28, 41, and 63-64. Mr. RUSSELL.

145. *Identification of Organic Compounds*

The application of qualitative and quantitative chemical and physical techniques to the determination of the identity and structure of organic compounds. Prerequisite: a grade of C or better in Chemistry 12, or 42. Mr. BUNNETT.

146. *Advanced Organic Chemistry*

The theoretical principles of organic chemistry are studied in the first half of the course; in the second half, topics of current interest in biochemistry and natural products are discussed. Prerequisite: a grade of C or better in Chemistry 145, or permission of the instructor. Mr. NACE.

151. *Elements of Chemical Thermodynamics*

A treatment of thermodynamics as applied to chemical problems, with emphasis on sound formulation from first principles. Prerequisite: grade of C or better in Chemistry 14 or Chemistry 63-64. Mr. KING.

162. *Advanced Physical Chemistry*

Modern theoretical developments, including the elements of statistical mechanics, kinetics, and quantum chemistry, and their application to problems in physical chemistry. Prerequisite: a grade of C or better in Chemistry 14 or Chemistry 63-64. Mr. KAY.

201. *Thermodynamics*. Mr. CARPENTER.

202, 203. *Statistical Mechanics*. Mr. ROSS.

212. *Theory of Dielectrics and Electrolytes*. Mr. COLE.

221. *Applications of X-Ray Diffraction in Chemistry*. Mr. CARPENTER.

241. *Advanced Organic Chemistry*. Mr. NACE.

243. *Advanced Organic Chemistry*. Mr. NACE.

244. *Advanced Organic Chemistry*. Mr. BUNNETT.

277, 278. *Modern Theories of Chemistry*. Messrs. KETELAAR and KING.

281, 282. *Departmental Seminars*

287, 288. *Departmental Colloquia*

291. *Special Topics in Chemistry*

292. *Special Topics in Chemistry: Chemical Kinetics and Mechanisms*. Mr. EDWARDS.

297, 298. *Research*

Classics

Professors ROBINSON, CLOUGH, COUCH (Chairman), LYNCH; Associate Professor WORKMAN; Instructor, Mr. EDWARDS; Assistant, Mr. DUNN.

GENERAL NOTE. The Department seeks to provide both a specialized training for those who may wish to enter graduate school in preparation for a career of scholarship, and also a broad liberal education for those of more general interests. Courses are offered in the principal fields of Greek and Latin language and literature, including elementary courses in Greek and a rapid review course in Latin, and also courses in ancient classical culture for which no knowledge of the languages is required.

PREREQUISITES. Students presenting one or two years of Latin for admission may elect Latin 5, 6; those presenting three or four years may elect

CLASSICS: GREEK

Latin 11, 12 or Latin 105, 106. Students presenting one year of Greek may elect Greek 5, 6; those presenting two or three years may elect Greek 105, 106 or 125, 126.

The arrangement of courses in Greek and Latin is consecutive and normally implies that a course with a lower number is prerequisite to one with a higher number, but this rule may be waived when evidence of previous training or achievement warrants.

DISTRIBUTION REQUIREMENT. See pages 70-72.

LANGUAGE REQUIREMENT. The foreign language requirement may be satisfied by passing an achievement test in Greek or Latin or by completing Greek 6 or Latin 6, or a more advanced course, with a quality grade. Students who wish to prepare for the test in a classical language in college should elect Greek 5 or Latin 5.

CONCENTRATION. The requirement for concentration is eight semester courses, including at least two semester courses of ancient language study, beyond the elementary level, that is, beyond Greek A, or Greek 2, or Latin 6, taken in college. Programs of concentration may be arranged with emphasis on the Greek or Latin language or on the general field of classical antiquity.

The Department of Classics also participates in the interdepartmental concentration program in Ancient and Medieval Culture.

HONORS. Students may become candidates for Honors in any of the fields of emphasis acceptable for concentration. During the junior year each Honors student will follow a tutorial program under the guidance of a member of the department; during the senior year an Honors thesis will be written. Various interdepartmental Honors programs may be arranged according to the interests of the students.

RELATED COURSES. Attention is called to certain courses in allied fields, such as Art, Egyptology, Philosophy, Political Science, and Religious Studies which may on occasion be included in a concentration program in Classics.

GREEK

1, 2. *The Essentials of the Greek Language; Selected Simple Passages from Greek Prose*

Intensive study of Attic Greek. Analysis of forms and syntax. Readings from Theophrastus, Aesop, Xenophon, and others. No prerequisite. I, Mr. LYNCH; II, Mr. EDWARDS.

A. *The Reading of Greek*

A rapid one-semester course directed toward the attainment of a capacity to read Greek prose. Early introduction of simple Greek selections. One of the briefer Platonic dialogues will be read. No prerequisite. Mr. WORKMAN.

5. *Socratic Dialogues of Plato and the Clouds of Aristophanes*

A study of several works related to the last days of Socrates. Prerequisite: Greek A, or Greek 1, 2, or one year of Greek for admission. Mr. EDWARDS.

6. *Homer and the Lyric Poets*

The first, third, sixth, and twenty-fourth books of the *Iliad*. A study of the form, literary style, and structure of the earliest European epic. Also selections from the principal lyric poets of the Archaic Age. The transition from a patriarchal to an individualistic society. Prerequisite: Greek 5 or its equivalent. Mr. COUCH.

105. *Euripides and Aristophanes*

Greek tragedy and comedy, their origin and development. Four plays will be read in whole or in part, the *Alcestis*, *Medea*, and *Hecuba* of Euripides, and the *Frogs* of Aristophanes.

106. *Herodotus and Thucydides*

A study of two contrasting philosophies of history, the inclusive and the critical, respectively. The episodic and informal style of Herodotus stands in contrast to the meticulous purpose of Thucydides. Some of the principal events of Greek history will be studied in their original recorded form.

108. *Demosthenes*

110. *Advanced Homer*

111. *Selections from Greek Authors*

125. *Aeschylus and Sophocles*

Advanced study of Greek tragedy, with reference to the environment of its growth and maturity in Athens. Mr. COUCH.

126. *Plato and Aristotle*

Selected reading from the *Republic* of Plato and the *Nicomachean Ethics* and the *Politics* of Aristotle; a study of the thought and the exposition of the humanistic philosophers. Mr. EDWARDS.

191. See *Classics 191* on page 135.

199. See *Classics 199* on page 135.

CLASSICS: LATIN

201. *Seminar in Greek: The Greek Anthology*. Mr. WORKMAN.

202. *Seminar in Greek: Studies in the Greek Drama*. Mr. COUCH.

LATIN

5. *Rapid Review of Latin Grammar; Selections from Prose Authors*

This course is designed especially for students who have entrance credit for only two years of Latin or whose study of Latin may have been interrupted. A rapid review of the essentials of Latin grammar from the beginning, with early and continued reading of extracts from Latin authors. Messrs. EDWARDS and DUNN.

6. *Vergil and Other Roman Poets*

A study of the mature works of Vergil, with extracts from the *Eclogues*, *Georgics*, and *Aeneid*; selections from various other Roman poets. Discussion of content, purpose, poetic form, and metre. The relation of Latin poetry to its environment. Mr. DUNN.

11. *Cicero and Pliny*

The *De Senectute* of Cicero and a selection of the letters of Pliny will be read. A study of the personal, temperamental and philosophical interests of two men active in different periods of Roman society. Mr. COUCH.

12. *Horace and Catullus*

Horace represents the humanistic philosopher, moralizing on the vagaries of life, counseling moderation in conduct, genial but not profound, amused by the pageant of contemporary society. Catullus illustrates intense individualism and the excess of emotion in poetry. Mr. WORKMAN.

105. *Plautus and Terence*

A study of the form, internal construction, and language of Roman comedy as evidence alike of the Roman sense of humor, the borrowing from Greek models, and the manners and morals of a vigorous and boisterous society. Mr. WORKMAN.

106. *Tacitus and other Roman Historians*

The scope, purpose, style, methods, and sources of two historians. The criteria of history. LIVY, Book I, and TACITUS, *Germania* and *Agricola*, will be read. Mr. COUCH.

111. *Selections from Latin Authors*

114. *History of the Latin Language*

191. See *Classics 191* on page 135.

199. See *Classics 199* on page 135.

201. *Seminar in Latin: Medieval Latin*. Mr. LYNCH.

202. *Seminar in Latin: Philosophy at Rome in the Time of Cicero*. Mr. EDWARDS.

CLASSICS¹

D1. *Great Periods in the Ancient History of the Near East and of Greece*

The significance of the Ancient Near East. A study of the political and cultural achievement of the Greek city-state. With Classics D2 this course fulfills the distribution requirement in History under the Social Studies. May also be taken as an independent elective. No prerequisite. Mr. ROBINSON.

D2. *Great Periods in the Ancient History of the Hellenistic Age and of Rome*

The transition from Greek to Roman dominance of the ancient world. A study of the political and cultural achievement of the Roman Republic and Empire. With Classics D1 this course fulfills the distribution requirement in History under the Social Studies. May also be taken as an independent elective. No prerequisite. Mr. ROBINSON.

IC 1, 2. *Evidence and Doubt in Classical Historiography*

Events in Greek and Roman history will be examined critically for significant and continuing ideas related to the responsibility of man and the function of the state. Readings in Herodotus, Thucydides, Livy, and Tacitus. This course fulfills the specific requirement in the Social Studies for two distribution credits in History. Mr. WORKMAN.

IC 3, 4. *Reason and Emotion*

An intensive study of the *Iliad* of Homer; the heroic ideal of man and his problems of life and behavior. This course fulfills one of the distribution requirements in the Humanities. Mr. EDWARDS.

D5. *The Classical Epic: Destiny in Vergil's Aeneid*

An intensive study of the theme of individual and rational destiny in one form of literature. With Classics D6 this course satisfies the distribution requirement under the Humanities. Mr. WORKMAN.

D6. *The Influence of the Classics on English Literature*

The Classical spirit as manifested in English letters, with special emphasis on artistic form and philosophical content. The more influential Greek and

¹ The courses under this heading, which include Ancient History, Classical Art and Archaeology, and Greek and Roman Literature in English, require no knowledge of Greek or Latin.

CLASSICS

Roman authors will be considered and their impact upon subsequent English writers studied. With Classics D5 this course satisfies the distribution requirement under the Humanities. Mr. WORKMAN.

33. *Ancient Greek and Roman Religions*

(Students who are interested in this course should register under *Religious Studies 33*.)

61. *Greek Literature, Exclusive of the Drama, in English*

A study of the origin and growth of the major forms of Greek literature against a background of the epic. Individualism, perspective, moral debate, argument, and self-consciousness will be examined as they are successively revealed in literature. May be taken as an independent elective; no prerequisite. Mr. LYNCH.

62. *The Greek Drama in English*

A study of the origin and development of the earliest European drama, with special attention to the Greek concept of excellence. The theories of imitation and purification as applied to various types of tragic literature. The place of tragedy and comedy in ancient Greece. May be taken as an independent elective; no prerequisite. Mr. COUCH.

117. *Greek Art and Archaeology: Prehistoric and Archaic*

The adventure in culture in prehistoric Crete and Mycenae. The Dorian Invasion and the rise of Hellenism. The exuberant Archaic Age of historical Greece, with special emphasis on architecture, sculpture, vases, and coins. The exhibition and study rooms of the Museum of the Rhode Island School of Design are used in connection with both Classics 117 and 118. No prerequisite. Mr. ROBINSON.

118. *Greek Art and Archaeology: Classical and Hellenistic*

The architectural, plastic, and pictorial art of the fifth and fourth centuries before Christ and of the Hellenistic Age. The excavations at Olympia and Delphi; the current work in the Athenian Agora. The monuments on the Athenian Acropolis. No prerequisite. Mr. ROBINSON.

119, 120. *Art and Archaeology of Ancient Egypt*

For a full description of this course see Egyptology 119, 120.

121. *Greek History to 146 B.C.*

The political, social, and economic history of ancient Greece until the Roman conquest. Special emphasis is laid on certain great problems, such as the significance of Greek tyranny, the winning of democracy at Athens,

Plato's view of the state, the idea of the Inhabited World during the Hellenistic Age. No prerequisite.

122. *Roman History to 337 A.D.*

The political, social, and economic history of Rome from earliest times to the death of Constantine. Special emphasis is laid on certain great problems, such as the struggle for democracy at Rome, the winning of a world and its effect on character, the fall of the Roman Empire. No prerequisite.

131. *Greek Non-Dramatic Literature in English*

132. *Roman Literature in English*

134. *Classical Influences in English Literature*

Through selected readings in English Literature and in Greek and Roman classics in translation and by lectures designed to explain the historical and literary significance of these works, this course is planned to introduce the student to the problem of literary influence and assimilation. No prerequisite.

141, 142. *History of the Ancient Orient: Mesopotamia*

A brief survey of the political history and culture of Mesopotamia, and the surrounding countries. For fuller description see *History of Mathematics* 141, 142.

143, 144. *History of the Ancient Orient: Egypt*

A cultural approach. The sequence of political and military events will be broadly outlined to provide the necessary background. Especial emphasis will be laid on the artistic, literary, scientific, social, and economic manifestations which make up the cultural pattern of Pharaonic Egypt.

191. *Senior Conference*

199. *Conference for candidates for Honors and other approved students*

The content of the conference will vary with individual needs. May be repeated for credit.

202. *Seminar: Problems in the History of Alexander the Great*

Designed as an introduction to the methods of critical research. Mr. ROBINSON.

Economics

Professor KILLOUGH, BOSLAND, TAFT,¹ STOLTZ (Chairman); Associate Professors SMITH, BORTS, CAGAN; Assistant Professors CARSON,² STEIN, BRENNAN; Instructor, Mr. PAUL; Teaching Associates, Messrs. CALIGARIS, COMEAU, and LEMONIAS, and Miss PARKER; Assistants, Messrs. ARON, GALANTE, HAYES, and SCHOTTA.

GENERAL PREREQUISITE. Economics D1, IC 1-2, IC 3-4, or IC 5-6 is prerequisite to all advanced courses in economics, except by written consent of the respective instructors.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. A grade of C or better in Economics D1, IC 1-2, IC 3-4, or IC 5-6 is required of students who concentrate in economics.

In addition to the elementary course (Economics D1, IC 1-2, IC 3-4, or IC 5-6), the requirement for concentration in economics is: Economics 71, 101, 102, 111, 154, 161 and *two* of the following: Economics 104, 107, 118, 131, 145, 192.

The Department recommends that each program also contain two semester courses or equivalent in a related field.

Interdepartmental Concentrations in *International Relations* and *Mathematics and Economics* are described on page 75.

HONORS. Candidates for Honors in economics must include Economics 71, 101, 102, 161, and 193-194 in their programs. In addition, a minimum of three courses and a maximum of six courses will be presented from the following list: in Economics: Economics 104, 107, 111, 118, 131, 145, 154, 192; in related fields: a maximum of two courses in other departments may be presented as part of the Honors program.

D1. *Elements of Economics*

An introduction to economic principles which gives consideration to the structure of economic life and the analysis of value, production, and distribution of income. Economic institutions and problems will be surveyed on an elementary level. Elective for sophomores, juniors, and seniors. The STAFF.

IC 1-2. *Political Economy*

This course deals with the social organization of economic activity. Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations*

¹ On leave of absence, Semester II, 1958-59.

² On leave of absence, 1958-59.

will serve as the initial source of economic ideas. The impact of Smith's ideas on economic policy and on subsequent economic thought will be analyzed. Emphasis will be placed on the relationship between economic ideas and the problems of the times. Messrs. SMITH, STEIN, and BRENNAN.

71. *Accounting*

An introductory course dealing with the principles of debit and credit, the recording of data, the preparation of income statements and balance sheets, and the analysis of financial statements. Mr. SMITH.

91. *The Economics of Area Studies: The New England Economy*

Location theory, interregional payments problems, and regional economic geography will be analyzed using the New England economy as a case study. The directions in which solutions of regional economic problems should be sought will be examined. Not open for concentration credit in Economics.

101, 102. *Advanced General Economics*

An advanced course in economic theory dealing with value, distribution, national income, imperfect competition, and economic dynamics. Mr. BRENNAN and STAFF.

104. *History of Economic Thought*

A systematic study of the writings of those who have contributed to the development of economic thought. Mr. Smith.

105. *Economic Analysis and Contemporary Problems*

Economic theory as a tool to analyze the nature of economic problems of our time, and to reveal the implications of alternative public policies designed to cope with them. Required of students concentrating in International Relations. Not open to students concentrating in Economics. Mr. STEIN.

107. *Theories and Programs of Economic Reform*

A study of economic reform from the beginning of the nineteenth century to the present time, including an examination of the radical indictments of the existing economic order and a survey of proposed substitutes. Critical analysis of current experiments in economic control. Mr. TAFT.

109, 110. *Economic Theory*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. BORTS.

ECONOMICS

111. *Money and Banking*

The principles of commercial and central banking; international monetary relations; monetary and income theory; monetary and fiscal policy. Mr. CAGAN.

118. *Public Finance*

The principles of government finance; public revenues and expenditures; public enterprises; taxation; the growth and significance of public debt; fiscal policy. Mr. BOSLAND.

131. *Labor Problems*

Nature and development of the labor problem. Unemployment, its problems and solutions; the allocation of labor; wage determination; structure and functions of labor and employer organizations; collective bargaining procedures; development of the laws governing labor relations. I, Mr. TAFT; II, Mr. LEMONIAS.

145. *Corporations and Government Control*

A study of the modern business corporation, its economic and financial aspects, and the problems and methods of government regulation of corporation activities. Mr. BOSLAND.

154. *International Economics*

Industrial foundations of international trade and comparative cost theory; balance of payments and international prices; nature and effects of international trade restrictions. Mr. KILLOUGH.

161. *Statistical Method*

The collection, reduction, and analysis of statistical data; the theory of errors and statistical induction; small sample theory; the measurement of association. Mr. STOLTZ.

192. *An Introduction to Mathematical Economics*

A study of the principal mathematical techniques in economic analysis. Theory of cost and production, consumer demand, introduction to linear programming. Prerequisite: Mathematics 21-22, 105, 151; Economics 101, 102, and either Mathematics 161 or Economics 161. Mr. STOLTZ.

193, 194. *Seminar on Economic Problems*

Includes the preparation of a thesis. Required of seniors in the Honors program. Mr. BOSLAND and STAFF.

199. *Research in Special Problems.* The STAFF.

FOR GRADUATE STUDENTS

205, 206. *Problems in Economic Theory*

Advanced economic analysis. I, Mr. BRENNAN; II, Mr. STEIN.

214. *Advanced Monetary Theory*

Problems in monetary theory and international finance. Mr. CAGAN.

219. *Problems in Public Finance*

The growth of public expenditures, efficiency in government, distribution of the tax burden and its economic effects, federal-state-local fiscal relationships, proposals for tax reform, the public debt, fiscal policy, and economic stability. Mr. BOSLAND.

232. *Problems in Labor Organization and Collective Bargaining*

An examination of a number of systems of collective bargaining, both here and abroad, and an analysis of some policies and problems of American and European labor. Mr. TAFT.

247. *Problems in Corporations and Public Control*

Social and legal problems of the modern corporation, particularly those arising from financial operations; government regulation of corporation activities. Mr. BOSLAND.

257. *International Trade*

Advanced theory. Mr. KILLOUGH.

258. *International Value and Exchange*

Advanced theory. Mr. KILLOUGH.

261, 262. *Theory of Statistics*

The theory of samples; regression analysis; the analysis of variance; frequency functions. Attention will be given to the statistical-quantitative problems of economics. Mr. STOLTZ.

266. *Business Cycle Theory*

An analysis of dynamic aggregative theories; monetary and real cyclical models; growth and cycles. Attention will be given to attempts at statistical verification of alternative frameworks. Mr. BORTS.

272. *Problems in Income, Value, and Cost*

Consideration of the economic and accounting concepts of income, value, and cost will be the core of the study undertaken. The course will also explore some of the economic implications of the generally accepted accounting principles and conventions. Mr. SMITH.

EDUCATION

291, 292. *Reading and Research*

Special work supervised by the instructors in the field in which the research is done. The STAFF.

293, 294. *Research Problems in Regional Economic Development*. Messrs. BORTS and STOLTZ.

Seminar

No course credit. Required of graduate students in economics. Offered every semester. The STAFF.

Education

Professors CASE (Chairman), SMITH; Associate Professors KELLOGG, DUNN.

PREPARATION FOR TEACHING. Preparation for public school teaching requires: (1) a background of broad general education, (2) specialization in one or more subjects in which the teaching is to be done, and (3) study in the field of education. Complete preparation in the latter two is not feasible in the undergraduate years and the prospective teacher should therefore plan for graduate study in the subjects to be taught and in professional courses. However, it is possible for students to complete full licensing requirements for public school teaching on the undergraduate level, provided they plan their course program with the approval of the Department of Education at Brown prior to registration for the sophomore year. For a student wishing to be licensed in the field of elementary education, attendance at a summer school session between the junior and senior years will be necessary. The undergraduate preparation in the field of education should include:

- (1) Education 102, Philosophy 154 in the junior year
- (2) Education 103, 104 in the senior year
- (3) Education 111, 112 in the junior year for those interested in elementary education

CONCENTRATION. Concentration in the field of education is not possible.

STATE CERTIFICATES. In Rhode Island certificates are required of all teachers in schools supported in whole or in part by public money; to secure certificates college graduates must have credit for the subjects covered by Education 102, 103, and 104, Philosophy 154, and a number of other courses, including practice teaching. Due credit toward certificates is given for separate courses. Those who seek to meet the requirements for other states should consult the Department.

102. *History of Education*

A study of the historical backgrounds of modern education, elementary, secondary, and higher; the relation of education to other historical developments; emphasis on the modern period and the evolution of present-day American educational institutions. Elective for juniors and seniors. Mr. CASE.

103. *Educational Psychology*

The principles of psychology applied to the problems of teaching and learning; man's native endowment; laws of learning; individual differences; mental tests. Elective for seniors. Normally preceded by Education 102. Mrs. ROSENBLITH.

104. *Methods of Teaching*

A course in the principles of method; organized observation of teaching; evaluation and use of textbooks; lesson planning; methods appropriate to the major subjects; class management. Elective for seniors. Normally preceded by Education 103. Miss KELLOGG.

105. *Foundations of Junior High School Education*

A study of the conditions resulting in the development of the junior high school unit; changing social and economic factors affecting the education of adolescents; an evaluation of present policies in the light of the basic purposes of public education.

106. *The Junior High School: Administration and Methods*

Problems incident to the organization of the junior high school program; administrative and supervisory procedures; individualization of instruction; the place and function of guidance; curricula and courses of study; appropriate methods; textbooks.

111, 112. *Elementary Education*

A general course in the field of elementary education intended primarily to meet the needs of juniors and seniors who are interested in preparing for elementary school service. Open also to graduate students. This course will consider the basic principles concerned with the operation of the elementary school. Special emphasis will be placed upon techniques and practices; study of the development of children in learning situations; observation and conference periods; use of supplementary materials. Miss KELLOGG.

131. *Language Arts in the Elementary School*¹

Children's oral and written language, handwriting, spelling, reading, and

¹ Offered in the Graduate Summer School for Teachers; primarily for undergraduates in the elementary teacher education program.

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literature. Critical examination of some practices and materials being used in the schools. The STAFF.

133. *The Elementary School Curriculum*¹

A study of the elementary curriculum, with a critical review of the principles and procedures which underlie modern programs. Exploration of current research, known instructional aids, and techniques appropriate for a modern elementary program. The STAFF.

201. *Public School Administration*

The organization and operation of a school system. Relation of the local unit to the state system; the school board; school finance; state aid; business administration; the curriculum; the teaching staff; supervision; teacher participation in administration; pupil attendance and classification; special departments. Elective for graduate students. Mr. SMITH.

202. *Principles of Secondary Education*

The place and function of secondary education in the United States: comparative secondary education; curriculum construction and revision; extra-class activities; educational and vocational guidance; pupil personnel; problems of articulation: the senior high school and the lower schools; the senior high school and college. Elective for graduate students. Mr. SMITH.

203. *Fundamentals of Measurement*

Basic principles of measurement and their application; historical and theoretical background; characteristics of a good testing device; various test forms, their construction and evaluation; analysis and interpretation of results; tabular, graphic, and statistical methods. Elective for graduate students. Normally followed by Education 204. Miss DUNN.

204. *Educational Testing*

A study of the various kinds of tests and scales, their uses and limitations; achievement tests in school subjects; general intelligence and special ability tests; analysis and interpretation of results; procedures in educational investigation; tabular, graphic, and statistical methods. Elective for graduate students who have credit for Education 203. Miss DUNN.

207, 208. *Special Methods and Practice Teaching*

A course in teaching methods given with the assistance of supervising teachers in neighboring schools to whom individual students are assigned for guidance and practice teaching. The work of the course is coördinated with the practice teaching in the schools. Observations, reports, and conferences. Required of graduate students who have been approved for prac-

¹ Offered in the Graduate Summer School for Teachers; primarily for undergraduates in the elementary teacher education program.

tice teaching. Either 207 or 208 may be taken independently. Each provides for 180 clock hours of practice teaching equivalent to 6 semester hours of credit in institutions operating on the semester hour basis and fulfills the requirements of most state boards of education. Miss KELLOGG.

211. *Principles and Practices of Guidance and Student Personnel Work*

A broad survey of guidance and personnel work in school, college, and community: the philosophy and scope of guidance, fundamental concepts underlying personnel procedures, use and interpretation of tests, methods and techniques of educational and vocational guidance at various school levels. Elective for graduate students. Miss DUNN.

212. *Counseling and Guidance Techniques*

Interviewing and counseling methods, use of tests and records in understanding the individual student, the function of teacher, administrator, and specialist in the guidance services, special phases of guidance (for example, community, evaluation, and placement), organizing the guidance program. Elective for graduate students. Prerequisite: Education 211. Miss DUNN.

215, 216. *Problems in Education, Thesis Course*

No course credit. Required of candidates for the degree of Master of Arts. The STAFF.

217, 218. *Experimental Education*

For students prepared for the investigation of major problems in measurement in education; critical evaluation of current contributions in this field.

221, 222. *Lecture Series for Teachers*

Ten weekly lectures each semester in subject matter of current interest to teachers. Each lecture is followed by a discussion period. Each lecture is given by a specialist in the subject-matter field of the series. The lecturers are from the Brown University faculty and from other leading institutions. Credit for a half-course per semester will be granted to qualified students upon special arrangements with the Registrar of the Graduate School. No student will be allowed to present credit for more than two of these half-courses toward the master's degree at Brown University. The first series was held during Semester II, 1949-50.

Egyptology

Professor PARKER (Chairman); Associate Professor CAMINOS; Visiting Lecturer, Mr. DE MEULENAERE; Assistant, Mrs. PECK.

119, 120. *Art and Archaeology of Ancient Egypt* (Classics 119, 120)

A statement of the principles of archaeology as they apply to Egypt and a survey of the artistic and material aspects of Egyptian culture from the Neolithic period through the Graeco-Roman era. Mrs. PECK.

131, 132. *Middle Egyptian*

An introduction to Egyptian hieroglyphic writing, based on Gardiner, *Egyptian Grammar*, and de Buck, *Egyptian Readingbook*. Elective by written permission of the instructor. Mr. PARKER.

143, 144. *History of the Ancient Orient: Egypt* (Classics 143, 144)

A cultural approach. The sequence of political and military events will be broadly outlined to provide the necessary background. Especial emphasis will be laid on the artistic, literary, scientific, social, and economic manifestations which make up the cultural pattern of Pharaonic Egypt. Mr. CAMINOS.

201. *Reading of Middle Egyptian Texts*

Selections from the stories of *Sinuhe*, *The Eloquent Peasant*, *The Shipwrecked Sailor*, and others. Introduction to hieratic. Mr. PARKER.

221. *Introduction to Coptic*. Mr. PARKER.

241. *Introduction to Late Egyptian*

Reading of texts in both hieratic and transcription. Mr. PARKER.

261. *Introduction to Demotic*. Mr. PARKER.

281. *Introduction to Old Egyptian*

Reading of texts in both hieroglyphic and hieratic. Mr. PARKER.

291, 292. *Reading and Research*

Topics for 1958-59: I, Autobiographical Inscriptions from the Middle Kingdom to the Late Period; Late Royal Inscriptions from Dynasty XXV to the Roman Period. II, The Egyptian Vizierate from Dynasty XXI onward. Mr. DE MEULENAERE.

Engineering

Professors BENFORD, BLISS, DRUCKER (Chairman), FINDLEY, KESTIN, KISTLER, MAEDER, SCHILHANSL, SYMONDS, TOMPKINS; Visiting Professor HERSEY; Associate Professors ANGULO, CLARKE, GURLAND, HAYTHORNTHWAITE, KODIS, KORNHAUSER, LERNER, MYLONAS, ONAT, PROBSTEIN, SOGIN; Assistant Professors BODNER, CHU, DOYLE, DUFFY, PAUL, PAPA-DOPOULOS, RASIEL, THOMMEN, WARD; Visiting Assistant Professor GÜCER; Lecturer, Mr. THAYER; Research Associates, Messrs. ANDERSON and SCHAFRANIK; Research Assistants, Messrs. ALI, AMBA RAO, BURKHARD, C. R. CHEN, W. T. CHEN, DUNN, FRASER, GJELSVIK, KELLY, KOOZEKANANI, KUAN, LEE, OSKAY, SOFTLEY, SUBRAMANIAN, WANG, WILDER, and YING; Assistants, Messrs. CARON, EVANS, and FREDERICK.

It is desirable to summarize the principles behind the curriculum in engineering at Brown University. Although there is actually a wide divergence in the aims and methods of engineering education in American institutions, these differences may be obscured to the prospective student by similar sounding names of courses and statements of policy.

Two main principles traditionally underlie the curriculum in engineering at Brown. One is that major emphasis should be placed on the fundamental subjects in physical science, mathematics, and engineering science. The latter includes analytical mechanics, electrical fields and circuits, mechanics of solids and structures, fluid mechanics, thermodynamics, heat and mass transfer, and metallurgy and physics of solids. To an ever-increasing extent engineers must have thorough training in *all* of these subjects, not merely in those directly bearing on a particular branch of engineering. To provide this thorough training is the purpose of the first three years of the engineering curriculum at Brown. In these three years, therefore, the curriculum is exactly the same for all students in the regular Bachelor of Science program. Only in the senior year are the students grouped according to the four options of aeronautical, civil, electrical, or mechanical engineering. In this year they take more advanced and basic professional courses appropriate to the option selected. In accord with the four course plan in effect at Brown, the subject matter of the curriculum, as the following pages reveal, is organized into a relatively small number of courses of extensive scope. Throughout, the program in engineering at Brown combines an extremely high level of theoretical work with careful attention to experiments.

The other main principle is that scientific and technological education, however fundamental, is not enough, and that the resources of the University in the liberal arts should be utilized by the students in engineering as fully as possible, in order that they may develop an informed sense of social

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responsibility and some degree of emotional sensitivity and maturity. In order to make sure that the students become acquainted with several disciplines outside their main field, the Bachelor of Science in Engineering curriculum requires that a minimum of six semester courses be taken in liberal arts; and by choosing electives students may have as many as nine semester courses outside science and engineering. For the most part, however, students in engineering at Brown broaden their education not through formal study but through the stimulation that results from their membership in a University in which many different interests are cultivated. The strength of the University in liberal arts and basic science, and the fact of its moderate size, make possible associations and privileges that are of inestimable value to the students of engineering.

Recent reports based on studies of special committees of the American Society for Engineering Education and the Engineers' Council for Professional Development have included general recommendations concerning the future development of engineering education. It is noteworthy that these recommendations might almost have cited the engineering curriculum at Brown as a model toward which engineering educators are urged to aim. This provides evidence that the guiding principles which are traditional at Brown are a sound basis for the education of engineers who must deal not only with the complex problems of today but with the new and still more difficult ones of tomorrow.

REQUIRED ENGINEERING COURSES FOR THE DEGREE OF BACHELOR OF SCIENCE IN ENGINEERING. Students are required to take courses numbered from 3 to 82 inclusive, or the equivalent, with the following exceptions: (1) Civil engineering majors are not required to take Engineering 26; (2) Aeronautical, electrical, and mechanical engineering majors are not required to take Engineering 23. Engineering 95 must be elected unless a course in Economics is chosen.

In addition, each student must complete four courses in one of the following senior options: *Aeronautical Engineering*—119, 187, 188, and 192 (recommended electives—171 and 182). *Civil Engineering*—119, 130, 133, and either 134, 137, or 138. *Electrical Engineering*—161 and three from 157, 158, 164, 167, and 168. *Mechanical Engineering*—171, 175, 176, and either 170, 177, or 182.

See also Requirements for Degrees in section on General Regulations.

ORIENTATION PROGRAM. Freshmen in engineering take part in an Orientation Program scheduled during the two weeks preceding the opening of the fall term. This provides an intensive review of basic mathematics together with opportunities for gaining familiarity with research and other activities of the Division of Engineering and for consultation with staff members.

HONORS. Candidates for Honors in engineering are chosen at the end of the junior year. Each will have the opportunity to work under the direction of a member of the staff on a project of experimental or analytical nature or a combination of both. An Honors report or thesis summarizing the results is required.

CONCENTRATION. Candidates for the Bachelor of Arts degree intending to concentrate in engineering should have Mathematics 9-10 and 29 in addition to the minimum engineering course requirements set in conference with the Division of Engineering and the Dean. Mathematics 9-10 should be taken in the freshman year.

PROFICIENCY IN PREREQUISITE ENGINEERING COURSES. An engineering course, other than the second semester of a year course, carries the requirement of proficiency in each prerequisite engineering course. Proficiency is established by:

- a) a grade of *C* or better in the prerequisite course at Brown or
- b) satisfactory achievement on a proficiency examination open to students with a *D* and to students who have not taken the course, or
- c) satisfactory completion of an approved course at another institution.

COMBINED PROGRAM FOR THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN ENGINEERING. Students may take part in a program leading to the degrees of Bachelor of Arts and Bachelor of Science in Engineering at the end of five years. In this program all requirements for both degrees must be met.

3-4. *Introduction to Engineering* (including Engineering Drawing, Descriptive Geometry, and Statics)

Scalar and vector quantities; elementary statics and dynamics; development of the concepts of work and power with mechanical and electrostatic applications; elasticity; rotational and vibratory motions. Vector algebra and geometry; elements of vector calculus; vector statics and other applications. Engineering drawing and the elements of descriptive geometry. Lectures, recitations, and drafting-room work. Messrs. KODIS, SYMONDS, GURLAND, and LERNER.

7. *Dynamics*

An introductory development in vector form of the fundamentals of dynamics with application to problems of engineering interest. Topics include kinematics and dynamics of particles and rigid bodies; principles of virtual displacement, work and energy, impulse and momentum; vibrations, balancing, motion relative to a rotating reference system and gyroscopic

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motion. Lectures and recitations. Prerequisite: Engineering 3-4; Mathematics 9-10. Messrs. MAEDER and CLARKE.

23. *Surveying*

Theory and practice of plane surveying; use of the tape, level, transit, stadia, and plane table; triangulation and topography. Lectures, field work, and drafting. Must be completed by the end of the third year. No course credit. Mr. BENFORD.

26. *Mechanical Technology*

Shop practice by individual arrangement. The machine shop work must be completed by the end of the third year. No course credit.

38. *Electricity and Magnetism*

Basic concepts of electricity and magnetism and the fundamental laws for electric and magnetic fields, using calculus and vector notation. Electrostatic fields, potential, electric currents, capacitance, magnetostatics, electromagnetic fields, and electric and magnetic properties of matter. Displacement current, the Maxwell equations in integral form, and an introduction to electromagnetic waves. Fundamental principles and characteristics of direct-current motors and generators. Lectures, recitation, and laboratory. Prerequisite: Mathematics 29; Engineering 7, except with special permission of the Division of Engineering. Messrs. KORNHAUSER and DOYLE.

39. *Electric Circuits*

Mesh and nodal analysis of networks. Basic theorems of network analysis and the duality principle. Transient response of first and second order circuits, impulse and step function excitation, and initial conditions. Sinusoidal steady-state response; the complex frequency plane. Resonance, its physical interpretation and practical applications. Energy relations in the sinusoidal steady-state; active and reactive power. Circuits involving material inductance, multiple resonance circuits, and Fourier series. Multiple resonance, circuits involving mutual inductance, the transformer, poly-phase circuits, and the elements of synchronous machines and induction motors. Lectures, recitation, and laboratory. Prerequisite: Engineering 7; 38. Messrs. KORNHAUSER and WARD.

42. *Fundamentals of Electronics*

Physical principles, analysis and basic applications of electron tubes and semi-conductor devices. Thermionic emission, the space charge problem, vacuum tube characteristics, semi-conductors and transistors. Gas discharges, gaseous rectifiers, and thyratrons. Graphical analysis, Fourier series, and equivalent circuit analysis of nonlinear devices. A detailed treat-

ment of vacuum tube and transistor amplifiers and oscillators. Lectures, recitation, and laboratory. Prerequisite: Engineering 39. Messrs. KORNHAUSER and DOYLE.

52. *Fluid Mechanics*

The fundamental ideas of fluid mechanics with the concepts of velocity, pressure, density, fields, stresses, surface and body forces, local and convective acceleration, viscosity, and elasticity. Conservation of mass, momentum, and energy are given. Effects of gravity and inertial forces, viscosity, and compressibility on fluid motion are also discussed. Topics include: the pressure-velocity relation, centrifugal effects, viscous shear, boundary layers, pipe and open-channel flow, instability, turbulent motion, wave propagation, subsonic and supersonic flight. Lectures, computation, and laboratory work. Prerequisite: Mathematics 29, Engineering 7. Messrs. BODNER and CLARKE.

58. *Mechanics of Materials*

The elements of mechanics of materials with emphasis on the fundamental concepts of stress and strain and the rational development and application of shaft, beam, and column formulas. A discussion of bending about non-principal axes, shear center for profile sections, elastic stability, and theories of strength are included. Recitations and laboratory. Prerequisite: Engineering 7, except with special permission of the Division of Engineering. Messrs. SYMONDS and PAUL.

59. *Mechanics of Materials and Introduction to Structures*

The general theorem of virtual work is established and extensively used in the study of stresses, displacements, and influence lines. Plane and space trusses, continuous beams and frames, rings, curved beams and arches are discussed. The reciprocal theorem, least work and Castigliano's theorem are studied and their relation to the theorem of virtual work is emphasized. Slope-deflection, moment distribution, structural vibration, and the basic methods of limit analysis are introduced. Lectures and recitations. Prerequisite: Engineering 7 and 58. Messrs. HAYTHORNTHWAITHE and PAUL.

71-72. *Thermodynamics*

Major emphasis is placed upon the First and Second Laws of Thermodynamics and their application to systems undergoing reversible or irreversible processes. The concepts of thermal equilibrium and temperature scale are established and applied to the study of the properties of substances. Combustion phenomena and the fundamentals of heat transfer are included. The basic laws and concepts are applied to the study of the most important prime movers and thermal machines. The one-dimensional theory of flow

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of a compressible fluid is also studied. Throughout the course, the difference between the microscopic and macroscopic approaches is emphasized, and the statistical presentation is used throughout in an illustrative way. Lectures, recitation, and laboratory. Prerequisite: Engineering 52 or equivalent and a course in Chemistry. Mr. THOMMEN.

82. *Physical Metallurgy*

Emphasis on the structure and constitution of metals and alloys and their relation to physical and mechanical properties. Introduction to physics of solids. Elementary treatment of dislocations and the electrical and thermal properties of solids. Brief description of heat treatment and fabrication of engineering metals for industrial purposes. Lectures and laboratory. Prerequisite: Engineering 38; 58; 72 (may be taken concurrently). Messrs. GURLAND and GÜCER.

95. *Engineering Economy*

The importance of economic factors in engineering projects and the methods of analysis to be followed in making an economy study. The basic elements of cost and their relative importance. Economic equivalence and its importance in comparisons between available alternatives. Accepted methods of financing a proposed project. The basic principles of the law of contracts. Elective for candidates for the degree of Bachelor of Science in Engineering. Elective, by written consent of the instructor, for junior and senior candidates for the Bachelor of Arts degree. Messrs. BLISS and THAYER.

193, 194. *Special Topics in Engineering*

CIVIL ENGINEERING

119. *Structural Analysis*

Concepts, theorems, and methods basic in the analysis of plane and space structures with applications particularly to structural types important in civil and aeronautical engineering, including general work-energy theorems, slope-deflection equations, and numerical methods for continuous beams and frames; bending and torsion of thin-walled open and closed sections with one or more cells; stability problems, including beam-columns and frames; introduction to plates and shells, and elements of plastic or limit analysis. Prerequisite: Engineering 59 or equivalent. Mr. HAYTHORNTHWAITHE.

130. *Design of Civil Engineering Structures*

The rational design of conventional and light weight steel members, riveted and welded connections, frames, and arches; design and selection of concrete mixes; reinforced concrete beams, columns, frames, and arches. An analysis of specifications through comparison with theoretical predictions

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of elastic and plastic behavior. Prerequisite: Engineering 119 or equivalent. Mr. BENFORD.

131. *Highway Engineering*

Economics, construction, and design of roads and pavements; methods of testing road materials; systems of administration and maintenance; inspection trips to examine the various types of city and state highways and bridges under construction, and also to manufacturing plants for materials. Prerequisite: Engineering 59 or equivalent.

133. *Hydraulic and Sanitary Engineering*

An analytical and economic study of water supply sources, their development and their use. Theory and planning of sanitary facilities including the collection of waste water. Inspection trips and laboratory. Prerequisite: Engineering 52; 59. Mr. BENFORD.

134. *Hydraulic and Sanitary Engineering*

Detailed study of the physical, chemical, and biological processes in water purification and waste water treatment. Theory and study of protective devices in environmental sanitation. Prerequisite: Engineering 133. Mr. BENFORD.

137. *Soil Mechanics and Principles of Foundation Engineering*

Classification and identification of soils; mechanical and physical properties and methods of testing. Elements of the analysis of stress and strain in soil masses; theories of failure, theory of seepage. Problems of building foundations; consolidation and settlement; stability of earth slopes and embankments. Lectures, laboratory experiments, and inspection of projects. Prerequisite: Engineering 59. Mr. BENFORD.

138. *Design and Construction of Foundations and Buildings*

Application of the theory of structures to buildings of different types; study and discussion of modern building practices, augmented by experiments on building materials and by inspection trips. Prerequisite: Engineering 119 or equivalent. Mr. LERNER.

ELECTRICAL ENGINEERING¹

157. *Electrical Network Theory*

Matrices in network theory, steady state and transient analysis. Fourier series, Fourier integral, and Laplace transform and their use in analysis and synthesis of networks. Synthesis of reactive two-terminal networks. Fos-

¹ Courses listed will be offered in 1958-59. Several changes in course arrangement and content are planned for 1959-60 and thereafter.

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ter's reactance theorem. Four-terminal network theory, equalizers, filter theory and design. Lectures and laboratory. Prerequisite: Engineering 39. Mr. ANGULO.

158. *Electrical Transmission*

Theory and practice of the transmission of electrical energy at a distance. Theory of the general transmission line from the lumped network point of view and from the field point of view; power lines, telephone lines, and radio lines. Propagation of microwaves in waveguides including dielectric guides. Propagation of electromagnetic waves in unbounded media. Reflection and refraction of waves. Radiation and antennas. Lectures and laboratory. Prerequisite: Engineering 157. Mr. ANGULO.

161. *Fundamentals of Electronics*

Physical principles, analysis, and basic applications of electron tubes and semiconductor devices. Thermionic emission, electron ballistics, space charge problems, semiconductors, vacuum tube characteristics, and transistors. Equivalent circuits, graphical analysis, oscillators, and a detailed treatment of vacuum tube and transistor amplifiers. Lectures and laboratory. Prerequisite: Engineering 39. Mr. WARD.

162. *Power Electronics*

Further study of the arc discharge, electrical conduction in gases, arc cathodes, grid control, and gaseous devices in general. Analysis of the circuits and apparatus involved in low and high power rectifiers, conversion apparatus of other types, control circuits, inverters, barrier layer rectifiers, semi-conductors, electronic sources of light, theory and analysis of photo-electric devices. General applications of electronics to industry. Lectures and laboratory. Prerequisite: Engineering 161 or equivalent. Mr. TOMPKINS.

164. *Communication Electronics*

Application of electronics to the transmission of information. Feedback and wide-band amplifiers, pulse techniques, systems of modulation and demodulation, and their application to practical communication systems. Theory of noise and the propagation of radio waves. Lectures and laboratory. Prerequisite: Engineering 161. Mr. KODIS.

167. *Alternating Current Machinery I*

Fundamental theory applied to the analysis of operation and determination of the characteristics of alternating current generators, operating singly and in parallel, synchronous motors, and allied apparatus. Study of the internal reactions, calculation, applications, operation, and control apparatus applicable to these machines; methods of testing. Lectures and work in the

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electrical machinery laboratory. Prerequisite: Engineering 40 or equivalent. Mr. TOMPKINS.

168. *Alternating Current Machinery II*

A continuing study of the fundamental theory applied to the analysis of operation, determination of characteristics, methods of testing, and application of transformers, polyphase and single-phase induction motors, and allied apparatus. Lectures and work in the electrical machinery laboratory. Prerequisite: Engineering 167 or equivalent. Mr. TOMPKINS.

MECHANICAL ENGINEERING

170. *Power Plants*

Modern power plants, including design of high pressure boilers, economizers, air preheaters and evaporators. Thermodynamic, economic, and operating problems involved in the design of prime movers and auxiliary equipment.

171. *Thermodynamics III*

Advanced problems in steady and unsteady heat conduction. Introduction to boundary-layer theory with applications to momentum, heat, and mass transfer by convection. Heat exchange by radiation, solid-to-solid, and gas-to-solid. Psychrometry with applications to air conditioning. Selected topics in chemical equilibrium and one-dimensional compressible flow. Prerequisite: Engineering 52; 71-72. Mr. SOGIN.

175. *Advanced Mechanics of Materials and Vibrations (including Design of Machine Elements)*

Elements of mechanics of continua with applications to beams, thick-walled tubes, and stress concentrations. Experimental methods of stress measurement. Curved beams and contact stresses. Advanced topics in vibrations. Lubrication. Design of shafts, tolerances, screws, belts, brakes, clutches, spur gears. Mr. FINDLEY.

176. *Machine Design (including Automatic Control)*

Principles of design and manufacture of machines. Gearing, cams, springs. Hydraulic, pneumatic, and electric actuators. Critical speeds of shafting and engines, balancing, dampers, impact. Theories of failure including fatigue, creep, and design to prevent failure by fatigue. Automatic control by open loop systems and servo mechanisms having mechanical, electrical, hydraulic, or pneumatic elements. Absolute and relative stability of automatic machines. Mr. FINDLEY.

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177. *Fluid Mechanics II*

Review of perfect-fluid flow. Lagrangean and Eulerian co-ordinates. Euler's equations. Ideal flow through channels. Momentum equations. Relative motion. Euler's "turbine" equation. The boundary layer concept. Transition and separation. Skin friction. Pressure drag. The Navier-Stokes equations and their elementary solutions. The boundary layer equations. The momentum integral equation. The flat plate at zero incidence. Turbulent flow. The one-dimensional theory of flow through turbines and compressors. Forces on blades, torque, reactive forces, thrust. Efficiencies. The re-heat factor. Sources of losses. Flow through cascades and its application to turbines and compressors. Effects of compressibility and of secondary flow. Losses. Mr. MAEDER.

178. *Internal Combustion Engines*

The principles of thermodynamics and mechanics applied to spark-ignition and compression-ignition engines. The work includes a study of the cycles, combustion, carburetion, friction, and other factors affecting power and efficiency. Lectures and laboratory. Prerequisite: Engineering 71-72. Mr. KISTLER.

AERONAUTICAL ENGINEERING

119. *Structural Analysis*

Concepts and theorems basic in analysis of plane and space structures with applications particularly to structural types important in civil and aeronautical engineering, including general work-energy theorems, slope-deflection equations, and numerical methods for continuous beams and frames; bending and torsion of thin-walled open and closed sections with one or more cells; stability problems, including beam-columns and frames; introduction to plates and shells, and elements of plastic or limit analysis. Prerequisite: Engineering 59 or equivalent. Mr. HAYTHORNTHTWAITE.

187. *Theoretical and Applied Aerodynamics I*

Theoretical and applied aspects of aerodynamics. Basic theoretical concepts include flow from the kinetic viewpoint, kinematics, dynamics, and energy relations for an inviscid compressible fluid field; subsonic incompressible flow covering conformal transformations, thin airfoil theory, and finite wing theory; and linearized compressible subsonic flows. The following applied topics are studied concurrently: lift and drag estimation, airplane performance, aircraft stability and control, and longitudinal and lateral dynamics and control. Prerequisite: Engineering 71-72. Mr. CHU.

188. *Theoretical and Applied Aerodynamics II*

Steady supersonic flow including review of compressible one-dimensional flow, oblique shock waves, two-dimensional airfoils, method of character-

istics, slender body theory, linearized three-dimensional wing theory, transonic and hypersonic flows. Elements of the dynamics of viscous flow, incompressible laminar and turbulent boundary layer theory, and some aspects of viscous compressible flows. Wind tunnel tests are made, and an aerodynamic aircraft design project is carried out by the student. Prerequisite: Engineering 187. Mr. CHU.

190. *Aircraft Propulsion Systems*

Review of Newtonian mechanics of the masspoint; classification of propulsion systems; ideal propulsion efficiency; systems where power plant and propeller are separable components, reciprocating engines, gas turbines, propeller theory; systems where power plant and propeller are integrated, jet engine, ram jet, solid fuel rocket, liquid fuel rocket. Prerequisite: Engineering 187 or equivalent, Engineering 171. Mr. ANDERSON.

192. *Aircraft Structural Design*

Design of various types of wing structures; frames, ribs, and webs. Bending and torsion of wings, stability and deflection of structures. Lectures, laboratory, and design project. Prerequisite: Engineering 119. Mr. BODNER.

PRIMARILY FOR GRADUATE STUDENTS

207, 208. *Mathematical Methods for Engineers*

Mathematical treatment of representative engineering problems. The mathematical discipline is stressed but its relationship with physical reality is shown. The main topics are: Complex function theory (including conformal mapping and contour integration), ordinary and partial differential equations (including initial and boundary value problems), Bessel and Legendre functions, Sturm-Liouville theory, Fourier and Laplace transforms, vector analysis. Mr. PAPADOPOULOS.

211. *Linear Circuit Analysis*

Matrix formulation of the general mesh and nodal equations for electrical networks. The complex frequency plane and its relation to Laplace and Fourier transform methods. Lagrangian formulation of the equations and the general properties of passive and active driving point and transfer impedances. Feedback systems, the Nyquist criterion, stability, and physical realizability. Frequency transformations and dissipative filters. Offered in alternate years. Mr. RASIEL.

212. *Linear Circuit Synthesis*

General properties of network functions in the complex frequency plane and at real frequencies. Hurwitz polynomials and positive real functions. Synthesis of driving point and transfer immittances by the methods of Brune, Darlington, Bott and Duffin, Gewertz, Bode, and Cauer. Constant

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resistance filter groups and lattices, ladder developments, partial fraction expansions, and the approximation problem. Offered in alternate years. Mr. RASIEL.

213. *Electronic Circuits*

Analysis and design of pulse and digital system elements. Response in time and frequency domains of pulse, wide-band, and feedback amplifiers. Multivibrators, wave shaping and generating circuits, blocking oscillators, synchronization, multipliers and dividers, counters, and analogue and digital computer circuits. Offered in alternate years.

214. *Electronic Communication Systems*

General aspects of communication. Amplitude, frequency, and pulse modulation. Introduction to the theory of noise and disturbances in communication circuits; derivation of the resistor noise formula; equivalent noise resistance of tubes. Telemetry, radar, and communications systems. Offered in alternate years.

215. *Electromagnetic Theory, Fundamentals*

The Maxwell field equations, scalar and vector potentials, boundary conditions, electromagnetic momentum, and the Maxwell stress tensor. Magnetic and dielectric materials and anisotropic media. Power and energy relations, the Poynting theorem, and plane, cylindrical, and spherical waves. Retarded potential solutions, Green's functions, and variational principles. Mr. KORNHAUSER.

216. *Electromagnetic Theory, Applications*

Applications of the fundamental laws of electrodynamics to problems in the radiation, scattering, and propagation of electromagnetic waves. Techniques for solving boundary value problems; transmission lines, waveguides, resonant cavities, antennas, and microwave circuits. Mr. RASIEL.

217. *Communication and Information Theory*

An introduction to probability and statistics and their application to the problems of communications. Spectral analysis, shot noise, optimum linear systems, non-linear systems, statistical detection of signals, information theory. Offered in alternate years. Mr. ANGULO.

218. *Servomechanisms*

The principles of network synthesis will be applied to the problem of feedback control system design. The special techniques developed for the analysis and synthesis of a.c. and d.c. control systems will be investigated. A portion of the course will be devoted to deriving the transfer functions and

general characteristics of typical servomechanism components. Offered in alternate years. Mr. WARD.

231, 232. *Advanced Theory of Structures*

A study of the general analytical and numerical methods for the analysis of structures. The structures and components considered will include beams, trusses, rigid frames, flat plates, thin shells, and suspension systems. Major emphasis will be on usual elastic behavior under static loading, but appreciable time will be devoted to buckling, vibration, and plastic action. Offered in alternate years. Mr. MYLONAS.

249, 250. *Advanced Engineering Mechanics*

Kinematics and dynamics of systems of particles and rigid bodies. Lagrange's equations and variational principles. Applications are chosen from the following topics: one degree of freedom problems, including linear and non-linear oscillatory motion, with numerical and graphical methods; motion of a particle in various force fields; plane and general motion of rigid bodies, including tops and gyroscopes; problems of coupled masses, with treatment of engine balancing and vibration absorption; general theory of small vibrations of systems of particles; vibrations and wave motion in stretched strings, bars, beams, and plates; shock and impact problems. Mr. ONAT.

255, 256. *Physical Metallurgy*

The relations between structure and properties of metals are developed on the basis of the modern theories of the metallic state. The major topics are: Interatomic forces and related physical properties of insulation, semi-conductors and conductors. Crystal structures of metals and associated mechanical behavior, including X-ray diffraction, dislocation and lattice imperfections, deformation mechanisms and recrystallization Constitution of alloys. Thermodynamics and kinetics of phase transformations. Principles of heat treatment. Offered in 1960-61 and in alternate years.

262. *Experimental Stress Analysis*

The principles, operation, and uses of the main methods of experimental stress analysis are studied and applied in the laboratory. Electrical resistance strain gages in one-dimensional and in plane strain problems, and brittle lacquers are treated. Plane and elementary three-dimensional photoelasticity are covered extensively from crystal optics and stress optical law to the complete stress determination and to the instruments and materials used. The use of models and the theory of mechanical similarity are developed in their general form. Offered in alternate years. Mr. MYLONAS.

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265. *Characteristics and Mechanics of Engineering Materials*

Properties and physical structure of engineering materials including metals and plastics: Crystallographic and molecular structure, dislocations and other imperfections. The phenomena and theories of fatigue, damping, fracture, creep, and other time effects. Influence of combined stress, impact, and temperature, discussed from the point of view of experiments. Theories of behavior of materials under combined stress, stress-relaxation, and tension tests. Prediction of behavior of structural elements such as beams and columns in creep. Offered in alternate years. Mr. FINDLEY.

271, 272. *Engineering Aerodynamics*

Inviscid Flows: basic equations and theorems, constant-density approximation, propagation of disturbances, theory of discontinuities, characteristics method, perturbation theories and similarity laws, structure of transonic and hypersonic flows. Viscosity and Heat Conduction: fundamental equations, exact solutions, slow motion, boundary layers and their behavior, heat transfer, instability, turbulent flow, other viscous phenomena. Physics and Chemistry of High Temperature Gases: equilibrium and nonequilibrium flows, ionization, electrical and magnetic effects. Gas Kinetics: concepts, rarefied gas phenomena, free molecule flows. Emphasis is placed on a physical appreciation of the phenomena.

273, 274. *Dynamics of Compressible Fluids*

Introduction to thermodynamic concepts. Equations of motion. Method of characteristics. Steady and unsteady one-dimensional flow. Shock waves. Interaction of waves. DeLaval nozzle. Approximate and exact methods for subsonic and supersonic two-dimensional flows. Three-dimensional flows. Supersonic wing theory (see Applied Mathematics 245, 246). Offered in alternate years. Mr. HOLT.

275. *Engineering Aerodynamics III*

Fundamental equations and concepts of linearized compressible flow. Solutions by Green's theorem using calculus of finite part. Symmetric and lifting wings in subsonic and supersonic flow. Ward's slender airplane theory. Aerodynamic Forces on arbitrary systems: wave drag, vortex drag, Trefftz plane relations, reverse flow theorems, singular edge forces. Aspects of drag minimization of spatial arrangements of wings and bodies: Hayes' theorem, minimum vortex drag, combined flow field, optimum configurations. Offered in alternate years. Mr. MAEDER.

276. *Experimental Methods of Aerodynamics*

Selected problems of modern aerodynamics and their solution by advanced analytical and experimental methods. The close interrelation between

theory and experiment is emphasized. Laboratory work is included using the transonic-supersonic wind tunnel, an electrolytic tank, and an internal flow tunnel. Offered in alternate years. Mr. MAEDER.

283, 284. *Advanced Thermodynamics*

Review of First and Second Laws. Third Law. Maxwell's and other thermodynamic relations and their application to steam and gas tables and charts. Phase equilibria. Chemical equilibria and their relation to combustion processes. Introduction to irreversible thermodynamics. Offered in alternate years.

285, 286. *Heat and Mass Transfer*

Formulation of basic equations of conduction, convection, and radiation. Physics of conductivity, viscosity, absorptivity, and emissivity. Selected problems in conduction, steady and unsteady states with methods of solution. Convection, including boundary layer theory, laminar and turbulent flows through tubes and over immersed surfaces. Radiation between black and gray surfaces, and gas radiation. Diffusion, evaporation, convection with change of phase. Applications, including heat exchangers, rotary regenerators, high-speed flows. Offered in alternate years. Mr. SOGIN.

291, 292. *Special Topics in Engineering I*

Devoted to special topics which usually are not treated in detail in the general courses. Topic for 1958-59: Hypersonic Flow. Mr. PROBSTEN.

293, 294. *Special Topics in Engineering II*

Topic determined by student's field of interest.

297, 298. *Reading and Research*

Work with individual students in connection with reading, problems of research, or preparation for work on theses. The STAFF.

It is expected that graduate courses in Advanced Electromagnetic Theory, Combustion, Hypersonic Flow, Transient Flow, Turbomachinery, Plates and Shells will be offered in two or three year cycles. Attention is directed to courses in Mathematics, Physics, and Applied Mathematics.

English

Professors DAMON, BROWN, BRADNER, ANDERSON (Chairman), NOYES, KAPSTEIN, KENNY, WAGGONER; Associate Professors WEBSTER, VAN DE WATER, BLOOM, VAN NOSTRAND, WATTS, HONIG; Assistant Professors JONES, SABOL, PHILBRICK, BLISTEIN, SOIREF, BARNHILL, KRAUSE, CREED, BELL, GUREWITCH, MARKS, LEWALSKI, HAWKES; Instructors, Messrs. GOSSE, THOMPSON, GARDNER, HUGHES, AXTON, and LEITER, and Miss SULLIVAN; Teaching Associates, Messrs. ROBILLARD, DELASANTA, and ISAACS, and Miss DAVIDOW; Assistants, Messrs. SHAWCROSS, NICOLET, STENBERG, QUIRINO, GIBSON, TAYLOR, VAUGHN, and MONTEIRO, and Mrs. BALLOU, and Misses RODGERS and PORTNOY.

PREREQUISITES. Demonstrated proficiency in English composition is prerequisite to concentration in English and to all courses in composition except English 1-2.

The program in English Expression is limited to candidates for Honors in English Expression. No student may be enrolled in this concentration without the written permission of Professor Webster. No student may begin a concentration in English Expression after the opening of the junior year.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION.

- I. English Literature: A) English 29, 30, 31, and 32 (in that order); B) English 41-42 or 141-142 or 143-144; and C) two semester courses from the following: English 73-74, 105-106, 115-116, 125-126, 133-134, 141-142, 143-144, 171, 172, 181, 182, 186, 187, or (with the written consent of the instructor) an appropriate 200-course.
- II. American Literature: A) English 31 and 32 (in that order); B) English 41-42; and C) English 141-142 or 143-144 or (with the written consent of the instructor) 277, 278 or 279, 280.
- III. English Expression: see "Honors in English Expression" below. No student may be enrolled in this concentration without written permission from Professor Webster.

HONORS IN ENGLISH LITERATURE. Candidates should consult the Department Advisor of Honors Students before the end of the sophomore year at the latest.

All candidates for Honors will be expected to familiarize themselves with certain portions of the field of English literature and language. It is recommended that ordinarily the student present six subjects, of which one should

be American literature and one should be Shakespeare. The remaining four subjects must be chosen from the following:

- | | |
|--|-----------------------------|
| 1. Old English Language and Literature | 6. The Drama since 1660 |
| 2. Middle English Language and Literature, including Chaucer | 7. The Eighteenth Century |
| 3. The Fifteenth and Sixteenth Centuries | 8. The English Novel |
| 4. The Drama to 1642 | 9. The Age of Romanticism |
| 5. The Seventeenth Century | 10. The Victorian Age |
| | 11. Contemporary Literature |

HONORS IN AMERICAN LITERATURE. Candidates should consult the Department Advisor of Honors Students before the end of the sophomore year at the latest.

The Honors Program in American Literature requires ten semester courses in concentration divided into four semester courses of English literature and six semester courses of American literature as follows: (1) The Honors Conference Group in Shakespeare; (2) Any other Honors Conference Group in English literature, upon the advice of the Department Advisor of Honors Students; (3) The Honors Conference Group in American literature; (4) English 141-142 or 143-144; and (5) English 191-192.

In addition it is recommended, although not required, that candidates should include at least one of the three following courses in English and American literature: English 171, 172, or 187.

HONORS IN ENGLISH EXPRESSION. Candidates for Honors in English Expression must concentrate in *either* Composition *or* Speech-Dramatics.

I. Composition: Ten semester courses are required, classified as follows: (1) English 3; (2) English 29, 30, 31, and 32 (in that order); (3) Two semester courses from the following: English 4s, 4e, 4d, 4v, and 7; (4) two semester courses from the following: English 5-6, 4s, 4v, 4d, and 7; and (5) English 5 (repeated if necessary) in preparation for the Honors Thesis.

Honors Thesis: a sustained work of imaginative or expository writing, which will be prepared during the 7th and 8th semesters, and which will constitute the work in any one of the English 4 sections, in English 23-24, or in English 5-6. With the consent of the Honors Supervisor for English Expression (Mr. Webster) any one of these courses may be either repeated or substituted for one of the English literature courses listed above under Requirements.

II. Speech-Dramatics: Ten semester courses are required, classified as follows: (1) English 21; (2) English 29, 30, 31, and 32 (in that order); (3) four semester courses from the following: English 22, 23-24, and 4d (with the consent of the Honors supervisor for English Expression, English 23-24 or 4d may be repeated); and (4) an Honors Thesis.

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Honors Thesis: a sustained work of dramatic writing, prepared during the 7th and 8th semesters and constituting the work in English 4d or in English 23-24. With the consent of the Honors Supervisor for English Expression (Mr. Webster) either of these courses may be repeated.

PREPARATION FOR GRADUATE WORK. Students intending to take graduate work in English are advised to elect as undergraduates one of the following courses in order that they may be prepared for advanced courses which presuppose an historical knowledge of the English language: English 105-106; 115-116; 125-126; 201, 202; 203, 204; 205, 206. A knowledge of French, German, and Latin is required for the degree of Ph.D.; of French or German for the degree of A.M.

1-2. *English Composition*

Training in the fundamentals of prose composition. The aim of the course is to aid students in the elimination of errors from their written English and to afford intensive practice in effective expository writing. The course will meet four hours per week.

This course is required of freshmen who are not proficient in English at entrance and are placed in English 1-2 *without option*. Such students may enter distribution Pattern B only with the permission of the Dean. Students who are not proficient and are placed in English 1 *with option* will be in one of two situations: if they are placed in distribution Pattern A, they may elect either English 1-2 or an approved distribution course which provides practice in writing; if they are in distribution Pattern B, they will not register for English but will be expected to receive sufficient practice in writing in their IC courses.

If students who do not elect English 1-2 as freshmen fail to achieve proficiency by the beginning of their third semester, they will be required to take English 1-2 as sophomores. Students in English 1 who at the end of their first semester achieve proficiency will be excused from English 2 and the grade in English 1 becomes permanent. Mr. GUREWITCH and others.

IC 1-2. *Man's Faith and Fate*

The core of this course is the idea of man's faith and fate as presented in the following major poems: *Tintern Abbey* by Wordsworth; *Manfred* by Byron; *Prometheus Unbound* by Shelley; *In Memoriam* by Tennyson; *Empedocles on Etna* by Arnold; *Four Quartets* by Eliot. The course will consider the poets' answers to these questions: the nature of Man; the nature of Nature; the nature of the Power that moves in Man and Nature; Man's conduct or fate in relation to this Power. The poems will be studied as works of art as well as vehicles of ideas. Messrs. BROWN and AXTON.

IC 3-4. *The Problem of American Individualism*

An inquiry into the concept of the free individual in a free society, based upon the critical reading of three major works: Melville's *Moby Dick* (1851), Thoreau's *Walden* (1854), and Faulkner's *The Sound and The Fury* (1929). The course will include a study of the intellectual background of this theme as reflected in certain historical and philosophical writings. The work of the course will consist of (1) informal class discussions and (2) frequent critical papers and individual conferences. Messrs. WAGGONER and GARDNER.

IC 7-8. *Comedy and Laughter*

This course will concern itself with a study of the comic spirit and its manifestation in English dramatic literature by careful examination of certain representative English comedies, ranging from Shakespeare's *Twelfth Night* (1601) to Auden and Isherwood's *The Dog beneath the Skin* (1935) and including Jonson's *Volpone* (1606), Congreve's *The Way of the World* (1700), Sheridan's *Rivals* (1775), Gilbert's *Patience* (1881), and Wilde's *Lady Windermere's Fan* (1892). The focus will be on English dramatic comedy. In addition, the course will consider collateral readings from the literatures of other countries; from the different genres: the novel, the tale, the poem, and the essay; from theorists and critics. The plays will be studied as literary works as well as sources for the answers to three basic questions: When do we laugh? Where do we laugh? Why do we laugh? Mr. GUREWITCH.

IC 9-10. *The Voices of Poetry*

An inquiry into the nature and uses of poetry, to be begun with and to be continually referred to some such classic work in English poetics as Samuel Taylor Coleridge's *Biographia Literaria* (1817) or Percy Bysshe Shelley's *A Defense of Poetry* (1821). The discussion of this work will be amplified and guided by consideration of highly selected passages by other theorists on the functions of poetry and the modes of poetic expression, from Plato to William Empson. The discussion of every theoretical statement or position will be directed to, and illustrated by, the analysis of a few select and generally short poems, from the work of anonymous balladeers to that of Dylan Thomas. This course, which will be accomplished largely through the daily presentation and discussion of assigned reports on specific problems in poetics, and of assigned poems, will attempt to answer such questions as these: Who or what is a poet? What does he do, and why? What should he do, and for whom? How does he do what he does? Just how does his activity affect us? What does it do to us, or make us do? What good is it? How can we tell? Mr. PHILBRICK.

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IC 11-12. *Milton's Dramas of Struggle and Victory*

This course will be based on a study of John Milton's *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*, considered as a trilogy which portrays the individual's temptation and downfall through acceptance of false values and concepts and his final spiritual victory. The course will include also collateral reading from Biblical source material, earlier epics, and programs of church and state reform. The literary excellencies and poetic and dramatic devices will be analyzed for their part in presenting Milton's ideas effectively. These ideas will be discussed as ethical and religious concepts *per se*, and many—for example, true or false liberty, the nature of worship and obedience, the character of the strong individual and his duties in church and state—will be tested for their present-day validity. Mrs. BELL.

IC 13-14. *The Nature of Tragedy*

Although tragedy is one of the noblest forms of literature, men have not always agreed upon what a tragedy should be. Aristotle's theory of tragedy has often been invoked as the first and last word on the subject, sometimes with such rigidity that Aristotle has had to be rescued from the Aristotelians. It should be remembered that we do not have the whole of the original *Poetics*, and that we do not know whether it was written by Aristotle himself. It is clear, however, that Aristotle proceeded toward his "theory" by making an empirical examination of the tragedies of his time, and anyone who would understand the nature of classical and modern tragedy must not only know Aristotle but follow his method of inductive analysis. Toward this end, eight representative tragedies by four major dramatists have been chosen for analysis: Sophocles's *Antigone* and *Oedipus Rex*; Shakespeare's *Macbeth* and *King Lear*; Ibsen's *Master Builder* and *John Gabriel Borkmann*; O'Neill's *Desire under the Elms* and *Mourning Becomes Electra*. In the collateral reading it will also be important to consider the dramatic works of Aeschylus, Euripides, Marlowe, Webster, Racine, Strindberg, Lorca, Williams, and Miller; and the dramatic theories of Dryden, Johnson, Coleridge, Bradley, Eliot, Krutch, Bentley, and Langer. The basic problem of the course will be to discover if there is a common ground for all tragic drama. Messrs. CREED and HAWKES.

IC 15-16. *The Contemporary Imagination*

An examination of various problems which have resulted from the shifting values characteristic of our time, particularly as these problems are reflected in selected readings, both poetry and prose, from modern English and American literature. Included in the course for intensive study and analysis are T. S. Eliot's *The Waste Land*, Aldous Huxley's *Point Counterpoint*, Joseph Conrad's *Nostromo*, D. H. Lawrence's *Women in Love*, W. H. Auden's *For the Time Being*, and Wallace Steven's *Harmonium*. By relating

contemporary political, moral, and religious problems to the literary imagination, the course is designed to give the students an intellectual and experimental awareness of the world in which they live and, at the same time, to give them an understanding of the relation between form and content in a work of art. There will be collateral reading from modern philosophers like Bertrand Russell, William James, and others. Mr. HUGHES.

IC 17-18. *The Idea of Nature in America*

A study of the concepts of Nature and the natural in the work of Walt Whitman and Mark Twain. The course will focus attention on *Leaves of Grass* and *The Adventures of Huckleberry Finn*. There will be reading assignments in Whitman's prose, in essays and sketches by Mark Twain, and in the critical literature about both men. Additional supplementary reading will include Hector St. John Crèvecoeur, *Letters from an American Farmer*, and Henry James's *The American*. Mr. MARKS.

IC 19-20. *Poetry and Belief*

Through a study of Dante's *Divine Comedy*, Spenser's *Faerie Queene*, and Milton's *Paradise Lost* and *Paradise Regained*—great philosophical poems interpreting variously the nature of man, the meaning of life, and the plan of salvation—this course will investigate the ways in which our response to a poem may be affected by our reaction to the philosophical or theological concepts it embodies. Such questions as the following are involved: Is validity of thought wholly irrelevant to a poem's aesthetic quality? Is our enjoyment of a poem marred in some degree if the ideas presented are unacceptable to us? What constitutes poetic truth and what kinds of intellectual and emotional assent does poetry elicit? Collateral reading will seek to illuminate the systems of thought set forth in these poems and the artistic functions of their literary modes (allegory and Christian epic). Modern critical essays dealing with the problem of poetry and belief will also be examined. Mrs. LEWALSKI.

3. *English Composition, Second Course*

An intermediate course, with work chiefly in the essay, for students who have met the English proficiency requirement. Miss SULLIVAN, Mr. HAWKES, and others.

4. *English Composition, Second course (continued)*

With the consent of the instructor any of the four divisions of English 4 may be repeated for credit, or a student who has completed one division of English 4 may elect one of the others. No student, however, can take more than two divisions of English 4.

4d. Play Writing. Prerequisite: English 3, or written consent of the instructor. Miss VAN DE WATER.

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4e. Advanced Exposition. Prerequisite: English 3, or written consent of the instructor. Mr. HAWKES.

4s. The Short Story. Prerequisite: English 3, or written consent of the instructor. Mr. WEBSTER.

4v. Verse Writing. Prerequisite: English 3, or written consent of the instructor. Mr. DAMON.

5-6. *English Composition, Advanced Course*

A course for practiced writers, which demands originality and substantial interest. English 6 is devoted to one long piece of fiction, drama, poetry, or expository writing. Elective by written consent of the instructor for a limited number of juniors and seniors. With the consent of the instructor the course may be repeated. Mr. KAPSTEIN.

7. *Principles of Argumentation*

A course in the principles of analysis, evidence, and the technique of brief-drawing, designed to train students in the fundamentals of an orderly and convincing presentation of their views. Mr. GOSSE.

D15. *Introduction to English and American Literature: Fiction and Drama*

A course designed to serve as a general introduction to the reading and analysis of English and American literature, arranged by types of literature rather than by a chronological survey. Mr. BLOOM and others.

D16. *Introduction to English and American Literature: Poetry*

This course is a continuation of English D15; it will be devoted to the reading and analysis of all types of poetry. Prerequisite: English D15. Mr. BLISTEIN and others.

17. *Introduction to Poetic Analysis*

The purpose of the course is to offer to juniors and seniors an opportunity to learn to read, criticize, and enjoy a poem. It cannot be taken by a student who has taken English D15, D16, and cannot be counted for concentration in English or American Literature. Messrs. BRADNER and HUGHES.

21. *Voice and Diction*

Fundamentals of public speaking: voice, phonetics, and diction. Miss VAN DE WATER, Mr. BARNHILL, and others.

22. *Public Address and Debate*

A course in the oral presentation of expository material; practice in analysis and brief-drawing, with training in clear, concise, and forceful discussion. Prerequisite: English 7 or 21. Mr. GOSSE and others.

23-24. *Play Production*

The elements of dramatic analysis and interpretation, acting, diction, and stagecraft. Elective for a limited number of students by written consent of the instructor. With further consent in special cases, the course may be repeated. Eight hours of attendance. Miss VAN DE WATER and Messrs. JONES and BARNHILL.

29. *English Literature from the Beginnings to 1625*

A study of English literature of the Middle Ages and the Renaissance, with special emphasis on Chaucer, Spenser, and Shakespeare. Elective for undergraduates; required of all concentrators in English Literature or English Expression. Mr. BRADNER and others.

30. *English Literature, 1625-1784*

A study of English literature of the seventeenth century and the Neo-Classical Age, with special emphasis on Donne, Dryden, Swift, and Pope. Elective for undergraduates; required of all concentrators in English Literature or English Expression. Mr. KENNY and others.

31. *English Literature, 1784-1832*

A study of English literature of the Age of Romanticism. Elective for undergraduates; required of all concentrators in English Literature, American Literature, or English Expression. Mr. PHILBRICK and others.

32. *English Literature, 1832-1900*

A study of English literature of the Victorian Age. Elective for undergraduates; required of all concentrators in English Literature, American Literature, or English Expression. Mr. BROWN and others.

41-42. *American Literature*

A survey of the whole field of American literature. Elective for sophomores, juniors, and seniors. Mr. VAN NOSTRAND and others.

73-74. *Shakespeare: Complete Works*

A general course, with reading of all of Shakespeare's works. Elective for sophomores, juniors, and seniors. Mr. BLISTEIN.

105-106. *Chaucer*

Reading and discussion of Chaucer's works and their background. Elective for juniors, seniors, and graduate students. In 1958-59 the course will be offered in the first semester only. Mr. ANDERSON.

115-116. *Principles of Literary Criticism*

Study in the theory and application of literary criticism. The primary aim of the course is to understand the practice of particular authors, whose

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works will be examined in the light of various critical systems. Elective for juniors, seniors, and graduate students. Mr. BLOOM.

123. *Shakespeare: Selected Plays*

Offered in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program. Not open to undergraduates.

125-126. *Shakespeare: Selected Plays*

Careful study of a few plays, with special attention to exact interpretation. In 1958-59 the course will be offered in the second semester only. The plays studied will be: *II Henry IV*; *All's Well that Ends Well*; *King Lear*; and *The Tempest*. Elective for juniors, seniors, and graduate students, and for sophomores by written consent of the instructor. The course may be repeated. Mr. SABOL.

127, 128. *Major British Poets*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mrs. LEWALSKI.

133-134. *The English Novel*

Reading and discussion of the more important writers of fiction from 1700 to 1900. Elective for juniors, seniors, and graduate students. Mr. NOYES.

141-142. *American Prose Fiction*

The important writers of fiction before 1900. Elective for juniors, seniors, and graduate students. Mr. WATTS.

143-144. *American Poetry*

An intensive critical and historical study. I, Bryant to Frost; II, Ezra Pound to the present. Elective for juniors, seniors, and graduate students. Mr. WAGGONER.

145, 146. *American Literature*

Topics for 1958-59: I, Nineteenth Century Authors; II, Twentieth Century Authors. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. MARKS.

147. *Contemporary American Literature*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. THOMPSON.

151. *A Study of the English Language from 1500 to the Present*

Offered in the Graduate Summer School for Teachers, 1958, for students in

the Master of Arts in Teaching program. Not open to undergraduates. Mr. CREED.

171. *Twentieth Century Poetry, English and American*

Tendencies in the form and thought of English and American poetry since 1914. Elective for juniors, seniors, and graduate students. Messrs. BROWN and PHILBRICK.

172. *The Twentieth Century Novel, English and American*

A critical study of the novel since 1900; reading of selected English and American novelists of the present generation. Elective for juniors, seniors, and graduate students. Messrs. KAPSTEIN and BLOOM.

181. *English Drama to 1580*

The development of the drama from medieval beginnings to the Renaissance.

182. *English Drama, 1580-1642*

The great Elizabethan dramatists and their successors to the closing of the theaters.

186. *English and American Drama of the Eighteenth and Nineteenth Centuries*

Reading and discussion of plays by the chief dramatists from the breakdown of classicism to Pinero, Thomas, and Shaw; the failure of the poetic tradition; the naturalistic movement. Elective for juniors, seniors, and graduate students. Mr. GOSSE.

187. *Twentieth Century American and European Drama*

Reading and discussion of plays by the chief dramatists after 1914; current tendencies in the theater. Elective for juniors, seniors, and graduate students. Miss VAN DE WATER.

191-192. *Senior Honors Conference in American Literature.* Mr. VAN NOSTRAND.

201, 202. *History of the English Language*

The development of English pronunciation, grammar, syntax, and vocabulary. Elective for graduate students and for juniors and seniors by written consent of the instructor. In 1958-59 the course will be offered in the first semester only. Mr. ANDERSON.

203, 204. *Old English Language and Literature*

Essentials of Anglo-Saxon grammar; poetry and prose selections; *Beowulf*. Elective for graduate students, and for juniors and seniors by written consent of the instructor. Mr. CREED.

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205, 206. *Middle English Language and Literature*

A study of Middle English language and literature to 1500, exclusive of the works of Chaucer and of medieval drama.

221, 222. *Sixteenth Century Literature, exclusive of the Drama.*

A survey of the main types of sixteenth century literature in England, with emphasis on their Continental sources; all of Spenser's principal works will be included. Mr. BRADNER.

223. *The Continental Backgrounds of Renaissance English Literature*

Prerequisite: a command of two of the following languages: Latin, Italian, French. Elective for graduate students and for seniors by written consent of the instructor.

245, 246. *English Literature of the Seventeenth Century*

A consideration of the main types of literature and of the major authors in England from 1625 to 1700. The second semester will be given over to a study of the English works of John Milton. Elective for graduate students and for seniors by written consent of the instructor. Mrs. BELL.

247, 248. *English Literature of the Eighteenth Century*

A consideration of the main types of literature in England from 1660 to 1784. Elective for graduate students and for seniors by written consent of the instructor.

249, 250. *English Literature of the Nineteenth Century*

A consideration of the main types of literature in England from 1770 to 1830. Elective for graduate students and for juniors and seniors by written consent of the instructor. Mr. KAPSTEIN.

273, 274. *Studies in the Elizabethan Drama*

Elective for graduate students and for seniors by written consent of the instructor. In 1958-59, the course will be offered in Semester II only. Topic: The Shakespearean History Play. Mr. BLISTEIN.

277, 278. *Studies in American Literature: Major American Writers*

One or two writers will be studied each semester. The student will be responsible for all the works of the writers being studied and for the major scholarly and critical treatments of them. Topic for 1958-59: I, Hawthorne; II, Faulkner. Mr. WAGGONER.

279, 280. *Studies in American Literature*

Elective for graduate students and for seniors by written consent of the

instructor. Topic for 1958-59: Literary Criticism in America. Mr. VAN NOSTRAND.

281. *Introduction to the Bibliography of English Literature*

The history of English studies; sources of English bibliography; the history of printed books; problems in bibliographical research. Required, without credit, of graduate students in their first year. The STAFF.

289, 290. *Problems in English and American Literary Research*

Work with individual students in the following fields: Old and Middle English, including Chaucer, Messrs. ANDERSON and CREED; The Renaissance, including Shakespeare and the history of the drama, Messrs. BRADNER and SABOL; The Seventeenth Century, Messrs. WEBSTER and DAMON; Neo-Classicism, Messrs. KENNY and BLOOM; Nineteenth and Twentieth Centuries, Messrs. ANDERSON, BROWN, and KAPSTEIN; American Literature, Messrs. WAGGONER and WATTS. Elective for approved graduate students and at the pleasure of the instructor.

291. *Seminar: Milton*

Elective for graduate students and for seniors by written consent of the instructor. Mr. WEBSTER.

292. *Seminar: William Blake*

Elective for graduate students and for seniors by written consent of the instructor. Mr. DAMON.

293. *Seminar: Alexander Pope and Jonathan Swift*

Elective for graduate students and for seniors by written consent of the instructor. Mr. KENNY.

294. *Seminar: Ben Jonson*

Elective for graduate students and for seniors by written consent of the instructor. Mr. NOYES.

HONORS CONFERENCE GROUPS

The following conference groups are provided primarily to meet the requirement of special Honors courses for candidates for Honors in English or American Literature. They are also open, however, to candidates for Honors in Literature, and so far as numbers permit, they may be elected by candidates for Honors in other departments of literature and by graduate students.

H1-2. *Shakespeare*. Mr. NOYES.

H3-4. *The Seventeenth Century*. Mrs. BELL.

GEOLOGY

H5-6. *The Eighteenth Century*. Mr. KENNY.

H7-8. *The Age of Romanticism*. Mr. KAPSTEIN.

H9-10. *The Victorian Period*. Mr. PHILBRICK.

H11-12. *American Literature*. Mr. THOMPSON.

Geology

Professor Quinn (Chairman); Assistant Professor ECKELMANN; Instructor, Mr. CIFELLI; Assistants, Messrs. HALL, BUZAS, and FEININGER.

GENERAL PREREQUISITE. Geology 1, D1, or IC 1-2 is prerequisite to all other courses in the Department except those courses for which other provision is made in the course statement.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the elementary course (Geology 1, D1, or IC 1-2), the requirements for concentration in geology are: Geology 2, (those who take IC 1-2 will substitute another geology course), 41, 45, 102, 113, 198, and two additional geology courses. The Department should be consulted by those planning a concentration program.

The Department recommends that at least four semester courses be elected in related sciences such as chemistry, mathematics, physics, and biology; the Department should be consulted with respect to which related courses are suitable for each student.

HONORS. Honors work in geology may include special reading or laboratory work in regular courses and a senior thesis on some special laboratory or field problem. Two courses in geology in addition to the usual concentration program are required of Honors students; at least one will be Geology 191 or 192.

GRADUATE WORK. Graduate study is necessary as a preparation for professional work in geology. For such advanced study a reading knowledge of French and German is necessary and the students are urged also to take a full year of college chemistry, a full year of college physics, and mathematics into calculus.

D1. *Elementary Physical Geology*

An introductory course concerned with the present geological state of the earth, the physical-chemical processes active in the earth today and during

the geologic past, and the origin of the earth and its relation to the universe. Major topics for consideration include the internal structure of the earth; composition of the crust, mantle, and core; genesis of sedimentary, igneous, and metamorphic rocks; quantitative methods of age determination; and the origin and deformation of mountain belts. The course is integrated with Chemistry D1. Chemistry D1 or D2 and Geology D1 is an approved interdepartmental sequence in the distribution requirements for the Sciences. Prerequisite: Chemistry D1 or equivalent. May not be taken in addition to Geology 1 or IC 1-2. Mr. ECKELMANN.

1. *Physical Geology*

An introductory course in the interpretation of geological evidence; the materials of the earth; its land forms and structure; the agencies active in their production. May be taken as an independent course to satisfy a distribution requirement in the Sciences. May not be taken in addition to Geology D1 or IC 1-2. Mr. QUINN.

2. *Historical Geology*

The geological history of the earth from its origin to recent times, with emphasis on North America, its dynamic, geographic, and climatic changes; animals and plants of the past; the evolution of life. Prerequisite: Geology 1 or D1. May not be taken in addition to Geology IC 1-2. Mr. CIFELLI.

41. *Mineralogy*

Introductory study of minerals. Crystallography, physical properties, and chemical tests as methods of identification of minerals. The uses and geologic occurrence of minerals. Prerequisite: Chemistry D1 or equivalent. Mr. QUINN.

45. *Structural Geology*

Original forms of igneous and sedimentary rocks and the structures produced by earth movements and metamorphism; the mechanics of rock deformation; the interpretation of topographic and geologic maps. Laboratory work in the three-dimensional visualization of folds and faults; practice in determining structures in the field. Prerequisite: Geology 1 and 2, IC 1-2, or D1. Mr. ECKELMANN.

102. *Petrography*

Study of the optical properties of minerals and the use of the polarizing microscope. Microscopic study of the main types of rocks and discussion of the classification and the origin of rocks. Prerequisite: Geology 41. Mr. QUINN.

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109. *Field Geology*

Supervised geological mapping of the rocks of a small area near Providence, guided and amplified by one discussion period each week on methods. Final work in the course consists of a carefully drawn geological map and a written report. Prerequisite: Geology 2 or IC 1-2 and permission of instructor. Mr. QUINN.

113. *Paleontology*

A study of the morphology, evolution, classification, and paleoecology of the major groups of fossil invertebrates. Stratigraphic application will be emphasized. Prerequisite: Geology 2, IC 1-2, or four semester courses of biology or botany. Mr. CIFELLI.

116. *Stratigraphy*

Description and interpretation of the rock succession in certain important and typical areas, particularly in North America. Paleogeography, paleoecology, and stratigraphic paleontology will be emphasized. Prerequisite: Geology 113. Mr. CIFELLI.

117. *Geomorphology*

A study of the processes and resulting topographic forms associated with erosion, transportation, and deposition by running water. Discussion of historical backgrounds, the place of geomorphology in the geologic sciences. Laboratory work will be concerned with principles of morphometry and simple statistical analysis of geomorphic data. Prerequisite: Geology 1, D1, or IC 1-2.

118. *Glacial Geology*

A study of the three interrelated fields together comprising glacial geology: (a) Glaciology—the study of the physics of glacial ice; (b) Glacial Geomorphology—the study of landforms associated with the erosion, transportation, and deposition by glaciers; (c) Glacial Stratigraphy—the study of glacial deposits. Prerequisite: Geology 1, D1, or IC 1-2.

123. *Sedimentation*

A survey of the methods of accumulation of sediments and of their alteration and consolidation. Prerequisite: Geology 1, D1, or IC 1-2. Mr. CIFELLI.

126. *Economic Geology of the Non-metals*

A study of the nature, occurrence, distribution, and exploitation of deposits of petroleum and natural gas, coal, building materials, salt, and other non-metallic mineral resources. Prerequisite: Geology 1 and 2, IC 1-2, or D1. Mr. CIFELLI.

142. *Economic Geology of the Metals*

A study of the origin, classification, and distribution of ore deposits. Readings, discussions, and laboratory work. Prerequisite: Geology 1 and 41, IC 1-2 and 41, or DI and 41. Mr. QUINN.

191, 192. *Individual Study of Geologic Problems*

Library, laboratory, or field study; includes preparation of thesis. Required of seniors in Honors Program; open to others by written permission of the Chairman of the Department. The STAFF.

198. *Fundamental Theories of the Geologic Sciences*

A discussion of the changing concepts in the different fields of geology. Assigned readings, discussions, and reports. For seniors concentrating in geology and graduate students. The STAFF.

211. *Research in Geology*

Elective for graduate students, and for undergraduates by written consent of the Department. May be repeated for credit. The STAFF.

212. *Research in Geology*

Elective for graduate students, and for undergraduates by written consent of the Department. May be repeated for credit. The STAFF.

243. *Petrology of the Igneous Rocks*

A study of the mineralogical and chemical nature of rocks; the crystallization history determined from field, petrographic, and phase-equilibrium studies; and the origin of magmas. Reading of significant contributions to the literature is emphasized. Petrographic studies involve use of the 4-axis and 5-axis universal stages. Prerequisite: Geology 42, 102, or equivalent. Mr. ECKELMANN.

244. *Petrology of the Metamorphic Rocks*

A study of the types of metamorphism and resulting mineral assemblages. Problems of progressive and retrograde metamorphism, metamorphic grades, facies, wet and dry environments; criteria for recognizing polymetamorphic rocks; and metamorphic rock fabric are considered. Reading of significant contributions to the literature is emphasized. Petrographic studies involve use of the 4-axis and 5-axis universal stages. Prerequisite: Geology 42, 102, or equivalent. Mr. ECKELMANN.

245. *Advanced Structural Geology*

The processes, products, and problems relating to rock deformation in plutonic environments are considered. Topics for intensive study include the

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physical properties of rocks; experimental studies in rock deformation, both scale model and high pressure; origin of deforming forces in the crust; distribution and structural evolution of mobile belts; and detailed megascopic structures of plutonic rocks in orogenic belts. Prerequisite: Geology 42 or 102 and 45 or 105. Mr. ECKELMANN.

History

Professors HEDGES (Chairman), GEORGE, WROTH, ARMSTRONG, KIRBY, KEENEY, CHURCH; Visiting Professor FLEMING; Assistant Professors LOVEJOY, McLoughlin, BAKER; Instructors, Messrs. THOMAS and JORAVSKY; Assistants, Mr. CONDON and Miss JASPERSON.

PREREQUISITES. History D1, D2 or IC 1, 2 is elective without prerequisite and is a prerequisite for concentration in history. Any other course in the department (except IC 1, 2, Honors courses, and graduate courses) is elective without prerequisite for juniors and seniors and is elective for freshmen and sophomores who have credit for History D1, D2 or IC 1, 2 or Classics D1, D2 or by written consent of the instructor.

DISTRIBUTION REQUIREMENT. See pages 70-72. Students who find that they must take distribution courses after their fifth semester may satisfy this requirement by taking any two semester sequence in history.

CONCENTRATION. The requirements for concentration in history are: History D1, D2 or IC 1, 2 as a prerequisite; 51, 52; 101, 102, or 107, 108; and four advanced semester courses, only two of which may be in the field of American history. The program is to be arranged in consultation with the Department supervisor.

The History Department participates in the interdepartmental concentration programs in American Civilization, Ancient and Medieval Culture, and International Relations.

HONORS. History Honors offers qualified students an opportunity to do individual work in fields of particular interest under the supervision of members of the Department and to familiarize themselves with historical materials and the methods employed by the historian.

In addition to the courses required for concentration, each student will take the Honors reading course (History 191, 192) both in the fifth and sixth and in the seventh and eighth semesters. Preparation of an Honors thesis will be included in this work. Programs are to be arranged, and a special field of interest determined, in consultation with the Department supervisor.

Honors will be awarded upon the basis of the course record, the Honors thesis, and the Honors examinations.

HONORS EXAMINATIONS. Comprehensive Examinations shall be taken by all candidates for Honors. The first will cover the general field of European history since the Fall of Rome and American history since 1783; the second, the special field of European or American history chosen by the student when the Honors program is formulated.

RELATED COURSES. Attention is called to courses related to the study of history in art, economics, English and foreign literatures, philosophy, and sociology, and to the following specific courses: Classics 117, 118, 121, 122, 141, 142; Political Science 105, 106, 109, 110, 115, 116, 117, 118, 122. Attention is invited to the program of study in American Civilization on page 104.

D1, D2. *European History since the Fall of Rome*

A general survey of European development since the fifth century. Satisfies the Social Studies distribution requirement in History. Messrs. GEORGE, KIRBY, and CONDON, and Miss JASPERSON.

IC 1, 2. *The Growth of the Modern State*

The central theme of the course will be the growth of the modern state from the Middle Ages to the present. The concept of the state will be analyzed within the historical context provided by the social structure, economic currents, and institutional developments in selected periods since the thirteenth century. The liberal idea of the state will be examined by reading works of Burke, Paine, and Mill, while the intellectual bases of the communist, fascist, and welfare states will be studied in appropriate authors and recent historical experience. Messrs. CHURCH, BAKER, and JORAVSKY.

IC 3, 4. *Europe's American Frontier*

The central theme of this course will be that the American shaping of certain fundamental problems of Western Civilization has been at once unique and derivative. The course will examine historically both the European and American ramifications of four specific problems in the evolution of modern democracy which exemplify the continuous interaction between the new and old worlds: 1) the conflict between Church and State; 2) the right of revolution; 3) the rise of nationalism; 4) the reaction to Marxian socialism. Mr. McLoughlin.

IC 5, 6. *The Anatomy of Revolution*

An investigation of the Brinton thesis that modern social revolutions have

HISTORY

common factors. Analysis of the Puritan, American, French, and Russian Revolutions with readings from de Tocqueville, Carlyle, Trevelyan, Beard, and Trotsky, together with documentary and other contemporary source material. Mr. THOMAS.

51, 52. *American History since 1763*

A general survey of American society, politics, and institutions, and of the relations of the United States with other countries. Mr. HEDGES.

101, 102. *Europe in the Middle Ages*

A survey of the political, constitutional, intellectual, and social-economic history of Europe from the late Roman Empire to the Renaissance. Mr. BAKER.

103, 104. *History of European Economic Life*

The evolution of economic life and institutions from the feudal age, dominated by agriculture, to the contemporary age, dominated by commerce and industry. Mr. KIRBY.

107, 108. *The Renaissance and the Reformation*

The emergence of the modern era in Europe, from the thirteenth to the seventeenth century. Mr. CHURCH.

109. *English Constitutional History in the Middle Ages*

A detailed examination of the medieval development of the English Constitution. Emphasis will be placed on the development of a strong monarchy, on the one hand, and on the growth of local institutions of self-government and of representation in a central parliament, on the other hand.

111, 112. *European History in the Seventeenth and Eighteenth Centuries*

The social, political, and intellectual development of Europe during the Age of Absolutism and the Enlightenment. Mr. CHURCH.

113. *Europe from 1789 to 1871*

The Old Regime; French Revolution and Napoleon; reaction, liberalism, and the economic revolutions; new social movements and nationalism; Revolutions of 1848; Napoleon III, Cavour, and Bismarck. Mr. ARMSTRONG.

119, 120. *Europe since 1870*

Century of Revolutions; nations and international rivalries; "the terrible 20th century"; First World War and Peace Settlement; democratic and totalitarian states between the wars; breakdown of the Peace Settlement and rise of the Axis; Second World War; post-war questions. Mr. ARMSTRONG.

131, 132. *Russian History from the Earliest Times to 1917*

The political, social, and cultural development of Russia from the earliest times to the October Revolution. Mr. McCONNELL.

141, 142. *English History since 1485*

The political and cultural development of England and Greater Britain in the modern period. Mr. KIRBY.

151. *The Establishment of the American Colonies, 1607-1751*

The origin and development of American civilization to the middle of the eighteenth century. Mr. LOVEJOY.

152. *The American Revolution and the Forming of the United States, 1751-1788*

The origins of the American Revolution and development of the federal union. Mr. LOVEJOY.

155. *Changing Interpretations of American History*

Offered in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program. Not open to undergraduates.

157. *Changing Interpretations of European History*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. HEXTER.

161, 162. *The History of American Economic Life*

An historical treatment of such topics as manufacturing, agriculture, foreign and internal commerce, labor, immigration, and city growth and life; the effect of these factors upon the ideals, problems, and society of the United States, past and present. Mr. HEDGES.

173. *The Social and Intellectual History of the United States, 1789-1860*

An examination of American social development with emphasis on the relationship between ideas and society. Special attention will be given to ideas about equality, expansion, religion, and reform. Mr. LOVEJOY.

174. *The Social and Intellectual History of the United States since 1860*

The significant intellectual currents in politics, economics, education, religion, philosophy, and science, and their relationship to the changing pattern of American society and institutions; analysis of the conflicting attitudes toward conservatism and liberalism, freedom and security, race and nationality, individualism, and conformity. Mr. McLoughlin.

HISTORY

177. *History of Religion in America*

Religion and the molding of American social, political, and intellectual history since 1607. Main currents of religious thought, separation of church and state, sects and schisms, revivalism, religion and social reform, and the warfare between science and religion. Mr. McLoughlin.

183, 184. *History of Science*

The Pre-Socratics to Newton; Newton to the present. Proficiency in the natural sciences is not required.

186. *History of Science in America*

Its achievements, its relation to European science, its conditioning by American society at large, and its own impact on society. Proficiency in the natural sciences is not required.

191, 192. *Honors Reading*

The precise nature of this course will be determined with reference to the individual programs of candidates for Honors in history. It is designed to supplement a student's experience in a course, or to open new fields, or to promote acquaintance with various forms of historical material. The Staff.

209. *Seminar in Medieval English History*

Problems in Medieval History.

211. *Seminar in Early Modern European History*

Problems in the Reigns of Louis XIII and Louis XIV. Mr. Church.

241, 242. *Seminar in English History*

Topics in the history of nineteenth century England. Mr. Kirby.

251. *Seminar in American Colonial History*

Topics in American history in the eighteenth century. Mr. Lovejoy.

274. *Seminar in the Social and Intellectual History of the United States*

Topic for 1958-59: The Impact of the Social Gospel Movement, 1875-1915. Mr. McLoughlin.

289. *Historiography and Historical Criticism*

Introduction to the history of historical writing; aids to research; and experience in textual criticism. Mr. Fleming.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The Staff.

History of Mathematics

Professors NEUGEBAUER (Chairman), SACHS.

121. *Introduction to the History of Mathematics*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. NEUGEBAUER.

141, 142. *History of the Ancient Orient* (Classics 141, 142)

A brief survey of the political history of Mesopotamia and the surrounding countries, followed by a study of their culture. May count for concentration in Ancient and Medieval Culture. Mr. SACHS.

151, 152. *History of Mathematics*

Special topics in the development of mathematics. Prerequisite: a knowledge of calculus and analytic geometry. Mr. NEUGEBAUER.

211, 212. *History of Ancient Astronomy*

Survey of history of astronomy down to Copernicus. Mr. NEUGEBAUER.

213, 214. *Seminar in the History of the Exact Sciences*

Discussion and reading of special topics in the history of ancient and medieval mathematics and astronomy. Messrs. NEUGEBAUER and SACHS.

291, 292. *Reading and Research*. The STAFF.

Linguistics

Professor TWADDELL and members of related departments compose the STAFF.

The Honors Program in Linguistics is designed to introduce qualified students to methods of analysis and comparison of languages; to allow students very freely to explore interdepartmental linguistic projects; and to provide a background for prospective scholars in linguistics, foreign languages, English, anthropology, philosophy, folklore, and literature.

Although Honors candidates in Linguistics will not be expected necessarily to distribute their work equally among the three major language families available for study at this University (Indo-European, Semitic, Hamitic), they will nevertheless be encouraged to explore more than one of the linguistic groups described in the current general catalogue (Classical languages, Egyptology, English language, Germanic languages, Romance languages, Russian languages).

For further information consult the booklet *Independent Study Programs* (Brown University, 1956).

LINGUISTICS

GENERAL LINGUISTICS

156. *Introduction to Linguistics*

The nature and history of language: sounds, word-formation, vocabulary, sentence structure. The origin of dialects and the development of standard languages. Spoken American English will be used as the basis for discussion and illustration. Elective for juniors and seniors. Mr. TWADDELL.

161. *Historical and Comparative Linguistics*

Topic for 1958-59: Introduction to the Indo-European languages. Knowledge of a modern European language (other than English) and some knowledge of Latin are desirable. Elective for juniors and seniors. Mr. KUCERA.

198. *Senior Conference*

Special work on preparation of Honors thesis under the direction of a member of the Staff. Open to Honors students and to others with written permission. Messrs. TWADDELL and KUCERA.

251, 252. *Seminar in Structural Linguistics*

Study of special topics. Mr. TWADDELL.

261, 262. *Seminar in Comparative Linguistics*

Topic for 1958-59: II, 262, Introduction to Slavic linguistics and Old Church Slavonic. Mr. KUCERA.

CLASSICAL LANGUAGES¹

114. *History of the Latin Language*

201. *Seminar in Latin*

EGYPTOLOGY¹

131, 132. *Middle Egyptian*

201. *Reading of Middle Egyptian Texts*

221. *Introduction to Coptic*

241. *Introduction to Late Egyptian*

261. *Introduction to Demotic*

281. *Introduction to Old Egyptian*

291, 292. *Reading and Research*

ENGLISH LANGUAGE¹

105-106. *Chaucer*

125-126. *Shakespeare: Selected Plays*

For full description of the courses see departmental statements in this catalogue.

MATHEMATICS

201, 202. *History of the English Language*

203, 204. *Old English Language and Literature*

205, 206. *Middle English Language and Literature*

GERMANIC LANGUAGES¹

153. *Middle High German*

154. *History of the German Language*

201. *Gothic*

202. *Old High German*

211, 212. *Problems in Historical and Comparative Grammar of the Germanic Languages*

292, 292. *Reading and Research*

ROMANCE LANGUAGES¹

French 221. *French Stylistics*

French 238. *History of the French Language*

French 239. *Old French Literature*

French 291, 292. *Reading and Research*

General Romance 237. *Introduction to Romance Linguistics*

General Romance 240. *Problems in Romance Linguistics*

Spanish 238. *History of the Spanish Language*

Spanish 291, 292. *Reading and Research*

RELIGIOUS STUDIES¹

151, 152. *Elementary Hebrew*

171. *Hellenistic Greek*

291, 292. *Reading and Research*

Mathematics

Professors ADAMS (Chairman), FEDERER, MASSEY; Associate Professors STEWART,² GALE, WERMER; Assistant Professors BUCHSBAUM, BARCUS, FLEMING; Research Associates, Messrs. CURTISS, GOULD, and ZILBER;

¹ For full description of the courses see departmental statements in this catalogue.

² On leave of absence, 1958-59.

MATHEMATICS

Instructors, Messrs. GREENBERG, KERTZNER, and LUNDELL; Assistants, Messrs. HOWARD, JONAH, KIERNAN, MITCHELL, NORVIG, RISHEL, ROBERTS, SMALL, TYNDALL, VOICHICK, ZIEMER, and ZUCKERMAN.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. Freshman candidates for the degree of Bachelor of Arts who plan to continue work in mathematics or the natural sciences are advised to register for Mathematics D1 and 2, or IC 1-2, or 9-10, in their freshman year, and for Mathematics 21-22 or 29 in their sophomore year. Students in doubt about the proper course to choose are urged to consult a member of the Mathematics Department. Each candidate for the degree of Bachelor of Arts who concentrates in mathematics pursues one of the following concentration programs, terminating in the senior year in a comprehensive examination uniform for all students enrolled in the program concerned. Additional related courses may be taken in mathematics or other fields, either as free electives or as part of an Honors program subject to general University regulations stated elsewhere.

1. *Concentration in Mathematics*: Mathematics 2 or IC 2, 21-22, 105, and one of the following concentration patterns, A: 101-102, 121-122; B: 101-102, 104, 161; C: 108, 121-122, 151.

2. *Interdepartmental Concentration in Mathematics and Economics*: Mathematics 2 or IC 2, and Economics D1 or IC 1-2 or IC 3-4 or IC 5-6 as prerequisites; Mathematics 21-22, 105, and 151, Economics 101, 102, and 192, and either Mathematics 161 or Economics 161.

3. *Interdepartmental Concentration in Mathematics and Physics*: Mathematics 2, or IC 2, and Physics 3 (or 2) as prerequisites; Mathematics 21-22, 105 (or 9-10, 29), and (in the senior year) 108, Physics 4 (or 37), 38, and two additional courses chosen from 37, 111, 114, 116, 121, 122, and 125.

HONORS. Candidates for Honors in mathematics are normally enrolled in an Honors program at the end of the sophomore year. The Honors program usually consists of a concentration program plus at least two but not more than six additional semester courses in mathematics or related subjects. An Honors Thesis must be submitted as a part of the program.

The Honors program in mathematics is extremely flexible. Some students take Mathematics 197 in one or more semesters. This course consists of independent reading and conferences with a faculty member. The Honors Thesis may be prepared as a part of the work in Mathematics 197. Some students take a graduate course (usually Mathematics 225, 226). This is particularly valuable for those who contemplate graduate study. The Honors Thesis may consist of a report on a problem, or set of related problems, studied in connection with a graduate course.

At the end of the senior year candidates take their comprehensive examination and a Senior Honors Examination consisting of their regular course examinations and an oral examination of unrestricted scope.

GRADUATE CREDITS AND COURSES. Mathematics 197, normally taken by senior Honors students, is open to approved graduate students. Mathematics 201 to 292 are designed primarily for graduate students.

D1. *Fundamentals of Mathematics*

An introduction to the logical structure which underlies mathematical procedures. Prerequisite: Elementary Algebra 1 and 2 and Plane Geometry. MR. ADAMS and others.

IC 1-2. *A Modern Introduction to Analytic Geometry and Calculus*

Real numbers, sets, relations, and functions; subsets of the plane; limits and continuity; differentiation; maxima and minima; superpositions and inverses. Mr. MASSEY and others.

2. *Analytic Geometry and Calculus*

Inequalities, functions, limits, differentiation of algebraic functions, maxima and minima, related rates, graphing. The normal prerequisite of Mathematics D1 is often waived for upperclassmen and for pre-medical students. May not be taken for credit in addition to Mathematics 9 without written permission of the Chairman of the Department.

5N. *Trigonometry, Analytic Geometry, and Introductory Calculus*

Required of Naval Reserve Officers Training Corps students who have not presented trigonometry on entrance, and whose programs do not include Mathematics 2 and 21; not open to others. Mr. NORVIG.

9-10. *Analytic Geometry and Calculus*

An intensive course in analytic geometry and calculus. Exponential and trigonometric functions and their inverse functions. Applications. Growth and vibration problems. Multiple integrals. Required in the freshman year of candidates for the degree of Bachelor of Science (except those taking the Nursing course) and often recommended for students intending to concentrate in chemistry, engineering, mathematics, or physics.

21-22. *Analytic Geometry and Calculus*

Trigonometric, exponential, and logarithmic functions. Integration, geometrical applications, polar coordinates, Taylor's Theorem. Prerequisite: Mathematics 2 or IC 2.

29. *Calculus*

Linear differential equations with constant coefficients, series, partial dif-

MATHEMATICS

ferentiation, line integrals. Prerequisite: Mathematics 10. Required in the sophomore year of candidates for the degree of Bachelor of Science (except those taking the Nursing course). Mr. BARCUS and others.

101-102. *Fundamental Problems of Algebra*

Induction, polynomials, groups, rings, fields, linear transformations. Required of students following concentration pattern A or B in mathematics; elective for others. Prerequisite: Mathematics 2, or IC 2, or 10. Mathematics 21-22 or 29, if not previously taken, must be taken concurrently.

104. *Fundamental Problems of Geometry*

Topics in projective, Euclidean, and non-Euclidean geometry. Required of students following concentration pattern B in mathematics; elective for others. Prerequisite: Mathematics 101 or 151. Open to students in the Master of Arts in Teaching program. Mr. BARCUS.

105. *Differential Equations*

A sequel to Mathematics 21-22. Required of all students concentrating in mathematics, in mathematics and economics jointly, or in mathematics and physics jointly; elective for others. Prerequisite: Mathematics 22.

106. *Vector Analysis*

Elementary operations with vectors, tensors, differential operations, and quaternions. Recommended for all students concentrating in mathematics. Prerequisite: Mathematics 22 or 29.

108. *Introduction to Partial Differential Equations*

Fourier expansions, Laplace equations. Equations for heat and wave motion. Required in the senior year of students following concentration pattern C in mathematics, or concentrating in mathematics and physics jointly; elective for others. Prerequisite: Mathematics 29 or 105. Mr. MASSEY.

121-122. *Advanced Calculus*

Convergence, continuity, Fourier series, functions of several variables, multiple integrals, line integrals. Required of students following concentration pattern A or C in mathematics; elective for others. Prerequisite: Mathematics 22 or 29. Mathematics 105 is normally taken previously or concurrently. Messrs. BUCHSBAUM and BARCUS.

126. *Elementary Complex Analysis, A*

Cauchy-Riemann differential equations, contour integration, conformal mapping, Dirichlet problems. Prerequisite: Mathematics 121.

127. *Elementary Complex Analysis, B*

Fourier series and integrals, Laplace transforms and integrals, applications. Prerequisite: Mathematics 126.

141. *Introduction to Modern Mathematics*

Offered in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program. Not open to undergraduates.

143. *Developments and Techniques of Modern Mathematics*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mrs. SCHAFER.

151. *Linear Equations and Matrices*

Simultaneous linear equations, matrices, and quadratic forms. Required of students following concentration pattern C in mathematics or concentrating in mathematics and economics jointly; elective for others. Prerequisite: Mathematics 2, or IC 2, or 10. Mathematics 21 or 29, if not previously taken, must be taken concurrently. May not be taken for credit in addition to Mathematics 101-102.

161. *Mathematical Statistics*

Discrete sample spaces, probability distributions, conditional probability, random variables, and tests of hypotheses. Required of students following concentration pattern B in mathematics; alternative to Economics 161 as requirement for students concentrating in mathematics and economics jointly; elective for others. Prerequisite: Mathematics 22 or 29 or permission of the instructor.

171. *Mathematical Theory of Investment*

An advanced course in compound interest, annuities, depreciation, and theory of actuarial tables. Prerequisite: Mathematics 2, or IC 2, or 10.

197. *Honors Conference*

Collateral reading, individual conferences. Messrs. BARCUS, BENNETT, and BUCHSBAUM.

201, 202. *Differential Geometry*

Introduction to the differential geometry of Euclidean and Riemannian spaces, from the point of view of Cartan. Offered in alternate years.

205, 206. *Algebraic Geometry*

Offered in alternate years. Mr. BUCHSBAUM.

221, 222. *Real Function Theory*

MILITARY SCIENCE

Fundamentals of the theory of functions of a real variable. Elective for approved graduate students. Mr. WERMER.

225, 226. *Complex Function Theory*

Elective for approved graduate students.

227, 228. *Advanced Topics in Mathematics*

Devoted to special topics which usually are not treated in a general course in the theory of functions. Topic for 1958-59: Measure Theory and Differential Geometry. Mr. FEDERER.

231. *Theory of Nonlinear Differential Equations*

232. *Theory of Differential Equations, Advanced Topics*

237, 238. *Differential and Integral Equations of Mathematical Physics*. Mr. WERMER.

241, 242. *Introduction to Topology*

Offered in alternate years.

251, 252. *Modern Algebra*

Set theory, groups, fields, linear dependence, linear transformations, and Galois theory. Elective for approved graduate students. Mr. BUCHSBAUM.

281, 282. *Seminar*

The work in the course is with individual students in algebraic topology and homological algebra. Open only to selected students. Half course credit. Messrs. MASSEY and BUCHSBAUM.

291, 292. *Reading and Research*

Special reading, problems of research, and, in some cases, preparation of theses. Either semester may be elected independently by approved graduate students. The STAFF.

Military Science

NAVY—Captain LYONS, U.S.N., Comdr. JOHNSON, U.S.N., Lieut. Comdr. CROZIER, U.S.N. Major LAUCK, U.S.M.C., Lieut. MORIN, U.S.N., Lieut. JOHNSON, U.S.N., and Lieut. (J.G.) JOBE, U.S.N.

AIR FORCE—Lieut. Colonel HUTCHESON, U.S.A.F., Major ALLEN, U.S.A.F., Captain BLEAU, U.S.A.F., and Captain HERNDON, U.S.A.F.

MILITARY SCIENCE: NAVAL

NAVAL SCIENCE

MISSION. The mission of the Naval Reserve Officers Training Corps is to provide by a permanent system of training and instruction in essential naval subjects at civil educational institutions a source from which qualified officers may be obtained for the Navy and the Marine Corps and their reserve components.

ORGANIZATION. As an agency of the Department of the Navy and as a department of Brown University, established in September 1940, the Department of Naval Science provides instruction in all basic Naval subjects required by a graduate to perform successfully the duties of an officer of the U. S. Navy or Marine Corps. Graduates who complete the Naval Science curriculum normally receive Line (general service) commissions. Individuals less frequently qualify for and receive commissions in the Civil Engineer Corps or the Supply Corps of the Navy. Graduates who are ordered to active duty after commissioning are eligible to apply for training in aviation, submarine, or other specialties attained through the Navy's school system.

REQUIREMENTS. The physical requirements for acceptance into the Department are the same as those for entrance into the U. S. Naval Academy.

Officer Candidates in the NROTC are of two types:

(a) *Regular NROTC Students* are appointed Midshipmen, U.S.N.R. Such students assume obligations to make three required summer cruises (including one aviation-amphibious summer cruise). Students agree to remain unmarried until commissioned and to serve at least fifteen months, or, at the discretion of the Secretary of the Navy, four years, on active duty after commissioning as Ensigns, U. S. Navy or Second Lieutenants, U. S. Marine Corps, and to remain in the Naval Reserve or Marine Corps Reserve until the sixth anniversary of their first commission. They may apply for retention as career Officers in the Regular Navy or Marine Corps. The costs of tuition, uniforms, fees, and textbooks is defrayed by the government; in addition, each student receives retainer pay at the rate of \$600 per annum.

(b) *Contract NROTC Students* have the status of civilians who enter into a mutual contract with the Navy. They are not entitled to the compensation paid Regular NROTC Students except as indicated hereinafter. For administrative purposes they are referred to as "Midshipmen"; they are uniformed at government expense in the same manner as Regular Students; and during their junior and senior years they are paid a commuted ration (currently ninety cents a day) allowance. To provide for deferment from the provisions of the Selective Service Act of 1948, the Contract Student must agree prior to enrollment to accept a commission after graduation, if tendered, and to serve on active duty for two years, if called. He must be unmarried and remain so until graduation. He is obligated to take the Naval

MILITARY SCIENCE: NAVAL

Science curriculum prescribed for the Regular Students; make one summer cruise of approximately six weeks, and accept a commission, if offered, in the Naval Reserve or the Marine Corps Reserve.

With the approval of academic authorities, any student may be permitted to pursue Naval Science courses for college credits, provided acceptance of such students will not adversely affect the instruction given NROTC students and providing permission in writing is given by the Department of Naval Science. They are not eligible to take NROTC practice cruises nor to be paid any compensation or benefits.

Under the present arrangement all members of the Naval ROTC Unit will take one Naval Science course each semester.

CONCENTRATION. Students may not concentrate in Naval Science.

NS101. *Naval Orientation and Sea Power*

An introduction to the Navy including organization, nomenclature, customs, traditions, and basic seamanship. It is designed to stimulate a living interest in the Navy and an appreciation of the influence of Sea Power to the past, present, and future security of the United States.

NS102. *Naval Orientation and Sea Power*

Continuation of NS101.

NS201. *Naval Weapons*

Fundamental principles of naval weapons systems and their control, with emphasis on guided missile construction, propulsion, control, and applications.

NS202. *Naval Weapons*

Prerequisite: Naval Science 201. Continuation of Naval Science 201 and the principles of radar, combat information center, anti-submarine warfare, mines, guided missiles, and amphibious warfare.

NS301. *Naval Engineering*

Provides an introduction to naval machinery and engineering systems. Nomenclature and principles of operation are stressed. Steam engineering systems and diesel engines are studied with respect to their application in naval installations. The elements of ship stability and damage control are included.

NS302. *Navigation*

Fundamental principles of terrestrial and celestial navigation. It includes familiarization with piloting, dead reckoning, and electronic aids to navigation; the theory and practical application of celestial navigation.

MILITARY SCIENCE: AIR

NS301M. *Evolution of the Art of War*

A survey of military history to World War I to teach the classic principles of war by a study of selected battles and campaigns of this era. It includes the development of weapons and tactics. For Marine Corps candidates.

NS302M. *Basic Strategy and Tactics*

A three part course: first, a survey of military history from World War I to the present to illustrate the classic principles of war and the development of weapons and tactics; second, a survey of basic and modern military strategy using historical examples as illustrative material; third, a study of contemporary Marine Corps tactics. Prerequisite: NS301M.

NS401. *Naval Operations*

Provides the student with information and training enabling him to qualify for watch standing billets afloat with a minimum of additional training after commissioning. Especial emphasis is placed on the use of the maneuvering board in basic tactics, the handling of communications, Rules of the Nautical Road, and weather from an operational point of view.

NS402. *Naval Administration*

Introduction to naval administration and how it is controlled by regulations and directives; the Uniform Code of Military Justice and its relationship to discipline; practical instruction in military leadership.

NS401M. *Amphibious Warfare*

A survey of Marine amphibious operations in World War II and Korea culminating in the basic principles of amphibious operations. Prerequisite: NS302M.

NS402M. *Amphibious Warfare Part II, Leadership and Military Law*

A three part course: first, a study of advanced amphibious principles; second, a study of leadership principles and problems encountered by the junior Marine Officer; third, a study of the Uniform Code of Military Justice stressing the role of the Marine Officer in administering justice. Prerequisite: NS401M.

AIR SCIENCE

The Air Force Reserve Officers Training Corps at Brown University was established in July 1951 under authority of Congress to provide a source from which qualified officers may be obtained for the Regular Air Force and the Air Force Reserve.

MISSION. The Mission of the Air Force Reserve Officers Training Corps is to train selected students for positions of leadership in time of national

MILITARY SCIENCE: AIR

emergency. It offers instruction in essential air science subjects and elementary military training to all physically and mentally qualified male students, and advanced training to a limited number of selected students, to produce junior officers who have the qualities and attributes essential to their progressive and continued development as officers in the United States Air Force.

ORGANIZATION AND STAFF. The United States Air Force details four officers and four enlisted airmen as the instructional staff at Brown University. The senior officer is designated as Professor of Air Science. All other officers are designated Assistant Professors of Air Science.

FACILITIES. The United States Air Force provides all specialized equipment for aids in instruction; these aids are placed in the custody of Brown University authorities for issue to the cadets as required. All Air Science textbooks and aids are loaned to the cadets on hand receipt.

INSTRUCTION. As an agency of the United States Air Force and as a department of Brown University, the Department of Air Science provides a peacetime course of instruction of four years in Air Science for which academic credit is given. The first two years consist of a basic course, the last two years of an advanced course. The advanced course is offered to selected students who are physically and mentally qualified and who have indicated a desire to attend flight training after graduation. In addition a limited number are selected from students majoring in Engineering and Physical Sciences. Subjects covered in the basic course and advanced course appear under course description. Completion of the basic course allows the student two semester courses toward graduation. Completion of the advanced course allows four semester courses toward graduation.

The advanced students are required to attend one summer camp for four weeks between the junior and senior year of college for which they are paid \$75 a month, and are furnished subsistence, housing, medical care, and necessary uniforms. Transportation in kind is provided for travel to and from summer camp.

FLIGHT INSTRUCTION PROGRAM: AFROTC Flight Instruction Program (PL 874, 84th Congress) authorizes qualified Senior Advanced Corps Cadets to receive 35 hours of flight training. Flight instruction is provided by CAA approved civilian flying school operators and administered by the Civil Aeronautics Administration (CAA). A private pilot's certificate is awarded upon successful completion. The entire flying program is provided at no cost to the student.

OTHER BENEFITS. Advanced students are paid a commuted value of the military ration for 590 days (now approximately \$.90 a day). The United

MILITARY SCIENCE: AIR

States Air Force also furnishes without charge a complete uniform to each cadet.

All qualified Air Force ROTC graduates are commissioned as Second Lieutenants in the Air Force Reserve. Upon receiving their commission flying trainees attend the Air Force Flight training program. They receive the pay and allowances of their rank during this course of instruction, in addition to incentive pay.

Under the present arrangements all members of the Air Force ROTC Unit will take one Air Science course each semester.

CONCENTRATION. Students may not concentrate in Air Science.

BASIC COURSES (FRESHMAN)

AIR ROTC 11-12. *Foundations of Air Power*

This course is carried as a half course through two semesters for one semester course credit. No credit for 11 without 12. It is a general survey of airpower designed to provide the student with an understanding of the Elements of Air Power and basic aeronautical science. The subject groupings are: 1. Introduction of Air Force ROTC, 2. Elements and Potentials of Airpower, 3. Air Vehicles and Principles of Flight, 4. Military Instruments of National Security, and 5. Professional Opportunities in the United States Air Force. A Leadership Laboratory is conducted for all students each semester.

AIR ROTC 21-22. *Elements of Aerial Warfare*

This course is carried as a half course through two semesters for one semester course credit. No credit for 21 without 22. The objective of the first semester is to acquaint the student with the elements of aerial warfare including the study of military targets and target reconnaissance, air bases, and the various types of aerial weapons.

The second semester is a continuation of the study of aerial warfare to include a basic understanding of factors of aircraft design according to the type mission they are to perform. It also includes a study of air power development, the strategic concepts of air operations, and the tactical employment of air power.

A Leadership Laboratory is conducted for all students each semester.

ADVANCED COURSES (JUNIOR)

AIR ROTC 31. *The Air Force Commander and His Staff, Problem Solving and Military Law*

The objective of this course is to acquaint the student with the factors of

MODERN LANGUAGES

command and associated staff functions. It will further provide the student with a basic understanding of the Uniform Code of Military Justice and an introduction to the laws of learning and problem solving. Leadership laboratory.

AIR ROTC 32. *Air Force Base Functions, Navigation and Weather, and Communicating in the Air Force*

The purpose of this course is to introduce the student to the basic principles of aerial navigation and weather, to acquaint the student with the major functions of an Air Force base, and to develop in the student an understanding of the nature of communication and its function in Air Force management and operations. Leadership laboratory.

AIR FORCE SUMMER CAMP

All advanced students who have successfully completed their junior year of Air Force ROTC are required to attend one Air Force ROTC Summer Camp for a four-week period. No credit (see page 192).

ADVANCED COURSES (SENIOR)

AIR ROTC 41. *Principles of Military Management and the Psychology of Leadership*

The objective of this course is to provide the student with a basic knowledge of human relations and the psychology of leadership and to develop those qualities of leadership that are essential to Air Force officers.

AIR ROTC 42. *Military World Political Geography*

To provide the AFROTC student with a general knowledge of political geography; to include its significance to the USAF, power patterns and geopolitical concepts. The framework of international policies, the anatomy of political power, geographical basis of power to include case studies in factors of powerhood of nations. Duties of the new Air Force officer are studied and the attributes and qualities essential to leadership in the United States Air Force are further developed.

Modern Languages

Professors H. BROWN, FICHTER, TWADDELL, KELLENBERGER (Chairman); LÓPEZ-MORILLAS, SALVAN, E. J. BROWN, GORDON, HOLSKE; Associate Professors SCHNERR, WEIMAR, ECHEVERRIA, TRUEBLOOD, RIDGELY, KUCERA; Assistant Professors DEWART, KOSSOFF, HALEY, AMOR, MCCORMICK, LOVE; Lecturers, Mr. JAMES and Mrs. KOSSOFF; Instructors, Messrs. BARCHILON, BENAY, SPEAR, and WHITING, and Mrs. FIELDS;

MODERN LANGUAGES

Assistants, Messrs. BERNSTEIN, BUCHER, HOOK, KACEN, LIAPUNOV, OESTERLE, RODRIGUEZ, and ZOLDESTER, and Misses CLEMENTE, HULL, and JONES, and Mesdames FROMMER, SILK, and VAMOS.

PLACEMENT TESTS. All students, before taking college courses in a modern language in which they presented entrance credit, must take a placement test in that language to determine the courses for which they are best qualified. It is recommended that students take the College Board Language Achievement Test for this purpose in secondary school. Otherwise, they must take the comparable Placement-Achievement Test given during Freshman Week.

Students with outstanding performance on these tests, or on the Advanced Placement Tests of the College Entrance Examination Board, may be admitted to advanced literature or language courses without the usual course prerequisites.

LANGUAGE REQUIREMENT. In Modern Languages, students may meet the language requirement for the Bachelor of Arts degree in either of two ways: (1) by passing an achievement test, which is given three times a year; or (2) by obtaining a grade of C or better in French 4, German 4, Italian 4, Russian 4, Spanish 4, or in a higher level course in any of these languages. Language requirements for other Bachelor degrees are described elsewhere in the Catalogue (see Degrees, Requirements for).

GENERAL PREREQUISITES. Most advanced literature courses presuppose one or more courses beyond the Achievement level; see prerequisites under course listings.

Students who pass the distribution tests (see page 62) are admitted to advanced courses in that language.

A qualified student who lacks exact course prerequisites will be admitted to any advanced course with written permission of the instructor.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. Students may concentrate in French, German, Italian Spanish, or in any two of the modern languages. The minimum requirement for concentration is eight semester courses (or their equivalent) above the DI1-DI2 level. Students planning to concentrate in Modern Languages should consult the authorized representative of the Division for each language.

Candidates in *French* will be expected to have a sound knowledge of selected fields and authors in French literature since 1500.

Candidates in *German* will arrange a program which will acquaint them

MODERN LANGUAGES: EUROPEAN LITERATURE

with the main writers and movements in German literature, particularly after 1750.

Candidates in *Italian* will arrange a program to acquaint them with (a) the period from Dante to the end of the sixteenth century and (b) the nineteenth century.

Candidates in *Spanish* will place special emphasis on (a) the Golden Age and (b) modern and contemporary literature of Spain or Spanish-American literature.

HONORS. Candidates for Honors in French, German, Italian, and Spanish will arrange a program which will (a) acquaint them with the main writers and movements in the language and literature of their choice and (b) permit them to do intensive work in a field of special interest to them. This will normally involve readings and reports in connection with selected courses during the last half of their college course and, where advisable, supervised additional readings in fields of special interest or value to them. In the seventh and eighth semesters they will prepare a thesis for which they will receive course credit.

Combined programs in two modern foreign literatures can be arranged to fit the student's particular needs and abilities. Programs combining English literature and one of the modern foreign literatures can also be arranged. An interdepartmental Honors Program is also offered in Linguistics (see page 181).

In Russian Studies the interdepartmental plan of study, which involves four academic disciplines, allows the student to specialize either in the humanities or in the social studies. The program provides an integrated study of Russian history, culture, government, and literature, and all courses will involve use of the Russian language. A reading knowledge of Russian is prerequisite. The program is comprised of ten semester courses: (1) four courses in Russian literature; (2) four courses in history, political science, and economics; and (3) two courses in the preparation of a thesis in literature, history, or political science. For further information consult the booklet *Independent Study Programs* (Brown University, 1956).

RELATED COURSES. Students concentrating in Modern Languages should consider the election of one or more courses in the principal periods of other literatures, in linguistics, and in related fields such as philosophy, art, history, and political science.

EUROPEAN LITERATURE IN TRANSLATION

IC 1-2. *The Literary Treatment of the Emancipation of Woman (1850-1900)*

The expression in literature of the problem of the emancipation of woman

MODERN LANGUAGES: FRENCH

and its attendant psychological, social, and cultural effects. The following European works from the Age of Realism will be read: Flaubert, *Madame Bovary* (1857), Goncourt, *Germinie Lacerteux* (1865), Tolstoy, *Anna Karenina* (1875-77), Ibsen, *A Doll's House* (1879), Pérez Galdós, *The Spendthrifts* (1884), and Strindberg, *Miss Julie* (1888). Mr. LÓPEZ-MORILLAS.

IC 5-6. *Sacrifice and Revolt: Generations in Conflict*

A literary and cultural study of change and tension in family relationships as portrayed by European authors from various artistic and ideological points of view. Among the works read will be Shakespeare, *King Lear* (1605), Balzac, *Father Goriot* (1835), Turgenev, *Fathers and Children* (1862), Ibsen, *Ghosts* (1881), Pirandello, *The Life I gave Thee* (1923), and García Lorca, *The House of Bernarda Alba* (1945). Mr. HALEY.

OTHER COURSES IN TRANSLATION. The following courses in literature in the Division do not require a knowledge of the language concerned: German 29, 30; Italian 161, 162; Russian 29, 30.

FRENCH

1-2. *Basic French*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; intensive oral drill and supervised reading practice in small sections four hours weekly. Elective for students who have not presented French for admission. No credit is given for the first semester alone, but with written permission a qualified student may elect the latter half of the sequence. Mr. SCHNERR and STAFF.

1R-2R. *Beginning French*

Intensive course: brief survey of the elements of the language and practice in reading. Three hours per week. Open to approved juniors and seniors who have met the language requirement in another foreign language. No credit is given for French 1R alone, but with written permission of the instructor a qualified student may elect French 2R. Mr. SPEAR.

2. *Elementary French II*

Reading of simple French prose. Grammar review, oral practice, written exercises. Four hours per week. Prerequisite: placement.¹ Mrs. FIELDS and STAFF.

3A. *Intermediate French IA*

Intensive and extensive reading of modern novels and plays. Grammar re-

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: FRENCH

view, oral practice, written exercises. Four hours per week. Designed for students whose previous performance in French will permit the use of more advanced reading texts. Prerequisite: French 1-2 with grade or *A* or *B*, French 2 with grade of *A* or *B*, or placement.¹ Mr. SPEAR and STAFF.

3B. *Intermediate French IB*

Intensive and extensive reading of modern prose. Grammar review, oral practice, written exercises. Four hours per week. Prerequisite: French 1-2, French 2, or placement.¹ Mr. BENAY and STAFF.

4. *Intermediate French II*

Readings in modern prose authors. Grammar review for reading purposes; training in translation techniques and in reading for comprehension. Three hours per week. Prerequisite: French 3. Mr. DEWART and STAFF.

10. *French Writers and Thinkers*

Reading and discussion of selected plays, fiction, essays, and poetry from the seventeenth century to the present which are significant for the understanding of key problems and concerns in French thought and letters. This course, in combination with any two-semester Distribution or IC course in Literature, will satisfy the prerequisite for advanced courses in French literature and for concentration in French. May not be taken in addition to French IC 1-2 or D11-D12. Open to students who have met the language requirement in French. Mr. ECHEVERRIA and STAFF.

IC 1-2. *The Humanist in Literature: Pascal, Voltaire, Camus, and some poets*

The writings in prose and verse of a number of French authors examined in order to discover their intellectual interests and the solutions they suggest for persisting human problems. Pascal's *Pensées*, Voltaire's philosophical tales, including *Candide*, one or two plays, Camus' *La Chute*, and poems of all periods will be read, illustrating both method and subject matter. Open to students who have met the language requirement in French. Occasionally, with written permission, this course may be taken concurrently with French 3A. Mr. H. BROWN.

D11-D12. *French Literature: Introductory Course*

Reading and analysis of representative works by important authors, such as Corneille, Pascal, Molière, Racine, Voltaire, Rousseau, Hugo, Balzac, Flaubert, Baudelaire, Saint-Exupéry, and Sartre. Discussion of literary genres and important aspects of French literary history. May be taken to satisfy the distribution requirement for a two-semester course in Literature

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: FRENCH

under Humanities. Open to students who have met the language requirement in French. Mr. RIDGELY and STAFF.

19. *Writing and Speaking French I*

Practice in writing and speaking French. Four hours per week: two hours of discussion and analysis plus two hours of oral practice. Open to students who have met the language requirement in French. Messrs. BARCHILON and SALVAN and STAFF.

51. *Writing and Speaking French II*

Intensive practice in writing and speaking French. Emphasis given to the idiomatic use of the language. Four hours per week: two hours of discussion and analysis plus two hours of oral practice. Prerequisite: French 19. Open also, with written permission of the instructor, to students who have completed French D11-D12 or IC 1-2 or 10. Mr. SALVAN and STAFF.

101. *The Classic Age: Order and Freedom*

The reactions of seventeenth-century man to social, moral, and aesthetic problems. Prose, poetry, and the drama; representative writers from Montaigne to Racine. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered every year. Mr. RIDGELY.

102. *The Romantic Revolt*

The emergence of the modern temper from the moral and psychological crisis of the romantic era, 1800-1850. The discovery and expression of new values, in lyric poetry, the drama, and the novel: Lamartine, Hugo, Vigny, Stendhal, Balzac, Flaubert. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered every year. Mr. ECHEVERRIA.

112. *Poetry of the Renaissance*

Developments in poetic aim, form, and content from 1550 to 1630. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years.

114. *Corneille, Molière, and Racine*

The flowering of the classic theater; new concepts of the dramatic, the tragic, and the comic; comparisons with forms of drama developed in other countries and at different times. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years. Mr. KELLENBERGER.

115. *Reason and Feeling in Eighteenth-century Fiction and Drama*

Changes in taste, attitude, aspirations, and techniques, primarily as reflected in the novel and theater, but with some reference to critical writings and to parallel developments in the fine arts and music. Prerequisite:

MODERN LANGUAGES: FRENCH

French D11-D12 or IC 1-2 or 10. Offered in alternate years. Mr. KELLENBERGER.

117. *Baudelaire and Modern Poetry*

Modern poetry from *Les Fleurs du Mal*, through symbolist and surrealist expressions, to contemporary tendencies, including such poets as Verlaine, Rimbaud, Mallarmé, Apollinaire, Eluard, Aragon, and Char. Conducted in French. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years. Mr. WHITING.

118. *The Contemporary French Theater*

The French theater since 1920: reading and discussion of plays by such authors as Lenormand, Jules Romains, Cocteau, Giraudoux, Montherlant, Anouilh, Camus, and Sartre. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years.

119. *The Generation of Proust*

A study of Proust's works, followed by readings and discussions of selected works of Valéry and Claudel. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years.

121. *European Humanism and the French Renaissance*

Northern and Southern Humanism as a historical background for French literature of the sixteenth century. Social and moral criticism of Erasmus and More, Neoplatonism, the *soeties* and *sermons joyeux*, Rabelais, the doctrine of the poets of 1550. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years. Mr. H. BROWN.

122. *Montaigne, Descartes, and Pascal*

The quest for individualism, reason, and faith, as seen in the works of three French *moralistes*. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years.

124. *Literature and the Rise of Science*

Literary implications of the scientific revolution of the seventeenth century; its influence on the imagination and the reading public; the rôle played by Voltaire and Diderot. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years. Mr. H. BROWN.

125. *Political and Social Reform in the Enlightenment*

The effect of new concepts of man on plans and aspirations for changes in the political and social structure of the *Ancien Régime*. Montesquieu, Voltaire, the *Encyclopédistes*, and Rousseau. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered in alternate years.

MODERN LANGUAGES: FRENCH

127. *Nineteenth-century Realism*

The impact of new developments in science and thought upon the writer's interpretation of reality. Readings in the novel from Balzac to Zola, with some consideration of poetry, history, and criticism. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered every year. Mr. DEWART.

128. *From Naturalism to Existentialism*

Changes in philosophical outlook and literary aesthetics from the end of the nineteenth century to the present will be examined in selected works of Huysmans, Gide, Malraux, Saint-Exupéry, Camus, and Sartre. Conducted in French. Prerequisite: French D11-D12 or IC 1-2 or 10. Offered every year. Mr. SALVAN.

170. *Advanced Written and Oral French*

Designed to develop skill and accuracy in literary composition and oral expression. Prerequisite: French 51 with grade of *A* or *B*, or written permission of the instructor. Offered every year. Mr. SALVAN.

181. *Studies in French Thought and Institutions*

Topic for 1958-59: The literature of political and social reform to 1850. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. ECHEVERRIA.

183. *Studies in the French Language*

Topic for Summer, 1958: Introduction to stylistics. Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. KELLENBERGER and Mrs. FIELDS.

186. *Studies in French Literature*

Topic for 1958-59: The French theater. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. RIDGELY.

198. *Senior Conference*

Special work or preparation of Honors thesis under the direction of a member of the staff. Open to Honors students and to others with written permission. Mr. SALVAN and STAFF.

201. *Studies in French Literature*

211. *Seventeenth-century French Literature*

Topic for 1958-59: Racine and classic tragedy after 1660. Mr. KELLENBERGER.

MODERN LANGUAGES: GENERAL ROMANCE

214. *French Literature from 1800 to the Present*

Topic for 1958-59: *Le journal personnel*, des Goncourt à Julien Green. Mr. SALVAN.

221. *French Stylistics*

The expression of affective and artistic values in French. A study of stylistic procedures and comparison with English usage. Offered in alternate years. Mr. KELLENBERGER.

238. *History of the French Language*

The development of the French language from the *Oaths of Strasbourg* to the modern period. Lectures, readings, and discussion. This course should be taken after General Romance 237. Offered in alternate years. Mr. SCHNERR.

239. *Old French Literature*

The history of Old French Literature from the *Chanson de Roland* to Villon. Offered in alternate years. Mr. GORDON.

252. *Research in Eighteenth-century French Literature*

261. *Problems in French Literary History*

Topic for 1958-59: Marcel Proust. Mr. SALVAN.

262. *Problems in French Literary History*

Topic for 1958-59: Problems in French-American relations. Mr. ECHEVERRIA.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

GENERAL ROMANCE

202. *Problems in Comparative Literature*

The study of special topics involving literary relationships and movements in the Romance literatures. Not offered every year.

237. *Introduction to Romance Linguistics*

Elements of the historical and comparative grammar of the Romance languages, with special attention to the Latin period. Lectures, readings, and discussion. This course should be taken before French 238 or Spanish 238. Offered in alternate years. Mr. SCHNERR.

MODERN LANGUAGES: GERMAN

240. *Problems in Romance Linguistics*

Studies in the history of the Romance languages. Offered in alternate years. Mr. SCHNERR.

GERMAN

1-2. *Basic German*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; intensive oral drill and supervised reading practice in small sections four hours weekly. Elective for students who have not presented German for admission. No credit is given for the first semester alone, but with written permission a qualified student may elect the latter half of the sequence. Mr. LOVE and STAFF.

1R-2R. *Beginning German*

Intensive course: brief survey of the elements of the language and practice in reading. Training in the technique of translating unaltered texts in the sciences, social studies, literature, philosophy, etc. Three hours per week. Open to juniors and seniors who have met the language requirement in another foreign language. No credit is given for German 1R alone, but with written permission of the instructor a qualified student may elect German 2R. Mr. HOLSKE and STAFF.

2. *Elementary German II*

Reading of easy German prose. Written exercises and some oral practice. Four hours per week. Prerequisite: placement.¹ Mr. ZOLDESTER.

3. *Intermediate German I*

Reading of modern German prose. Intensive vocabulary expansion and training in reading technique; some oral practice. Four hours per week. Prerequisite: German 2 or placement.¹ No credit if student has credit for German 3S. Mr. McCORMICK and STAFF.

3S. *Intermediate Scientific German*

Reading of scientific texts; grammar for reading. Four hours per week. This course is not designed to prepare for the German achievement test taken by Bachelor of Arts candidates and certain Bachelor of Science candidates. Prerequisite: German 2 or placement¹ by test. No credit if student has credit for German 3. The STAFF.

4. *Intermediate German II*

Readings in modern authors with training in translation techniques and some oral practice. Three hours per week. Prerequisite: German 3, or German 3S with a grade of C or better. Mr. LOVE.

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: GERMAN

D11, D12. *German Literature: Introductory Course*

Reading and discussion of representative works since the late eighteenth century, primarily short stories and poetry in D11 and plays and poetry in D12. Weekly lecture in German on important aspects of German literary history. May be taken to satisfy the distribution requirement for a two-semester course in Literature under Humanities. Open to students who have met the language requirement in German. Messrs. HOLSKE and WEIMAR.

19. *Composition and Conversation*

Practice in writing and speaking German. Four hours per week: two hours of discussion and analysis, plus two hours of oral practice. Open to students who have met the language requirement in German. Offered in alternate years. Mr. McCORMICK.

29. *German Literature to 1800 in English Translation*

German literature from the beginnings to Goethe, in its relation to other literatures and to its general cultural background. Readings include selections in English translation from medieval literature and from the works of Lessing, Goethe, and Schiller. Three hours per week: two lectures plus discussion in section meeting. Mr. LOVE.

30. *German Literature after 1800 in English Translation*

German literature from Romanticism to the modern period (ca. 1800-1950), in its relation to other literatures and to its general cultural background. Readings include selected works in English translation of the Romantics, Heine, Nietzsche, Hauptmann, Thomas Mann, Rilke, Kafka, Werfel, and others. Three hours per week: two lectures plus discussion in section meeting. Mr. WEIMAR.

110. *Advanced Composition and Conversation*

Designed to develop facility in oral and written German. Discussion of significant aspects of contemporary Germany. Four hours per week. Prerequisite: German 19. Open also, with written permission of the instructor, to students who have completed German D11, D12. Offered in alternate years.

121. *German Literature before Goethe*

The development of German literature from the early Middle Ages to the second half of the eighteenth century. Extensive reading of works by the principal writers, with an intensive study of Lessing. Lectures in German and English. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. McCORMICK.

MODERN LANGUAGES: GERMAN

124. *Studies in German Literature*

Topic for 1958-59: Lyric poetry of the nineteenth and twentieth centuries. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Students may receive credit for this course in any two successive years. Mr. WEIMAR.

131. *Goethe and Schiller*

A study of works representing the Storm and Stress movement, the classical period of Goethe and Schiller (to 1805), and the preparation of Romanticism. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. HOLSKE.

132. *Goethe and Romanticism*

Goethe's *Faust*, Kleist, Schlegel, Novalis, Tieck, and Hoffmann. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. HOLSKE.

143. *Realism*

German literature from the decline of Romanticism to the end of the nineteenth century. A study of trends and representative works of Grillparzer, Heine, Hebbel, Keller, Meyer, and others. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. HOLSKE.

144. *Modern German Literature*

A study of trends and writers after Nietzsche: Impressionism, Expressionism, and subsequent developments; George, Rilke, Kafka, Thomas Mann, Werfel, and others. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. WEIMAR.

153. *Middle High German*

The elements of the language. Reading of the *Nibelungenlied* and selected *Minnelieder*. Open, with written permission of the instructor, to students who have met the language requirement in German. Mr. McCORMICK.

154. *History of the German Language*

The development of German pronunciation, the inflections, word-formation, syntax. Special emphasis on the modern period. Open, with written permission of the instructor, to students who have met the language requirement in German. Not offered every year.

198. *Main Trends in German Literature*

Major developments and writers from the pre-Christian period to the present. Primarily for seniors, open occasionally to graduate students. If an

MODERN LANGUAGES: ITALIAN

Honors Thesis is written in addition to the course work, double credit will be given. Mr. HOLSKE and STAFF.

201. *Gothic*

An introduction to the historical and comparative grammar of the Germanic languages with Gothic as a basis. Reading of selections from Wulfila's translation of the Gospels. Not offered every year.

202. *Old High German*

Phonology, morphology, etymology, syntax. Reading of Franconian, Bavarian, and Alemannic texts. Mr. TWADDELL.

211, 212. *Problems in the Historical and Comparative Grammar of the Germanic Languages*

225. *Problems in German Literature*

Topic for 1958-59: Expressionism. Mr. WEIMAR.

226. *Problems in German Literature*

Topic for 1958-59: Keller. Mr. HOLSKE.

231. *Seminar in German Literature*

Topic for 1958-59: Schiller. Mr. HOLSKE.

232. *Seminar in German Literature*

Topic for 1958-59: The courtly epic and lyric. Mr. TWADDELL.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

ITALIAN

1-2. *Elementary Italian*

Grammar, oral practice, reading, written exercises. Four hours per week. Elective for students who have not presented Italian for admission. No credit is given for Italian 1 alone, but with written permission of the instructor a qualified student¹ may elect Italian 2. Mr. GORDON.

3. *Intermediate Italian I*

Reading of modern prose. Grammar review, oral practice. Four hours per week. Prerequisite: Italian 2 or placement.¹ Mr. GORDON.

4. *Intermediate Italian II*

Readings in modern authors. Grammar review and composition. Three hours per week. Prerequisite: Italian 3. The STAFF.

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: RUSSIAN

51. *Writing and Speaking Italian*

Open to students who have met the language requirement in Italian, or with written permission of the instructor. Four hours per week: two hours of discussion and analysis plus two hours of oral practice. Not offered every year. The STAFF.

D107, D108. *General Survey of Italian Literature*

A general view of Italian literature to 1870, with emphasis on the more important writers and literary movements. May be taken to satisfy the distribution requirement for a two-semester course in Literature under Humanities. Open to students who have met the language requirement in Italian. Offered in alternate years. Mr. GORDON.

133, 134. *Studies in Modern Italian Literature*

The most significant writers and literary movements of Italy from the Counter-Reformation to the present. Open to students who have met the language requirement in Italian. Offered in alternate years. Mr. GORDON.

155, 156. *Humanism and Renaissance*

An interpretative reading of the most representative authors of the Trecento, Quattrocento, and Cinquecento and a study of their influence on European literature. Open to students who have met the language requirement in Italian. Offered in alternate years. Mr. GORDON.

161, 162. *Dante's Divina Commedia*

The *Divina Commedia* treated as a representative monument of medieval culture. A knowledge of Italian is not required except in the case of majors in Italian. Prerequisite: written permission of the instructor. Offered in alternate years. Mr. GORDON.

198. *Senior Conference*

Each student concentrating in Italian will work under the direction of a member of the Staff. If an Honors Thesis is written in addition to the course work, double credit will be given. Mr. GORDON.

215, 216. *Research in Italian Literature*

RUSSIAN

1-2. *Elementary Russian*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures three hours weekly; intensive oral drill and supervised reading practice two hours weekly in small sections. Elective for students who have not presented Russian for admission. No credit is given for Russian 1 alone,

MODERN LANGUAGES: RUSSIAN

but with written permission of the instructor a qualified student¹ may elect Russian 2. Mr. E. J. BROWN and STAFF.

3. *Intermediate Russian I*

Intensive reading of Russian prose, including selections from the works of Pushkin, Chekhov, Tolstoy, and others. Grammar review and oral practice. Four hours per week. Prerequisite: Russian 2 or placement.¹ Mr. E. J. BROWN.

4. *Intermediate Russian II*

A course intended primarily to develop reading fluency in a variety of fields. Selections include readings in literature, literary criticism, history, and other subjects. One hour per week is given to composition and conversation. Four hours per week. Prerequisite: Russian 3 or placement.¹ Mr. KUCERA.

19. *Writing and Speaking Russian*

Practice in writing and speaking Russian. Four hours per week: two hours of discussion and analysis, plus two hours of oral practice. Open to students who have met the language requirement in Russian. Mr. KUCERA.

29. *Russian Literature in English Translation I*

Russian literature from the earliest times, with particular attention to the nineteenth century. Selected works of Pushkin, Lermontov, Gogol, Turgenev, Dostoyevsky, and others will be read. Elective for juniors and seniors. No knowledge of Russian is required. Three hours per week: two lectures plus discussion in section meeting. Mr. KUCERA.

30. *Russian Literature in English Translation II*

Russian literature from Tolstoy to the present. Selected works of Tolstoy, Chekhov, Gorky, Bunin, and important Soviet writers will be read. Cultural and intellectual development in the twentieth century will be stressed. Elective for juniors and seniors. No knowledge of Russian is required. Three hours per week: two lectures plus discussion in section meeting. Mr. E. J. BROWN.

31, 32. *Russian Literature: Introductory Course*

Open to students who have met the language requirement in Russian. Identical with Russian 29, 30, except that designated portions of the assigned work will be read in Russian. Messrs. E. J. BROWN and KUCERA.

191, 192. *Readings in Russian Literature*

Prerequisite: Russian 31, 32. Study of individual authors or special topics. May be taken also as an Honors reading course in connection with the

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: SPANISH

preparation of a thesis. Topics for 1958-59: I, 191, Pushkin; II, 192, Tolstoy. Messrs. E. J. BROWN and KUCERA.

291, 292. *Reading and Research*

Work with individual students in connection with special reading or problems of research. Messrs. E. J. BROWN and KUCERA.

SPANISH

1-2. *Basic Spanish*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; intensive oral drill and supervised reading practice in small sections four hours weekly. Elective for students who have not presented Spanish for admission. No credit is given for the first semester alone, but with written permission a qualified student may elect the latter half of the sequence. Mr. KOSSOFF and STAFF.

2. *Elementary Spanish II*

Grammar, oral practice, written exercises. Reading of simple texts. Four hours per week. Prerequisite: placement.¹ Mr. AMOR and STAFF.

3. *Intermediate Spanish I*

Reading of modern prose: intensive drill in translation, extensive practice in reading for comprehension. Oral practice. Four hours per week. Prerequisite: Spanish 2 or placement.¹ Mr. HALEY and STAFF.

4. *Intermediate Spanish II*

Readings in modern authors: reading for comprehension and practice in translation techniques. Three hours per week. Prerequisite: Spanish 3. Mrs. KOSSOFF.

D11, D12. *Spanish Literature: Introductory Course*

An introduction to the various literary forms (novel, drama, essay, poetry), and to some of the best Spanish writers from the medieval period to the present (Cervantes, Lope, Bécquer, Galdós, and others). Intensive and extensive reading, and class discussion. May be taken to satisfy the distribution requirement for a two-semester sequence in Literature under Humanities. Open to students who have met the language requirement in Spanish. A student may not receive credit for both this course and Spanish D13-D14. Mr. KOSSOFF and STAFF.

D13-D14. *The Real and the Ideal in Spanish Literature*

The course will explore through reading and discussion the interplay of the real and the ideal in Spanish literature. Representative readings in the

¹ See statement on Placement Tests, page 195.

MODERN LANGUAGES: SPANISH

novel, drama, essay, and poetry of different periods from the Middle Ages to the present. Cervantes' *Don Quijote* will be stressed throughout as the outstanding expression of a fusion of the two elements. May be taken to satisfy the distribution requirement for a two-semester sequence in Literature under Humanities. Open to students who have met the language requirement in Spanish. A student may not receive credit for both this course and Spanish D11, D12. Not offered every year. Mr. TRUEBLOOD.

19. *Spanish Composition and Conversation*

Practice in writing and speaking Spanish. Four hours per week: two hours of discussion and analysis plus two hours of oral practice. Open to students who have met the language requirement in Spanish. Mr. AMOR and STAFF.

51. *Advanced Composition and Conversation*

Intensive practice in writing and speaking Spanish. Oral and written reports. Four hours per week: two hours of discussion and analysis plus two hours of oral practice. Prerequisite: Spanish 19. Open also, with written permission of the instructor, to students who have completed Spanish D11, D12 or D13-D14. Mr. AMOR and STAFF.

107. *Survey of Spanish Literature to 1700*

A study of the main literary *genres* and the more important writers from the beginnings to the end of the seventeenth century. Prerequisite: Spanish D11, D12, or D13-D14, or written permission of the instructor. Mr. FICHTER.

108. *Survey of Spanish Literature after 1700*

A study of the main literary *genres* and the more important writers from the eighteenth century to the present. Prerequisite: Spanish D11, D12, or D13-D14, or written permission of the instructor. Mr. FICHTER.

115. *Literary Currents in Colonial Spanish America*

The Spanish experience in the New World as recorded in selected writings of early explorers, conquerors, missionaries, and their chroniclers and poets; and by representative prose and verse writers of the later colonial and revolutionary periods. Prerequisite: Spanish D11, D12, or D13-D14, or written permission of the instructor. Offered in alternate years. Mr. TRUEBLOOD.

116. *Literary Currents in Modern Spanish America*

A study of outstanding works and significant literary trends of the nineteenth and twentieth centuries. Emphasis will be upon the search for a genuine expression in literature of an independent Hispanic New World. Prerequisite: Spanish D11, D12, or D13-D14, or written permission of the instructor. Offered in alternate years. Mr. TRUEBLOOD.

MODERN LANGUAGES: SPANISH

120. *The Novel of the Nineteenth Century*

The development of the novel from Fernán Caballero to Pardo Bazán with special emphasis on Galdós. Prerequisite: Spanish D11, D12, or D13-D14. Offered in alternate years. Mr. AMOR.

121. *Contemporary Spanish Literature*

A study of the *Generación del 98*, with special emphasis on its contributions to the novel and essay. Prerequisite: Spanish 108 or written permission of the instructor. Mr. LÓPEZ-MORILLAS.

141. *Cervantes*

An introduction to the study of Cervantes, with special attention to *Don Quijote*. Prerequisite: Spanish 107. May not be taken in addition to Spanish D13-D14. Offered in alternate years. Mr. KOSSOFF.

142. *The Drama of the Golden Age*

A study of some of the masterpieces of the classic theater from Lope de Vega to Calderón. Prerequisite: Spanish 107. Offered in alternate years. Mr. KOSSOFF.

151. *Studies in Spanish Literature after 1700*

Topic for 1958-59: The Spanish novel of today: an analysis of representative works by such authors as Zunzunegui, Cela, Laforet, Pombo, and Delibes y Arbó. Prerequisite: Spanish 108; occasionally, Spanish D11, D12, or D13-D14, with written permission of the instructor. Students may receive credit for this course in different years. Offered in alternate years. Mr. LÓPEZ-MORILLAS.

152. *Studies in Spanish Literature before 1700*

Prerequisite: Spanish 107; occasionally, Spanish D11, D12, or D13-D14, with written permission of the instructor. Students may receive credit for this course in different years. Offered in alternate years.

170. *Advanced Written and Oral Spanish*

Designed to develop skill and accuracy in literary composition and oral expression. Prerequisite: Spanish 51 with grade of *A* or *B* or written permission of the instructor. Offered in alternate years. Mr. AMOR.

181. *Studies in Spanish Thought and Institutions*

Topic for 1958-59: Hispanic attitudes and problems. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. KOSSOFF.

MODERN LANGUAGES: SPANISH

184. *Studies in the Spanish Language*

Topic for 1958-59: The living language. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. AMOR.

186. *Studies in Spanish Literature*

Selected topics designed to acquaint the student with major works of Spanish literature and scholarly studies of them. For students in the Master of Arts in Teaching program. Not open to undergraduates.

198. *Senior Conference*

Special work or preparation of Honors Thesis under the direction of a member of the Staff. Open to Honors students and to others with written permission. Mr. FICHTER and STAFF.

213. *Cervantes A*

A study of Cervantes' works exclusive of *Don Quijote*. Offered in alternate years. Mr. FICHTER.

214. *Cervantes B*

A study of *Don Quijote*. Offered in alternate years. Mr. FICHTER.

219. *The Spanish Drama to 1635*

The development of the *comedia*, with special emphasis on Lope de Vega. Offered in alternate years. Mr. FICHTER.

220. *The Spanish Drama from 1635 to 1681*

The later development of the *comedia*, with special emphasis on Calderón. Offered in alternate years. Mr. FICHTER.

221. *Problems in Spanish and Spanish-American Literature*

Topic for 1958-59: Federico García Lorca. Mr. LÓPEZ-MORILLAS.

223. *Seminar*

Special topics and problems in Spanish and Spanish-American literary history. Topic for 1958-59: Problems of research in the *Siglo de oro* drama. Mr. FICHTER.

238. *History of the Spanish Language*

Outline of historical phonology and morphology. Offered in alternate years. This course should be taken after General Romance 237. Mr. SCHNERR.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

Music

Professors COOLIDGE (Chairman), DINNEEN; Associate Professors FISCHER, VAN KOPPENHAGEN, Visiting Associate Professor MADEIRA; Assistant Professors LAURENT, NELSON; Lecturer, Miss MANGLER; Assistant, Mr. KUNZEL.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the elementary course (Music D1), the requirement for concentration in music is: eight semester courses or equivalent, including Music 3, 13, 14, and 197, 198. The Department recommends that ordinarily the program contain eight semester courses or equivalent in addition to Music 197, 198. Membership in one of the recognized choral groups or the orchestra is required.

HONORS. There are three co-equal Honors Programs possible in Music: (1) Music History or Musicology, (2) Music Theory or Creative Music, and (3) Music Performance or Applied Music. A topic, leading to a thesis, in one of these areas is selected in consultation with the Honors advisor of the department.

The thesis project depends on the choice of program. There are three possibilities having equal value: a critical-analytical summary for the Music History program, an original string quartet movement or work for orchestra for the Creative Music program, or a senior recital for the Music Performance program.

HISTORY AND LITERATURE

D1. *Introduction to Music*

A variety of masterpieces, including symphonies, operas, and works for piano, presented with a view to intelligent listening. Emphasis on a keener grasp of rhythms, harmonies, forms, and other elements. Recordings and reading assigned for outside study. May be taken to satisfy a distribution course requirement under Humanities. Messrs. FISCHER and VAN KOPPENHAGEN, and STAFF.

2. *An Historical Introduction to Music*

Discussion of selected musical works in connection with cultural influences and other arts. Elective only for juniors and seniors who have not taken Music D1. Recordings and reading assigned for outside study. Mr. LAURENT.

3. *Survey of Orchestral and Operatic Music*

Symphonies, orchestral suites, and operas from various periods including

MUSIC

the contemporary. Lectures; recordings and reading assigned for outside study. Prerequisite: Music D1 or the written consent of the instructor. Mr. LAURENT.

4. *Nineteenth Century Composers*

Significant works by Beethoven, Schumann, Mendelssohn, Berlioz, Liszt, Wagner, Brahms, Tchaikovsky, and others. Orchestral, choral, operatic, and chamber compositions. Lectures; recordings and reading assigned for outside study. Prerequisite: Music D1 or the written consent of the instructor. Mr. COOLIDGE.

6. *Survey of Music for Keyboard Instruments*

Study of the nature of the harpsichord, clavichord, piano, and organ and of the music written for them from the Elizabethan period to the present. Illustrations at the harpsichord, piano, and organ; recordings and reading assigned for outside study.

23. *Beethoven and Brahms*

A study of symphonies, concerti, choral solo, and chamber works, with emphasis on analysis. Lectures; recordings and reading assigned for outside study. Elective by written consent of the instructor. Prerequisite: Music D1.

71. *Choral Music*

An historic survey of choral literature including a consideration of program building and elementary conducting. Bibliography of choral literature. Prerequisite: Music D1 and membership for one year in the Brown University Chorus, the Chapel Choirs, or the Glee Clubs. Elective by written consent of the instructor. Messrs. DINNEEN and LAURENT.

106. *Twentieth Century Composers*

Developments in contemporary music illustrated through a study of important orchestral works, operas, ballets, and other forms as used by Debussy, Sibelius, Strauss, Schoenberg, Stravinsky, Bartok, Milhaud, Walton, Hindemith, Prokofieff, Harris, Copland, and others. Lectures; recordings and reading assigned for outside study. Each student will investigate the work of a composer not included in the lectures and report in a term paper. Prerequisite: Music D1 or the written consent of the instructor.

122. *The Life and Works of Bach*

Consideration of the life of Bach in relation to family, predecessors, and contemporaries, and influences which operated on the composer. Consideration of the keyboard, chamber, orchestral, and choral works as well as combined forms. Lectures, field trips, and individual research projects. Elective by written consent of the instructor.

131. *American Music: the Colonial Era and through the Civil War*

Psalmody, secular songs, folk and dance music, plays with music, operas. The concert life and music publishing. Research in the collections of the libraries. Miss MANGLER.

132. *American Music: 1865 to the Present*

Songs and piano compositions, operas, oratorios, orchestral works, music in education, the American "schools" of composition. Research in the collections of the libraries. Miss MANGLER.

141. *Oratorio and Symphony in the Classic and Romantic Eras*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. PICHIERRI.

142. *Music in the Twentieth Century*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. COOLIDGE.

191-192. *Special Topics*

Individual topics in advanced theory, composition, or history. Elective for qualified students by permission of the department chairman. Required for Honors students in music in the senior year. Available for Honors students in related fields by arrangement with Honors counselors. Messrs. COOLIDGE, DINNEEN, NELSON and LAURENT and Miss MANGLER.

197, 198. *Advanced Music History and Literature*

A detailed study of music in Western culture. In addition to the consideration of a wide variety of musical literature and important historical trends, the course stresses three special techniques: score analysis, preparation of essays, and lecturing on selected topics. Required for concentration. Messrs. DINNEEN, COOLIDGE, and LAURENT.

291, 292. *Reading and Research*

Special topics in European or American music. Messrs. COOLIDGE, DINNEEN, and LAURENT.

THEORY

13, 14. *Theory of Harmony*¹

Formation and connection of chords; principles of modulation; harmonic and form analysis; ear training. Elective by written consent of the instructor. Mr. NELSON and Miss MANGLER.

15. *Creative Writing*

Composition in the smaller two-part and three-part forms. Elective by written consent of the instructor. Prerequisite: Music 13, 14. Mr. NELSON.

¹ Students in concentration are expected to complete these courses prior to their seventh semester or establish proficiency by passing an examination drawn up by the Department.

MUSIC

16. *Counterpoint*

Introduction to contrapuntal techniques, both strict and free. Writing of two-part and three-part counterpoint; analysis of contrapuntal textures. Elective by written consent of the instructor. Prerequisite: Music 13. Mr. NELSON.

117. *Advanced Counterpoint and Fugue*

Continuation and expansion of material in Music 16. Imitation, canon; fugal writing in three and four parts; writing in the style of the chorale-prelude; analysis of fugues in *The Well-Tempered Clavier* by Bach. Elective by written consent of the instructor. Prerequisite: Music 16. Mr. NELSON.

118. *Elements of Orchestration*

Introduction to standard symphonic instrumentation and the basic principles of orchestration. Elective by written consent of the instructor. Prerequisite: Music 13, 14. Mr. NELSON.

APPLIED

Only two of the sequences in this group of applied music courses may be counted for concentration.

51-52. *Instruction in Vocal or Instrumental Music; or Instrumental Ensemble Music*^{1,2}

For students who wish to continue their study of voice or instrument or to study by means of performance the literature of chamber music (see statement on page 209 regarding opportunities for instruction on a non-credit basis). To receive permission to enroll in this course, the student confers with the chairman of the Department concerning an informal audition for members of the Department, choice of teacher, and other details. One hour of instruction weekly. Public auditions are scheduled regularly and, in some instances, a student may prepare for a Senior Recital. Half-course each semester. Elective by written consent of the chairman of the Department. Mr. VAN KOPPENHAGEN and STAFF.

53-54. *Instruction in Vocal or Instrumental Music; or Instrumental Ensemble Music* (second year)²

Half-course each semester. Elective by written consent of the chairman of the Department. Mr. VAN KOPPENHAGEN and STAFF.

155-156. *Advanced Instruction in Vocal or Instrumental Music*²

For students who wish to continue their study of voice or instrument. The course is designed to include at least one recital or concert during the aca-

¹ Permanent credit only when Music 13, 14 is completed or proficiency in Theory is established by passing an examination given by the Department.

² Any fees charged by an instructor are in addition to the regular tuition charge for the course.

demic year. To receive permission to enroll in the course the student confers with the chairman of the Department concerning an informal audition for members of the Department, choice of teacher, and other details. At least one hour of instruction weekly. Half-course each semester. Elective by written consent of the chairman of the Department. The STAFF.

157-158. *Advanced Instruction in Vocal or Instrumental Music* (second year)¹

Half-course each semester. Elective by written consent of the chairman of the Department. The STAFF.

The Brown University Chorus. Mr. LAURENT, Director.

The Chorus performs major choral works with the University Orchestra and the Rhode Island Philharmonic Orchestra, presents special programs at the Rhode Island School of Design Museum, and combines with other college choruses for cantatas and oratorios with prominent soloists. Membership is open to undergraduate and graduate students who qualify by passing an audition requirement. Auditions are scheduled during the registration period. Two rehearsals are held each week.

The Brown University Orchestra. Mr. FISCHER, Conductor.

Numbering some seventy players, the orchestra gives four to six concerts each season, including one which features outstanding student soloists. Membership is open to all students, faculty, administrative officers, and qualified amateurs from the community. One rehearsal is held each week, with extra rehearsals scheduled before concerts.

The Brown University Band. Mr. FISCHER, Director.

The Band functions as a marching band of undergraduate men during the football season and accompanies the team to all but one game. Awards are made for participation in three marching seasons. During the rest of the season the band is a concert group and includes Pembroke students as well as undergraduate men. Admission to the band is by audition during the registration period. Two rehearsals are held each week.

The Pembroke Glee Club. Mr. NELSON, Director.

Activities include two joint concerts each year with the glee clubs of such colleges as Bowdoin, Trinity, Amherst, Yale, or Dartmouth, participation in the annual Latin Carol Service, and presentation of one on-campus concert. Membership is open to undergraduate women who pass the audition requirement. Tryouts for freshmen and transfer students are scheduled during the first week of the semester. Two rehearsals are held each week.

¹ Any fees charged by an instructor are in addition to the regular tuition charge for the course.

PHILOSOPHY

The Brown University Glee Club. Mr. LAURENT, Director.

The Glee Club presents both on-campus and out-of-town concerts and features a Spring Tour during the vacation period in most years. Membership is open to all undergraduate men who qualify by passing audition requirements. The audition schedule is announced during the registration period. Four rehearsals are held each week.

The Chapel Choirs. Mr. DINNEEN, Director; Miss ADAMS, Assistant to the Director.

All students are eligible to sing in the Chapel Choirs. In addition to regular Chapel and Vesper services, the Choirs present an annual mid-winter concert of sacred music and appear on regional and coast-to-coast radio broadcasts. Auditions are held the first week in May. Two rehearsals are held each week.

Additional Opportunities for Study of Voice or Instrument

Any student, regardless of technical proficiency, who wishes to receive instruction in piano, organ, violin, viola, cello, harp, voice, or other standard instruments will be assisted in doing so by members of the Department.

Philosophy

Professors CHISHOLM (Chairman), TOMAS; Visiting Professor FALK; Associate Professors TAYLOR, LADD;¹ Assistant Professors LENZ, SALMON, FEINBERG; Instructor, Mr. SCHMITT; Assistants, Messrs. CORNMAN, CANFIELD, and LEHRER, and Mrs. MILLER.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. The requirement for concentration in philosophy is: eight semester courses or equivalent, which must include Philosophy 58, 101, 102, and 122. Philosophy D1, D2 and IC 1-2 do not count toward concentration.

HONORS. The following courses are required: Philosophy 55, 58, 101, 102, 122, 191 or 198, and three other courses in philosophy, including either Philosophy 151 or 153.

During the senior year candidates will write a Senior Thesis on a subject to be selected with the approval of the department. This work will be done in connection with Philosophy 191 or 198 for one or more semesters. Senior candidates will also participate in the work of the Department colloquium.

¹ On leave of absence, 1958-59.

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At the end of their senior year candidates will take a Senior Honors examination consisting of three parts as follows:

Part I. Problems related to work in the whole pattern of concentration, but with special emphasis upon ethics: 3 hours.

Part II. Same as Part I, but with emphasis upon the work of courses other than ethics: 3 hours.

Part III. Special authors selected by the student from a list available at the office of the Department: 3 hours.

D1. *Philosophy and the Types of Human Experience*

A study of ethics, esthetics, and political philosophy. Critical examination of the basic assumptions of each. Elective for freshmen and sophomores. Satisfies the first half of the Philosophy distribution requirement under Humanities. To be followed by D2. Messrs. CHISHOLM, TOMAS, and LENZ.

D2. *Philosophy and the Types of Human Experience*

Critical examination of the basic philosophical assumptions of science, religion, and metaphysics. The nature of reality as conceived by a number of the great philosophers. Elective for freshmen and sophomores. Satisfies the second half of the Philosophy distribution requirement under Humanities. Prerequisite: Philosophy D1. Messrs. CHISHOLM, TOMAS, and LENZ.

IC 1-2. *The Philosophy of Justice and Knowledge*

A study and critical evaluation of the basic philosophical ideas expressed in Plato's *Republic* and in John Locke's *Essay Concerning Human Understanding* or Spinoza's *Ethics*. The philosophical problem of the nature of human knowledge and of ultimate reality; its relevance to morals, education, politics, and religion. Messrs. FALK, TAYLOR, SALMON, FEINBERG, and SCHMITT.

CONTACT COURSES

These courses deal with branches of philosophy which have specially close relations with certain other subjects, such as art and religion.

55. *Logic*

The conditions of clear statement and valid argument; definition and classification; syllogism and other types of formal reasoning; detection of fallacies. Introduction to symbolic logic. Elective for sophomores, juniors, and seniors. Mr. CHISHOLM.

58. *Ethics*

The nature of good and evil, right and wrong, duty, social obligation. A survey of possible views. Their bearings on problems of the individual and of the state and other social institutions. Mr. FEINBERG.

PHILOSOPHY

151. *Philosophy of Religion*

A critical and constructive study of the nature of religion, of its various forms and manifestations, and of its functions in human life. Consideration of special topics. Elective for sophomores, juniors, and seniors. Mr. TAYLOR.

153. *Philosophy of Art*

The nature of art and beauty, their relations, and their functions in society, esthetic contemplation, the esthetic feelings, and the esthetic object. Standards of criticism. Elective for sophomores, juniors, and seniors. Offered in alternate years. Mr. TOMAS.

154. *Philosophy of Education*

A critical examination of the major conceptions of education from Plato to Dewey. Special attention will be given to the philosophical principles underlying these conceptions. Mr. LENZ.

161. *Philosophical Analysis of Current and Classical Literature*

Exercise of the analytical and evaluative apparatus acquired through other study of philosophy. Reading and philosophical criticism of literary works containing ideas significant for ethics, social policy, religion, art, science, education, or other major human interests. Offered in alternate years. Mr. TOMAS.

169. *Philosophy of Science*

Analysis of the methodology of the empirical sciences and the nature of scientific explanation. Inductive inference and probability. Convention and definition in science. The nature and status of theoretical concepts. The relation between observational data and scientific hypotheses. Important philosophies of science. Mr. SALMON.

HISTORICAL AND SYSTEMATIC COURSES

101. *Ancient and Mediaeval Philosophy*

A survey of the development of occidental philosophy from early Greek times to the Renaissance. Elective for juniors and seniors. Mr. TAYLOR.

102. *Modern Philosophy*

A survey of the development of occidental philosophy from the time of the Renaissance to Schopenhauer. Prerequisite: Philosophy 101. Elective for juniors and seniors. Mr. LENZ.

122. *Recent and Contemporary Philosophy*

A survey of the development of occidental philosophy from Schopenhauer to the present time. Prerequisite: Philosophy 101, 102 or their equivalent. Elective for juniors and seniors. Mr. FALK.

125. *History of Philosophy in America*

A survey of the development of philosophy in America from the colonial period to the present. Elective for juniors and seniors. Mr. TOMAS.

191. *Topical Investigations*

Tutorial course designed primarily for Honors students. Independent study under individual guidance. Problems or topics for study are assigned to each student, who will report in writing and orally. Elective by written consent of the Department for seniors who have credit for not less than two years of philosophy. The STAFF.

198. *Senior Seminar*

Intensive reading, discussion, and criticism directed toward the attaining of solutions to outstanding philosophical problems. Conducted entirely by the seminar method for students concentrating in philosophy. Mr. CHISHOLM.

GRADUATE COURSES

Advanced graduate instruction in the Department of Philosophy is carried on mainly by independent investigation of special topics under individual supervision. Any of the courses listed below may be elected more than once.

201. *Research in Philosophy*

Research under individual guidance by special arrangement with members of the Department. The STAFF.

202. *Seminar*

Topic for I, 1958-59: Problems of Empiricism. Mr. LENZ.

203, 204. *Seminar*

Topics for 1958-59: I, Kant's Practical Philosophy. Mr. FALK; II, Problems of the Self. Mr. TAYLOR.

205, 206. *Seminar*

Topics for 1958-59: I, Mathematical Logic, Mr. CHISHOLM; II, Problems of Aesthetics, Mr. TOMAS.

207, 208. *Seminar*

Topic for I, 1958-59: Utilitarian Moral and Legal Theory. Mr. FEINBERG.

209. *Theories of Knowledge*

A survey and critical discussion of the chief contemporary theories of knowledge. Mr. CHISHOLM.

PHYSICS

221. *Department Colloquium*

Discussion by the Staff and advanced students of research problems and current technical literature in philosophy and allied fields. Presentation and criticism of original papers. Required without credit of all graduate students in philosophy. Meets ordinarily twice a month. The STAFF.

Physics

Professors BEYER, BRAY, FARNSWORTH, LINDSAY, MORSE, TRUELL, WILLIAMS (Chairman); Associate Professors COOPER, FELDMAN, NYBORG, PECK, SHAPIRO, WESTERVELT; Visiting Associate Professor (Research) KECK; Assistant Professors DILLON, EUBANK; Assistant Professors (Research) DEKLERK, LIEBMANN; Research Associates, Messrs. HANEMAN, MADDEN, and SAPERSTEIN; Visiting Research Associates, Messrs. ENER, NEGITA, OLSEN, and ZINK; Technical Assistant, Mr. LUBRANO; Research Assistants, Messrs. ANDO, CRISTALL, CROUCH, HASSLER, HERBJØRNSEN, HODGES, HWA, IYENGAR, KAPLAN, KOWALSKI, MARSH, MASSIMO, O'KEEFE, OMAN, PANVINI, RING, RYAN, and TUUL; Assistants, Messrs. ATTANASIO, BELLIN, BUTLER, CHIARODO, COTTIS, HOOPER, JACKSON, KNUTSON, LEE, LEIBOWITZ, LETCHER, LEVENTHAL, MONROE, SEEGAL, TAYLOR, THOMAS, WALKER, YUN, and ZATZICK.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the elementary course (Physics DI), the requirements for concentration in physics are Physics 3, 4, 37, 38, 111, plus two semester courses (to be chosen from 114, 116, 121, 122, 125) and Mathematics 10 or 22. With written permission of the Department the following may be accepted: 2, 37, 38, 111, plus three courses (to be chosen from 114, 116, 121, 122, 125) and Mathematics 10 or 22.

The Joint Concentration in Mathematics and Physics is described on page 75. Requirements for the degree of Bachelor of Science in Physics are given in the Section "Requirements for Degrees."

Students intending to concentrate in physics should consult the chairman of the Department for advice in arranging their programs.

HONORS. Candidates for Honors in physics will be expected to pursue a more rigorous and extensive program than those merely concentrating in the subject. In addition they will be required to take a diagnostic examination at the end of the sixth semester, to begin an Honors thesis during the seventh semester and complete it (as a part of Physics 198) during the eighth semester. Honors candidates are also expected to participate in a

special Honors seminar throughout their period of participation in the program and to take a special written comprehensive examination in general physics and an oral examination on the thesis at the end of the eighth semester. Further details about the program may be obtained from the Chairman of the Department or the departmental Honors committee.

PREPARATION FOR SPECIAL FIELDS. Students planning to study medicine may satisfy the requirement in physics for most medical schools by taking Physics D1, 2.

D1. *Elementary Physics*

Distribution course in physics designed to acquaint the student with the fundamental methods of physical science. Lectures with demonstrations, conferences for discussion of problems and tests, and laboratory work. Considerable emphasis on the contemporary aspects of physics. Six hours of attendance. Mr. MORSE and STAFF.

2. *General Physics*

A second semester of physics for pre-medical, Navy, and Air Force students who need a year of elementary physics; may be taken as a continuation course fulfilling a distribution requirement in Physics under Sciences. Lectures, conferences, and laboratory work. Six hours of attendance. Prerequisite: Physics D1 or equivalent. Mr. MORSE and STAFF.

3, 4. *Fundamental Physics*

Basic course in physics for those intending to do further work in the physical sciences. Lectures, conferences, and laboratory. Six hours of attendance. Required or elective for the degrees of Bachelor of Science in Physics, Chemistry, and Applied Mathematics; and the degree of Bachelor of Arts with concentration in Physics or Mathematics and Physics (prerequisites: Physics D1 or equivalent, Mathematics 2 or equivalent, and Mathematics 21-22 concurrently). Elective for others by written permission of the department. Mr. EUBANK.

37. *Basic Principles of Laboratory Physics*

Emphasizes laboratory work, including graphical methods, theory and recording of measurements, and the estimation of errors, in connection with experiments drawn from all basic fields of physics. Calculus is used freely. Six hours of attendance. Prerequisite: Physics 3, 4; or Physics 2 and written consent of the instructor. Mr. BEYER.

38. *Intermediate Mechanics and Thermodynamics*

Basic concepts of mechanics, the motion of particles, properties of aggregates of particles, kinetic theory, and elementary thermodynamics. Five

PHYSICS

hours of attendance. Prerequisite: Physics 3 or 37; Mathematics 9-10 or 22 (may be taken concurrently). Mr. COOPER.

61. *Modern Physics for Engineers A*

Wave motion, geometrical and physical optics, and origins of electromagnetic radiation. Laboratory work is provided. Six hours of attendance. Required in the sophomore year of all candidates for the degree of Bachelor of Science in Engineering. Elective for other students by written consent of the Department. Mr. WILLIAMS.

62. *Modern Physics for Engineers B*

Covers kinetic theory of gases and elementary statistical reasoning in physics, atomic theory and atomic structure, nuclear physics. The calculus and differential equations are used freely. Laboratory work is provided. Six hours of attendance. Required in the senior year of all candidates for the degree of Bachelor of Science in Engineering. Elective for other students by written consent of the Department. Mr. WILLIAMS.

107. *Structure of Matter*

Offered in the Graduate Summer School for Teachers, 1958, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. DILLON.

109. *Atomic Physics*

Offered in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program. Not open to undergraduates.

111. *Atomic Physics*

Elementary charged particles, radioactivity, atomic models, the Bohr theory of atomic structure, elementary wave mechanics, quantum theory of solids, nuclear physics. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 38 or approved equivalent and Mathematics 9-10 or 21-22. Mr. SHAPIRO.

114. *Intermediate Electricity and Magnetism*

A systematic treatment from both classical and modern standpoints. Laboratory work is provided. Six hours of attendance. Prerequisites: Physics 37 and Mathematics 9-10 or 21-22. Mr. DILLON.

116. *Introduction to Nuclear Physics*

Survey of nuclear phenomena; origin, properties, and effects of nuclear radiations; artificial transmutation of the elements; nuclear binding forces; energy levels; cosmic rays; nuclear biophysics. Laboratory work will be provided. Five hours of attendance. Prerequisite: Physics 111. Mr. EUBANK.

121. *Radiation Physics A*

The wave equation and its solutions; nature and properties of waves in general; applications to vibrations in strings, membranes and rods, to water waves, acoustics and thermal conduction. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 38 or approved equivalent and Mathematics 29 or approved equivalent. Mr. TRUELL.

122. *Radiation Physics B*

The wave equation in the fields of electromagnetism and quantum mechanics; origins and properties of the oscillating electromagnetic field; physical optics; the wave properties of matter; the Schrödinger equation. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 121 or approved equivalent. Mr. TRUELL.

125. *Advanced Mechanics and Thermodynamics*

Hamilton's principle, Lagrange's equations, canonical equations, phase spaces, statistical ensembles, principles of thermodynamics, physical applications of thermodynamics. Prerequisite: Physics 38 and Mathematics 108 or approved equivalent. Mr. NYBORG.

128. *Acoustics*

The generation and detection of sound waves; transmission of sound through various media; sound absorbing structures; electroacoustics; the problem of hearing; non-linear acoustics; ultrasonics. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 37, 38 or approved equivalent.

198. *Senior Conference*

Offered either semester. Review of general physics and preparation of thesis project. Required of candidates for the degree of Bachelor of Science in Physics. Elective for other undergraduates with written permission of department. Mr. PECK and STAFF.

199. *Special Topics in Experimental and Theoretical Physics*

Topics in special areas of physics, offered from time to time upon sufficient demand from qualified students. Elective by special permission of the department. Open also to students in the Master of Arts in Teaching program. The STAFF.

202. *Techniques of Experimental Physics*

205. *Theoretical Mechanics*

206, 207. *Quantum Mechanics A, B*

POLITICAL SCIENCE

- 209. *Electrodynamics and Relativity*
- 214. *Statistical Mechanics*
- 215, 216. *Special Topics in Physics*
- 217, 218. *Nuclear Physics A, B*
- 219. *Solid State Physics*
- 223, 224. *Seminar-Reading Courses in Research Topics*
- 231. *Low-Temperature Physics*
- 232. *Quantum Mechanics C*
- 233. *Quantum Theory of Fields*
- 234. *Quantum Theory of Solids*
- 235. *Radiofrequency and Microwave Spectroscopy*
- 237. *Ultrasonics*
- 238. *Non-linear Acoustics*
- 291, 292. *Research*

Political Science

Professor DODGE (Chairman); Associate Professor PERKINS; Assistant Professors McCONNELL, CORNWELL, GOODMAN, WILLIAMS; Instructors, Messrs. MANWARING and RINTALA; Assistants, Messrs. LEVINE, MIDGLEY, PRISLEY, and SPRINTHALL.

GENERAL PREREQUISITE. Political Science DI or IC 1, 2 or IC 3, 4 is prerequisite to all other courses in political science, except where other provision is made in the course statement, or by written consent of the instructor.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. Except by permission of the Department, granted upon formal application, a student must obtain a grade of C or better in the introductory course (Political Science DI or IC 1, 2 or IC 3, 4) in order to concentrate in political science.

In addition to the introductory course, to be completed by the end of the fourth semester, the requirements for concentration in political science may be met by Political Science 103, 106, 109, 110, 117, and three other semester courses.

POLITICAL SCIENCE

HONORS. For admission to Honors in political science a student must have obtained a grade of *B* or better in the introductory course.

The Honors program will comprise, in addition to the introductory course, at least ten semester courses in political science, including Political Science 191, 192 to be taken in the seventh and eighth semesters. The last-named courses cover the preparation of a thesis on a selected topic within the special field of interest.

DI. *Principles of Political Science*

A study of the basic concepts of political science as illustrated in political institutions and practices. May be taken to satisfy a distribution requirement in Government under Social Studies. Mr. CORNWELL and others.

IC 1, 2. *The Political Ideal of Freedom*

A critical study of three great themes: liberty, equality, and power, in selected historical periods. The classics studied will be Lord Acton and Alexis de Tocqueville with collateral reading from Plato to Lenin. Messrs. DODGE, McCONNELL, GOODMAN, WILLIAMS, and RINTALA.

IC 3, 4. *The Idea of World Peace*

A critical study of the main ideas associated with the search for peace and security in the age of the nation-state. The classics studied will be the peace projects of the Abbé de St. Pierre, Rousseau, Bentham, and Kant. Assessment of the Holy Alliance, League of Nations, and United Nations. Messrs. GOODMAN and RINTALA.

103. *American National Government*

The basic principles of the American governmental system, with special emphasis on the national government. Mr. CORNWELL.

106. *The Government of the U.S.S.R.*

A study of the historical and ideological foundations, the organization and the technique of the Soviet system. Mr. McCONNELL.

107. *Political Parties and Pressure Groups*

The functions, history, organization, and activities of political parties and the nature and activities of pressure groups in the United States with some emphasis on state and local politics. Mr. CORNWELL.

109. *History of Political Theory*

Ancient and medieval political thought; early modern political theory from the Renaissance and Reformation to the seventeenth century. Mr. DODGE.

POLITICAL SCIENCE

110. *History of Political Theory*

An historical survey of political thought from the beginning of the seventeenth century to the contemporary period. Mr. DODGE.

113. *Far Eastern Government and Politics*

Political ideas and institutions in China and Japan with considerable emphasis on the historical background. Mr. WILLIAMS.

115. *American Constitutional Law*

A study of the role of the Supreme Court in defining the extent of Federal and State governmental power and in shaping national policy, through the reading of judicial opinions. Mr. MANWARING.

116. *American Constitutional Law*

A study of the role of the Supreme Court in enforcing Constitutional limits on governmental power and in protecting individual rights, through the reading of judicial opinions. Mr. MANWARING.

117. *International Politics*

Political and legal principles underlying the modern state system. Material and ideological factors which influence state policies. Analysis of the power position, interests, and policies of key states. Consideration of selected conflict situations. Mr. PERKINS.

118. *International Organization*

The development of international organization. The structure and functioning of the United Nations and other intergovernmental organizations. Mr. PERKINS.

120. *Problems of International Policy in Special Areas*

Problems arising from the impact of western ideas, institutions, and industrialism upon under-developed areas and their significance for international relations. Members of the American Universities Field Staff will participate. Prerequisite: Economics 105, 154, and Political Science 117. Mr. PERKINS.

121. *Governments of Continental Europe*

A comparative analysis of the governmental systems of France, Italy, Germany, and Poland. Mr. McCONNELL.

122. *Foreign Relations of the United States*

The means by which United States foreign relations are conducted. Analysis of United States policies in terms of historical development and conditioning factors. Some problems facing the United States in its foreign relations today. Mr. PERKINS.

POLITICAL SCIENCE

123. *British Parliamentary Democracy*

A study of the parliamentary system in Britain and the Commonwealth of Nations. Mr. WILLIAMS.

124. *American Political Theory*

A study of the development of American political thought from the colonial period to the present. Mr. DODGE.

126, 127. *Twentieth-Century United States Foreign Policy*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. MOUNTAIN.

191. *Individual Study Project*

Directed reading and preparation of a thesis on an approved subject. Required of all seniors who are candidates for Honors in political science in the last two semesters of their course. The STAFF.

192. *Individual Study Project*

Continuation of 191.

PRIMARILY FOR GRADUATE STUDENTS

201. *Contemporary International Relations*

Topic for 1958-59: Topics in the Foreign Relations of the United States. Mr. PERKINS.

203. *Modern Political Thought*

Topic for 1958-59: Topics in eighteenth and nineteenth century French political thought. Mr. DODGE.

205. *American Politics and Administration*

Topic for 1958-59: Topics in American government and politics. Mr. CORNWELL.

206. *Problems of American Constitutional Law*. Mr. MANWARING.

207. *Imperialism and Nationalism*.

Topic for 1958-59: Non-economic sources of Imperialism. Mr. WILLIAMS.

208. *Problems of European Governments*

Topic for 1958-59: Problems in the History of Russian Political Thought. Mr. McCONNELL.

209, 210. *Reading and Research*

Work with individual students in connection with special reading, research problems, or preparation of theses. The STAFF.

Psychology

Professors SCHLOSBERG (Chairman), PFAFFMANN,¹ RIGGS;² Associate Professors DAVIDS, KLING; Assistant Professors BLOUGH, CLAYTON, CHURCH, ENGEN, KRAUSKOPF, LEVY, LIPSITT, ROSENBLITH, SCHRIER; Lecturer, Mr. BOSQUET; Instructor, Mr. ERICKSON; Research Assistants, Messrs. HOCKMAN, MENTZER, ROSE, and SHORTESS, and Miss TULUNAY; Assistants, Messrs. ALDRICH, HALE, KEESEY, KLAPPER, NORD, OAKLEY, and SPEARS, and Mrs. ERICKSON, and Misses COOPER, KEHOE, and NIEHL.

PREREQUISITE. One of the following courses is prerequisite to all other courses in the department: Psychology D1, IC 1-2, or IC 3-4.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the elementary courses (Psychology D1, or Psychology IC 1-2, or Psychology IC 3-4), the requirements for concentration in psychology are: 101, 104, 105 (or 103), 106, 107, 198, and two optional courses. Elementary courses in biology, mathematics, and physics furnish a useful background for work in psychology. Psychology 101 (statistics) should be taken in Semester V or earlier.

See also the description of the interdepartmental concentration in Human Biology on page 74.

HONORS. The Honors program in psychology offers exceptional students an opportunity to perform semi-independent research on topics of their own choosing. This research starts as independent reading during the junior year and culminates in a Senior Honors Thesis. Any member of the Staff may direct this research, but the students must present semi-annual reports and their thesis directly to the departmental supervisor of Honors work. Honors candidates are also expected to attend the weekly meetings of the Colloquium during the senior year.

Course Requirements. Honors candidates will take the basic concentration courses (Psychology 101, 104, 105 (or 103), 106, 107, and 198), a thesis course (199), and at least three additional courses which may be in psychology or in related fields. Students who contemplate graduate work should consult the section below on "Graduate Studies."

Examinations. At the end of the senior year, candidates will take the Senior Comprehensive Examination (two three-hour sessions, written) plus an oral examination on the special and general aspects of the Honors Thesis.

¹ On leave Semester II, 1958-59.

² On leave Semester I, 1958-59.

GRADUATE STUDIES. Students contemplating eventual graduate work in psychology should, as undergraduates, secure a reading knowledge of two of the following languages: German, French, and Russian. They should also have credit for at least a two-semester course each in biology, mathematics, and physics, plus one course in chemistry. Certain aspects of psychology are also related to sociology.

DI. *Elementary Psychology*

An outline of the major facts and principles of human behavior. Lectures, demonstrations, and laboratory. This course may be taken to fulfill one of the distribution course requirements in the Biological Sciences. Messrs. SCHLOSBERG and KLING.

IC 1-2. *Psychology as the Science of Behavior*

A critical study of the concepts underlying the definition of Psychology as the Science of Behavior. The writings of Pavlov on conditioned reflexes and of Freud on psychoanalysis will be used as original sources. These will be supplemented by writings and experimental studies of other workers up to the present day. Class and discussion meetings, laboratory experiments, and demonstrations. Messrs. PFAFFMANN, BLOUGH, CHURCH, LIPSITT, SCHRIER, and ERICKSON.

IC 3-4. *Measurement of Mind*

Speculations concerning the relation of mind and body will be examined. Particular attention will be paid to Fechner's formulation of this problem which encouraged the application of scientific measurement in psychology. The power of scientific measurement in solving problems in perception, intelligence, attitude, and personality will be discussed. Discussion meetings and laboratory demonstrations. Mr. ENGEN and Miss CLAYTON.

6. *Applied Psychology*

The study of psychological principles and techniques of measurement as they are used in solving problems in industry, business, military affairs, vocational selection, and individual adjustment. This course will usually not be included as a part of concentration. Mr. KRAUSKOPF.

8I. *Child Psychology*

A study of behavior and development in childhood. Emphasis will be placed on such basic psychological processes as motivation, perception, and learning. Social events and processes that affect the child's development will be studied. Considerable attention will be devoted to empirical researches relevant to child psychology. Mr. DAVIDS.

PSYCHOLOGY

101. *Statistical Methods in Psychology*

An introduction to the principles and techniques of statistical analysis. Topics include the treatment of test scores, experimental design, sampling, and testing experimental hypotheses. Mr. CHURCH.

103. *Methods in Child Psychology*

A study of observational and research methods in child psychology. The history of and current trends in child development will be studied. Concurrent with class consideration of the theoretical concepts and response-measures employed by various writers, laboratory periods will permit students to observe infants and young children under both natural and experimental conditions. Mr. LIPPSITT.

104. *Psychological Testing*

An introduction to the study of psychological tests, methods, and results in the measurement of intelligence, achievement, personality, and other psychological factors. Prerequisite: Psychology 101. Mr. ENGEN.

105. *Experimental Psychology: Behavior Processes*

An experimental study of reflexes, reaction time, learning, and motivation. Mr. KLING.

106. *Experimental Psychology: Receptive Processes*

An experimental study of vision, audition, touch, taste, smell, and perception. Mr. RIGGS.

107. *Normal and Abnormal Personality*

A study of normal and abnormal behavior of persons. Following an introduction to fundamentals of learning, particular emphasis will be placed on the behavioral consequences of frustration, conflict, and anxiety. Open only to juniors and seniors who have had a previous course in psychology. Mr. LEVY.

111. *Advanced Psychological Testing*

The application of psychological test methods in the measurement of intelligence in normal children and adults. Class meetings and field work. Limited enrollment requires approval of departmental concentration advisor. Prerequisite: Psychology 104. Mr. BOSQUET.

112. *Social Psychology*

The extension of general psychological principles and methods to the study of social behavior. The determinants of attitudes and the behavior of individuals in small groups are emphasized. Open only to juniors and seniors who have had a previous course in psychology. Mr. CHURCH.

134. *Advanced Abnormal Psychology*

A study of the mechanisms and determinants of abnormal behavior, with special emphasis on methods of investigation. This course will utilize the case method in the local hospitals. Prerequisite: Psychology 107 and written consent of the instructor.

136. *Advanced Abnormal Child Psychology*

A study of the determinants and effects of psychopathology in children. Emphasis will be placed on personality dynamics, motivation, learning, and interpersonal relations of emotionally disturbed children. This course will utilize the case method in local institutions. Mr. DAVIDS.

198. *Advanced General Psychology*

This course is designed to help students in integrating their knowledge of psychology. Conducted in general by the seminar method. Required of seniors concentrating in psychology. Other students admitted only by written consent of the instructor. The STAFF.

199. *Special Problems*

Individual undergraduate research studies. Required of all Honors candidates in the senior year. Others admitted by special permission of the concentration advisor. The STAFF.

201. *Advanced Statistical Methods in Psychology*

A study of statistical techniques including small sample theory, analysis of variance, and non-parametric statistics. Prerequisite: Psychology 101 or the equivalent. Mr. LEVY.

202. *Statistical Principles of Experimental Design*

A study of important hypothetical distributions and the power of various statistical tests. Emphasis will be placed on the statistical aspects of complex experimental designs used in psychological research. Prerequisite: Psychology 201 or the equivalent. Offered in alternate years. Miss CLAYTON.

203. *Research in Experimental Psychology*

Elective by written consent of the instructor. The STAFF.

204. *Experimental Child Psychology*

An intensive study of the learning processes of children, including consideration of motivational variables insofar as these are learned or affect the learning process. Methodological issues and theoretical considerations will be discussed within the framework of the course, which is to be oriented around child learning phenomena in which a fair body of literature has accumulated. Offered in alternate years. Mr. LIPSITT.

PSYCHOLOGY

206. *Systematic Psychology*

A detailed consideration of theoretical and historical problems. Offered in alternate years.

207. *Advanced Quantitative Methods in Psychology*

A study of the mathematical techniques required in advanced psychological and physiological research. Offered in alternate years. Mr. RIGGS.

209. *Sensory Psychophysiology*

A study of the afferent-neural processes in hearing, touch, smell, and taste. Particular attention is paid to the similarities and differences among these senses and to the general principles of sensory function. Offered in alternate years. Mr. PFAFFMANN.

210. *Vision*

Analysis of the receptive processes involved in such visual functions as dark adaptation, acuity, and color discrimination. Offered in alternate years. Mr. RIGGS.

212. *Perception*

The study of the problems in visual, auditory, and tactual perception. Particular attention will be devoted to those problems that involve several sense fields. Offered in alternate years. Mr. SCHLOSBERG.

213. *Seminar in Experimental Psychology*

An analysis of theoretical and methodological problems in psychological measurement with particular emphasis on psychophysics. Mr. ENGEN.

214. *Conditional Reflexes*

Offered in alternate years. Mr. SCHLOSBERG.

228. *Personality*

The seminar will consider the operational meaning and possible experimental analysis of concepts and principles widely used in accounting for normal and abnormal behavior.

229. *Neural Foundations of Behavior*

The anatomical and functional study of the brain, spinal cord, and peripheral nervous system. Laboratory includes dissection, use of histological materials, and electrophysiological methods of recording neural activity. Offered in alternate years. Mr. PFAFFMANN.

RELIGIOUS STUDIES

231. *Learning I*

A critical study of reinforcement theories of learning. Offered in alternate years. Mr. KLING.

232. *Learning II*

A critical study of expectancy, contiguity, and dual theories of learning. Offered in alternate years. Prerequisite: Psychology 231. Mr. LEVY.

291, 292. *Special Fields of Psychology*

A reading course in areas not covered in more specialized courses. One-half course credit per semester. Messrs. LIPSITT, LEVY, and CHURCH, and Mrs. ROSENBLITH, and others.

Instrumentation for Psychological Research

Demonstrations and practical work covering the basic mechanical, electrical, optical, and photographic techniques used in psychological research. Students will be excused from those portions in which they are already proficient. No credit. Offered in alternate years. Mr. KLING and STAFF.

Psychological Colloquium

Weekly meetings for the discussion of research problems presented by visiting scholars and members of the department. No credit.

Religious Studies

Associate Professor CRARY (Chairman); Assistant Professor FRERICHs; Lecturer, Mr. BALDWIN; Instructors, Messrs. MOEHRING and DIETRICH; Assistant, Mr. POPE.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. In addition to the prerequisite course (Religious Studies D1), the requirement for concentration in Religious Studies is eight semester courses which must include Religious Studies 21 and 22; 33 or 110; 111 or 112; two courses from the following: 41, 113, 114; and two elective courses with the advice of the department.

PREPARATION FOR SPECIAL FIELDS. Students planning to study theology should elect the Biblical language courses, beginning with Religious Studies 12 or 151, 152.

RELIGIOUS STUDIES

RELATED COURSES. History 107, 108, *The Renaissance and the Reformation*; History 177, *History of Religion in America*; Art 4, *Medieval Art*; Philosophy 151, *Philosophy of Religion*.

D1. *Introduction to Religion in the West*

Beliefs, worship, and practices of the various traditions of Judaism and Christianity. Their historical background and their significance in modern American life. Messrs. CRARY, FRERICHs, BALDWIN, DIETRICH, and POPE.

IC 1, 2. *God and Destiny: The Bible and Western Man*

The course will deal with the central problem of the Bible: God and Man. Passages dealing with this central idea will be studied; non-Biblical works challenging or expanding the views presented in Scripture will be read and discussed. Extensive collateral readings, ranging from antiquity to the present time, will be encouraged. Mr. MOEHRING.

12. *Hellenistic Greek*

Selections from representative writings in Koine Greek, including the Septuagint and New Testament. Special attention is to be paid to grammatical and stylistic peculiarities of Koine Greek. An elementary knowledge of Greek is required. Mr. MOEHRING.

21. *Old Testament Literature, History, and Religion*

A study of the Old Testament against the background of the ancient Near East emphasizing the history and religion of the Hebrew people. Readings from the priestly, prophetic, and wisdom literature. Mr. FRERICHs.

22. *New Testament Literature, History, and Religion*

A study of the New Testament with emphasis upon the account of the life and teachings of Jesus. Paul's interpretation of faith and problems faced by the early Christian Church. Mr. MOEHRING.

33. *Ancient Greek and Roman Religions*

Religious thought and institutions of the Greeks and Romans from the Homeric Age to the Age of Constantine. Mr. MOEHRING.

41. *Christian Ethics*

The New Testament basis of Christian ethics. Types of interpretation of Christian ethics, both in their historical expression and in their attitude toward central ethical problems of the individual and society. Some comparisons of religious and philosophical ethics. Mr. DIETRICH.

RELIGIOUS STUDIES

103, 104. *Topics in the Bible and Its Background*

Prerequisite: Religious Studies 21 and 22, or permission of the instructor.
Topic for 1959-60: I, New Testament Theology. Mr. MOEHRING.

110. *History of Judaism*

The principal contributions of the Biblical, Talmudic, and medieval periods to the Jewish religion. Hasidism. History, development, and recent trends in modern Orthodox, Conservative, and Reform Judaism. Mr. FRERICHs.

111, 112. *History of Christian Thought*

The development of Christian thought in the West. Its institutional context; seminal thinkers; major movements; cultural and liturgical expressions. I. Early and Medieval. II. The Modern Period (prerequisite: Religious Studies 111 or permission of the instructor). Mr. DIETRICH.

113. *Types of Modern Religious Thought in the West*

Important religious perspectives from the 19th century to the present. The impact of science on religious thought. Liberal Christianity, the social gospel, naturalistic humanism, neo-orthodoxy, and neo-Thomism. Mr. CRARY.

114. *Problems in Religious Thought*

Perennial problems confronting religious thinkers: the nature of religious knowledge (reason, intuition, and faith); the nature and meaning of human existence; the problem of evil; history and human destiny. Mr. CRARY.

121, 122. *Religions of the East*

151, 152. *Elementary Hebrew*

Elements of Hebrew grammar and syntax. Translation of Old Testament prose narratives. Mr. FRERICHs.

198. *Topics in Religion*

209, 210. *Seminar*

Special topics to meet the needs of advanced students in the study of religion. Topics for 1958-59: I, Augustine. Mr. DIETRICH; II, Reinhold Niebuhr—his religious, social, and political thought. Mr. CRARY.

221, 222. *Seminar*

Topic for 1958-59: II, Hebrew Historiography. Mr. FRERICHs.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

Sociology

Professors WHITNEY, MAYER (Chairman); Associate Professors GIDDINGS, PFAUTZ, GOLDSTEIN; Assistant Professors WRONG, SCHULZE; Instructor, Mr. MEHTA; Research Assistant, Mr. STOCKWELL; Assistants, Mr. LAMBERTY, and Mesdames SAPERSTEIN and WILDER.

GENERAL PREREQUISITE. Sociology DI or IC 1, 2 is prerequisite to all other courses in sociology except by written consent of the instructor involved or as indicated in the course descriptions.

DISTRIBUTION REQUIREMENT. See pages 70-72.

CONCENTRATION. Except by permission of the Department, granted upon written application, a student must obtain a grade of C or better in Sociology DI or IC 1, 2 in order to concentrate in sociology.

In addition to the introductory course (Sociology DI or IC 1, 2) to be completed by the end of the fourth semester, the requirements for concentration in sociology are eight semester courses including 104 and 111 and 182 and 198 (both ordinarily in Semester VIII). A comprehensive examination must be passed in the senior year.

See also the description of the interdepartmental concentration in Human Biology on page 74.

HONORS. For admission to candidacy for Honors in sociology a student must have obtained a grade of B or better in the introductory course; and must have a general average in the University of at least 3.0. All programs must be approved by the Honors advisor for the Department.

The Honors program will comprise, in addition to the introductory course, at least ten semester courses in sociology including, in addition to the concentration requirements, Sociology 196 in the sixth semester and 191, 192 in the seventh and eighth semesters. Course 191, 192 includes the preparation of a thesis on a selected topic within the student's special field of interest. An Honors examination, written and oral, must be passed in the eighth semester.

DI. Social Groups and Social Change

An analysis of human groups and social relations and an examination of the processes and consequences of social change. May be taken to satisfy the distribution requirement in sociology under Social Studies. Lecture and discussion meetings. I, Mr. SCHULZE; II, Mr. WRONG.

IC 1,2. *Man and Society*

An analysis of the major trends in the development of Western societies and value systems. Changes in population and social structure involved in the rise of modern urban societies are considered in Semester I. In Semester II modern American life is critically examined. Writers whose works receive attention include Emile Durkheim, Robert Redfield, Thorstein Veblen, and David Riesman. I, Messrs. WRONG and MEHTA; II, Messrs. SCHULZE, WRONG, and MEHTA.

101. *Human Origins*

An introduction to human paleontology and archaeology with attention to the emergence of races and the beginnings of culture. No prerequisite. Cannot be counted toward sociology concentration. Mr. GIDDINGS.

102. *Cultural Anthropology*

An examination of the principles of cultural anthropology with emphasis on the social structure and organization of nonliterate peoples. No prerequisite. Mr. GIDDINGS.

104. *The Community*

Communal life from its beginnings in the folk society, with emphasis on contemporary urban-metropolitan communities. Community types, functions, structures, and systems viewed in both their ecological and social aspects. Mr. WHITNEY.

106. *The Family*

The structure and functioning of the family in various cultures, its relation to other social institutions, and its part in social change. The family as a primary group: an analysis of status and roles of the family members, personal development in the family, conflict and cooperation in family relationships. Mr. SCHULZE.

111. *Methods of Social Research*

A beginning survey of the principal research methods employed in the social sciences, especially in sociology. Evaluation of existing research; exercises and projects. No prerequisites for students in Semesters VI, VII, and VIII. Mr. GOLDSTEIN.

120. *Culture and Personality*

An analysis of the significance of culture and social interaction for the development of personality. The nature and function of language, group norms, and social structure in the socialization process. Social and cultural factors in motivation, neurosis, and national character. Mr. PFAUTZ.

SOCIOLOGY

125. *Population and Migration*

An analysis of the causes and consequences of major population trends throughout the world; of changes in birth and death rates; and of the mobility and migration of peoples. Attention is given to population in relation to economic systems, international relations, and war. No prerequisites for students in Semesters VI, VII, and VIII. Mr. WHITNEY.

127. *Races and Minority Groups*

The nature and significance of racial differences for social relationships. Dominant-minority group relations in various countries. Religious differences and tensions. Tactics and strategies in desegregation programs. The implications of discrimination and prejudice for personality. Mr. SCHULZE.

133. *The Social Order*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

137. *Social Organization*

An analysis of power structure emphasizing the sociology of modern politics. Bureaucratic social organization, political movements and ideologies, the nature of totalitarianism, and the sociological prerequisites for a democratic polity are considered. Mr. WRONG.

138. *Social and Personal Disorganization*

An examination of the concepts of social and personal disorganization; a study of some of the major forms of social disorganization and their relation to personal disorganization. Mr. GOLDSTEIN.

139. *Social Classes*

The division of society into castes, estates, and classes, and its consequences in terms of the distribution of power. Patterns of stratification in various parts of the world. Analysis of significant empirical studies of the American stratification system. The relation of ethnic groups to the class structure. Mr. MAYER.

148. *Collective Behavior*

An analysis of crowds and panics; publics and public opinion; propaganda and social movements; fads and fashion; rumor and gossip; and of communication agencies and their function in mass society. Mr. PFAUTZ.

150. *The American Indian*

A survey of the archaeological background and ethnology of the Indians of North and South America. Cannot be counted toward sociology concen-

tration. No prerequisites for students in Semesters VI, VII, and VIII. Mr. GIDDINGS.

153. *American Indian Backgrounds*

Offered in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program. Not open to undergraduates.

156. *Race and Class in American Life*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. GORDON.

160. *Sociology of Industry*

Modern industry viewed as a complex social organization; the application of sociological concepts to the understanding of human relations in business firms and industrial plants. The development of modern industry; the growth of professional management; the functions of the executive, the role of the foreman; the social factors governing worker morale and efficiency; the formal and informal organization of workers; industrial conflict, the relation of industry, community, and society. No prerequisites for students in Semesters VI, VII, and VIII. Mr. MAYER.

181. *A Sociological Analysis of American Life*

An analysis of various aspects of contemporary American life on the basis of sociological principles and concepts. Open only by permission of the instructor. Mr. WHITNEY.

182. *Sociological Theory*

A systematic study of writings of importance in the development of sociological thought; emphasis is placed upon contributions to conceptual frames of analysis and to their place in research. Mr. MAYER.

191, 192. *Individual Research Project*

Intensive supervised reading, ordinarily culminating in a research project. A specific program will be arranged in terms of the student's individual needs and interests. Required of all students who are candidates for Honors in sociology; open to others only by written consent of the chairman of the department. The STAFF.

196. *Process and Analysis in Social Research*

A seminar examination of the research process utilizing scientific method; analysis and use of the more important techniques employed in social science research, with emphasis upon sociological materials; critical examination of research monographs. A research topic will be formulated and inves-

SOCIOLOGY

tigated by each student. Open to graduate students and to students who have completed Sociology 111 or its equivalent. Mr. GOLDSTEIN.

198. *Senior Conference: Principles of Sociology*

An intensive consideration of the principles and major concepts of sociology. Required of all concentrators in their senior year. Not open to others except by written permission of the chairman of the department. The STAFF.

PRIMARILY FOR GRADUATE STUDENTS

201. *Seminar on Social Organization*

202. *Seminar on Population*

Topic for 1958-59: Population factors in economic growth. Mr. WHITNEY.

204. *Seminar on Community and Ecology*

Topic for 1958-59: The ecological study of the community. Mr. MEHTA.

205. *Seminar on the Sociological Aspects of Contemporary Institutions*

Topic for 1958-59: The structure of power in American society. Mr. MAYER.

221. *Quantitative Methods of Sociological Analysis*

Systematic examination of and experience with the application of statistical principles and methods to the analysis of sociological data. Mr. GOLDSTEIN.

223. *Techniques of Demographic Analysis*

Procedures and techniques for the collection, evaluation, and analysis of demographic data: census and vital registration systems; measures of population composition and of fertility, mortality, and migration; construction of life tables; population estimates and forecasts. Mr. GOLDSTEIN.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, research, or preparation of theses. The course program will be suited to the requirements of the student. Intensive study of theory, data, and research methods (stressing one of these) may ordinarily be undertaken in any field in which courses are offered by the Department and in a number of others, for example, Regional Sociology, The Sociology of Knowledge, and Communication. The STAFF.

The University Libraries



University Library

The University Library, containing 883,000 bound volumes and adding about twenty thousand volumes each year, includes the John Hay Library, two Divisional Libraries, and the Pembroke College Library.

The Main Library building, erected in 1910 as a memorial to John Hay, of the class of 1858, and enlarged in 1939, houses the general collection of books, general reading rooms, divisional reading rooms and seminars in the Humanities and in History and Social Studies, and many special collections:

Harris Collection of American Poetry and Plays, founded by Judge Albert Gorton Greene, class of 1820, increased and cataloged by Caleb Fiske Harris, class of 1838, presented to the University in 1884 by the legacy of Senator Henry Bowen Anthony, class of 1833, and endowed by Samuel Coffin Eastman, class of 1857, has grown to be the world's largest collection in its field, containing at present some 122,000 bound volumes, 20,000 broadsides, leaflets, etc., 50,000 pieces of sheet music, 5,000 manuscripts, etc. Included in the Harris Collection are the *Walt Whitman Collection* of some 1,300 volumes; the *Langdon Collection of Pageants*, containing a great variety of material in approximately 250 volumes and portfolios; the *Asa Cushman Collection of Plays*, manuscripts and prompt copies, constituting a large part of Mr. Cushman's repertory during his career as actor and manager in Providence, New York, etc.; and the *Macdougall Collection* of Psalters and hymnals.

Chambers Dante Collection, 1,700 volumes, formed by a specialist on Dante, William F. Chambers, during a long residence in Florence; its strength is in scholarly editions, commentaries (chiefly in Italian), and works concerning Dante's time.

Dorr Collection, manuscripts, pamphlets, broadsides, and newspaper clippings gathered by Thomas W. Dorr (of "Dorr's Rebellion") and some two hundred volumes once belonging to Dorr and his immediate family.

Drowne Collection, 320 volumes from the library of Dr. Solomon Drowne, class of 1773, kept together as a memorial of this distinguished alumnus

THE UNIVERSITY LIBRARIES

and as an instructive example of a private library of the eighteenth and the early nineteenth century; also three groups of Solomon Drowne papers.

Hammond Lamont Memorial Library of English Literature, 2,700 volumes, with emphasis on eighteenth-century English literature.

John Hay Collection, a virtually complete collection of the writings of John Hay, periodical contributions and separately published books, broadsides and pamphlets, supplemented by books from his personal library. The collection is especially rich in manuscripts, containing the diaries which John Hay kept while acting as assistant private secretary to President Lincoln, letter press books, letters written by and to John Hay. This collection, which complements and supplements the McLellan Lincoln Collection, contains much of interest to the cultural and political historian of the United States during the last four decades of the 19th century.

Foster Horace Collection, some 600 volumes, chiefly editions and translations of Horace.

Koopman Collection, a memorial to Harry Lyman Koopman, Librarian of Brown University 1893-1930, a collection of 5,000 rare books, manuscripts, fine bindings, association copies, etc., particularly in the field of English literature, formed by the late Philip D. Sherman, class of 1902, Professor of English, Oberlin College.

McLellan Lincoln Collection, formed by Charles Woodberry McLellan, acquired in 1923 for the University by John D. Rockefeller, Jr., class of 1897, and enriched by other gifts of Mr. Rockefeller; one of the three strongest Lincoln collections in the country, containing some 10,500 bound books, pamphlets, and newspapers, 4,700 broadsides, leaflets, etc., 6,500 prints, photostats, etc., 1,900 manuscripts (over 800 of which were written or signed by President Lincoln), 311 pieces of sheet music, and 1,400 museum pieces (medals, coins, etc.).

Bullard and Hoffman Napoleon Collections. The *Bullard Collection* of 185 Napoleon caricatures represents the work of the great English, French, German, Russian, and Spanish cartoonists who lampooned Napoleon and his campaigns throughout his career. The *Hoffman Collection*, constitutes a museum collection of books, fine bindings, engravings, and art objects of unusual interest and beauty.

Metcalf Collection of Pamphlets, 10,000 sermons of the early nineteenth century and 40,000 miscellaneous pamphlets of considerable historical interest.

Rider Collection of Rhode Island History, 5,000 volumes and 10,000 pamphlets.

THE UNIVERSITY LIBRARIES

George Earl Church Collection on South America, 3,500 volumes, chiefly on Latin America but containing valuable material on political history and economic resources of both North and South America prior to 1910.

Knight and Peltz Stamp Collections, an almost complete collection of United States postage stamps in blocks of four, uncanceled, and a collection of United States special delivery stamps.

Ward Collection, the working library of Lester F. Ward, one of the founders of the study of sociology and Professor of Sociology at Brown University 1906-1909; the thousand bound volumes represent Ward's successive interests in the fields of paleontology and sociology, while voluminous scrap-books, card indexes, etc., show his methods of work.

Williams Table Collection, containing at present some five hundred volumes identified as having been in the University Library in its colonial period (1767-1782).

The Divisional Libraries are: Biological Sciences, located in the Arnold Biological Laboratory, containing the volumes on biology, botany, and psychology; Physical Sciences Library, located on the top floor of the Metcalf Research Laboratory, containing the volumes on astronomy, chemistry, geology, mathematics, physics, and the Corthell Library of Engineering. The mathematics section forms an outstanding and internationally famous collection.

Pembroke College Library, located on the top floor of Pembroke Hall, is a basic open-shelf collection of more than 12,000 volumes, carefully chosen and continuously revised to balance the old with the new. The library contains the books needed for background reading for the larger courses offered at Pembroke College as well as the books for required reading. There is a small reference collection and a select group of current periodicals. There is also a collection of phonograph records which are available for use in the library or for home circulation.

Pembroke College students are expected to use the resources of the John Hay Library and the two Divisional Libraries when material they need is not available in the Pembroke College Library.

John Carter Brown Library

The John Carter Brown Library is a growing collection of about thirty thousand volumes relating to the history of North, South, and Central America. It was begun about 1846 by John Carter Brown of Providence and continued by his son, John Nicholas Brown, at whose death in 1900 it passed, with building and an endowment, into the possession of the University. Composed of source material printed before 1801, the collection

THE UNIVERSITY LIBRARIES

bears in Europe and in America a deserved renown for completeness as well as for its possession of some of the most coveted individual treasures of Americana. A history of the Library with a guide to its collections has been published. Students of the University, under direction, and other accredited investigators have the privilege of using the collection. Exhibitions are announced in the University's *Weekly Bulletin*. The Associates of the John Carter Brown Library was organized in 1944 to aid in enlarging the collection.

The Annmary Brown Memorial

The Annmary Brown Memorial, on Brown Street near the southwest corner of the Wriston Quadrangle, contains a world-famous collection of incunabula, valuable in the studies of the earliest known printing presses and of Renaissance and Mediaeval culture. Collected and housed by General Rush Christopher Hawkins, Commander of the Hawkins Zouaves in the Civil War, the books were assembled for the purpose of illustrating the spread of printing from its birthplace in Mainz about the middle of the 15th century. Items in the collection, many of them exceedingly rare if not unique, date between 1460 and 1500. The Memorial, dedicated to General Hawkins' wife, Annmary Brown, after whose grandfather this University is named, also contains paintings by early and later masters. The Memorial was acquired by Brown in 1948 by court order, when it was deeded to the University by the Memorial's Board of Trustees. Fifteenth and sixteenth century books from the University's general collection are now being transferred here, in order that the building may serve as a center for Renaissance studies.

Providence Libraries

The seven collections of books named below comprise, with the University Libraries, nearly two million volumes in the city at the service of the students.

The Providence Public Library, at Empire and Washington Streets, offers to all students at Brown University the free use of more than 546,000 volumes. The following departments and collections are available: *Art and Music Department* with book collections on Architecture and Jewelry, sheet music and recordings, and over 150,000 pictures; *Business-Industry-Science Department* with a complete file since 1876 of Specifications and Drawings of the U. S. Patent Office, Alien Custodian Patents, standard business and financial services, and important collections on Textiles and Printing; *Reference Department* with Providence newspapers on microfilm back to 1820, city directories for Rhode Island and telephone directories for 1,000 American cities and towns, U. S. Documents depository collection,

THE UNIVERSITY LIBRARIES

The Rhode Island Index—a subject index to persons, places, and events in Rhode Island found in books, pamphlets, periodicals, and the files of the *Journal and Bulletin*; microfilm and photostat services; *The Williams Memorial on Irish Culture* containing, in addition to books and periodicals, a reproduction of the “Book of Kells,” a Celtic hand-illuminated manuscript of about the 7th Century A.D.; *The Fox Collection* of over 400 pamphlets covering Irish history, religion, and education from 1740–1890, and a large collection of Irish street ballads; *The Fiske Harris Collection on the Civil War and Slavery* containing more than 10,000 items on regimental histories, early works on slavery, Confederate and Union Ballads, general histories, Lincoln, naval and military tactics, Civil War belles-lettres, and editions of “Uncle Tom’s Cabin” in over 30 languages; *The Nicholson Whaling Collection* comprising some 9,000 items, including logbooks, account books, crew and outfitting lists, insurance papers, and personal journals; *The Edith Wetmore Collection of Books for Children*, 1850 volumes, spanning five centuries in over twenty languages. Also available are representative Rhode Island imprints before 1800, and current subscriptions to over 800 periodicals with back files of major trade and general periodicals.

The Tockwotton Branch at 121 Hope Street and the Rochambeau Branch at 708 Hope Street are near the University Campus and are available to students. Applications for borrowers’ cards may be obtained at the Reference Desk at the University Library.

The Library of the Providence Athenaeum is a collection of general literature numbering over 138,000 volumes. Professors or teachers may become annual subscribers on the payment of six dollars in advance, and any student of Brown University may become a subscriber for three months on the payment of three dollars. The rights of such subscribers are personal only and do not extend to their families.

The Library of the Rhode Island Historical Society, 52 Power Street, comprises 100,000 bound volumes, 50,000 pamphlets, about one million manuscripts on all aspects of Rhode Island history, and a practically complete file of Rhode Island newspapers, beginning with 1758. The genealogical collection is the third largest in New England and the library also specializes in the publications of other state and local historical societies. By the courtesy of the Society this collection is accessible, free of charge, to members of the University.

The Library of the Rhode Island Medical Society contains approximately 42,000 volumes on medical science and receives current medical periodicals. It has the James H. Davenport Collection of the extra-professional writings of physicians and surgeons and books about them. The Library is open to any person for consultation; circulation is restricted to members and to inter-library loan.

THE UNIVERSITY LIBRARIES

The State Law Library is a collection of 78,000 volumes devoted wholly to law. It is open to any person for consultation.

The Rhode Island State Library, in addition to United States, state, and legislative documents, has volumes in the field of constitutional and statutory law, political and social science, economics, general history and biography, and Rhode Island history, including the Preston Collection of Rhode Island material. It is the exchange authority for state documents with other nations, states, and some municipalities. It administers the State Library Extension Service and State Aid to Free Public Libraries. Its Legislative Reference Bureau does law drafting and special legislative reference for the General Assembly. It has a division for the collecting and filing of records of our several World Wars. The State Librarian is Director of a "Book Pool for the Armed Forces" and is, *ex-officio*, State Record Commissioner.

The Library of the Rhode Island School of Design contains about 25,000 volumes and an extensive list of periodicals dealing with the practice and history of all the arts, fine and applied. Mounted photographs of works of art are available for study, and a clipping collection is maintained for the use of students of design and illustration. The library is open to all students for reference. Full privileges are accorded to those who are registered for courses at the School.

Buildings and Grounds



THE MAIN CAMPUS of Brown University occupies an area of approximately forty acres. In close proximity are athletic fields and recreational facilities covering more than thirty-five acres and, within ten miles of the campus, there is an outing reservation with cabins and more than 110 acres of clearing, woodland, and water. Within fifteen miles of the University is the Mount Hope Estate in Bristol, Rhode Island.

University Hall, in which the Offices of Administration are located, was constructed in 1770 and originally known as The College Edifice. The building is an excellent example of early colonial architecture, a monument to the founders and to the cultural interests of the colony. Near it on the Front Campus are Hope College erected in 1822, another example of early college architecture, and Manning Hall erected in 1834, an early American revival of the classical form. Surrounding these historic buildings, on or near the main campus, are more than one hundred buildings now devoted to university purposes.

The John Hay Library, erected in 1910 and named for a distinguished son of Brown, houses the general library collections of the University. The John Carter Brown Library of Americana is separately housed in its own building on the College Green. The Annmary Brown Memorial, housing a collection of incunabula and paintings, is on nearby Brown Street. Divisional libraries occupy space in other buildings.

Over fifty buildings are devoted to classroom, laboratory, research, library, office, and conference use by the departments of instruction, including Angell Hall, Appleton House, Applied Mathematics Building, Arnold Biological Laboratory, Art Building, Art Studio, Barus Hall, The Cabinet, the Engineering Building and Laboratories, Engineering Research Laboratory, Howell House, Hunter Psychology Laboratory, Ladd Astronomical Observatory, Lyman Hall, Manning Hall, Marston Hall, Metcalf Chemical Laboratory, Metcalf Research Laboratory, Music Building, Nuclear Physics Laboratories, Partridge Hall, Photographic Laboratory, Prospect House, Rhode Island Hall, Richardson Hall, Robinson Hall, Rogers Hall, Sayles Hall, Van Wickle Hall, Waterman House, Whitehall, Wilbour Hall, and Wilson Hall.

The Herbarium in Rogers Hall contains over 100,000 specimens from all parts of the world, but mainly from New England. The Geological Museum is housed in Rhode Island Hall. A greenhouse near Arnold Laboratory is used for experimentation, laboratory, and classroom work by the Botany Department.

BUILDINGS AND GROUNDS

The University maintains student residences and dining halls, which are listed, both for The College and for Pembroke College, in the section on Student Life and Organizations. There are two separate dormitories for graduate students located at 67 and 69 Manning Street, known as the Graduate Center. The Sharpe Refectory, the dining hall for men at the College, is part of the Wriston Quadrangle. Faunce House, the student center on the Brown campus, is described on page 247.

The Colgate Hoyt Swimming Pool is located on Lincoln Field, and Marvel Gymnasium, erected in 1928, is located on Aldrich Field near the Brown Stadium on Elmgrove Avenue. The Intramural Playing Field, the Thayer Street Tennis Courts, and the Nicholson Memorial Tennis Courts on Manning Street are adjacent to the campus. Brown Field with its football stadium and Aldrich Field with its baseball diamonds, soccer, and other playing fields are located on Elmgrove Avenue approximately a mile and a half from the campus. In 1956, the University acquired 39 acres of land less than a quarter of a mile from the campus. The site has been named Aldrich-Dexter Field and will be developed as Brown's athletic plant of the future.

The Brown University Outing Reservation is located on Upper Sprague Reservoir in the town of Smithfield and is equipped with one lodge and three cabins. Year-round use is made of the 80 acres of woodland and 30-acre pond by faculty, student organizations, alumni, and informal groups. Boats are available for fishing on the well-stocked pond. The cabins may be rented on a daily, weekly, or bi-monthly basis. The Reservation is largely supported by the Class of 1906 which donated the land and the larger cabin at their 25th reunion. Many other classes and individuals have made contributions which have added to the value of the Reservation.

The Brown University Boat House, located a mile from the campus on the Seekonk River north of the Red Bridge, provides headquarters for the Brown University Yacht Club and facilities for intramural and intercollegiate boat races on Narragansett Bay.

The Mount Hope Estate, 512 acres of land and approximately a mile of shorefront on Mount Hope Bay in Bristol, Rhode Island, was a gift to Brown University from the Rudolf F. Haffenreffer family and Foundation. Located on the Estate are the Haffenreffer Museum of the American Indian, the Director's Residence, the Supervisor's Cottage, and a Pembroke Outing Cottage. This unique collection of American Indian objects embraces Indian lore from Southwestern and Eastern America as well as New England. It is the largest collection of Indian relics now in private hands. The site, once the home of King Philip of the Wampanoag Tribe, is rich in Rhode Island colonial history.

PEMBROKE COLLEGE

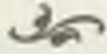
Pembroke College, in addition to having the use of the various class-

BUILDINGS AND GROUNDS

rooms, libraries, laboratories, and the observatory of the University, has on its campus an administration and classroom building, dormitories, a center for non-resident students, a health center, a gymnasium, an athletic field and field house, and tennis courts.

Pembroke Hall, dedicated in 1897, was the first building erected on the women's campus. It is located at 172 Meeting Street, the main entrance to the grounds of Pembroke College, which are one eighth of a mile from the Brown University campus. The building contains the Offices of the Deans, the Admission Office, the Recorder's Office, the Placement Office, the Cashier's Office, classrooms, the Pembroke College Library, and the Pembroke Bookstore. Alumnae Hall, the student building, contains a large auditorium, a cafeteria, private dining rooms, offices for student organizations, rooms for social gatherings, study groups, or committee meetings, the Office of the Advisor to Student Activities, the Office of the Director of Residence, and the Alumnae Office. Doyle House serves as the student health center (see page 252). Sayles Gymnasium contains the offices of the Department of Physical Education. This well-equipped gymnasium, together with the outdoor athletic facilities and the indoor facilities at the Field House, makes excellent provision for voluntary recreational activity as well as for the Physical Education requirements detailed in Appendix A on page 315.

University Health Service



THE HEALTH of every student at The College and at Pembroke College is a matter of active concern to Brown University, which operates a health center on each campus. Andrews House at 13 Brown Street, where the Director of the University Health Service has his main office, is maintained for resident and non-resident men students. The Sarah E. Doyle House at 129 Cushing Street is maintained for resident and non-resident women students. Both health centers, with graduate registered nurses in attendance, receive any respective students who want advice as to health, both emotional and physical, and admit for medical study and care those who are ill. Members of the Medical Staff attend the students who report as out-patients as well as those who are house-patients. Names of the Medical Staff members are given under Officers of Administration on page 16.

Medical Examinations

The Medical Staff, assisted by a group of medical specialists, gives a medical examination to every new student during Freshman Week and appropriate follow-up examinations thereafter.

Every new student is required to present satisfactory evidence of successful vaccination against smallpox.

Medical Care

A house-patient will receive medical care, nursing care, and board, without charge, for a period not exceeding a total of fourteen days during any one academic year. Non-resident students have the privilege of house-patient care, if they so desire. Student out-patients will receive medical care without charge.

Hospital Care

When it is deemed necessary to transfer a student to the Rhode Island Hospital or the Charles V. Chapin Hospital for special care, the superintendent of the respective health center will make the arrangements.

Charges

No fees will be charged by members of the Medical Staff for professional services to students, unless the medical care is given in a hospital or a private home.

UNIVERSITY HEALTH SERVICE

If students are house-patients for more than fourteen days during any one academic year, they will be charged by the University at the rate of \$5 for each extra day.

If a member of the Medical Staff is called to Andrews House or Doyle House or to a dormitory or fraternity house for the medical care of a student between the hours of 6 p.m. and 8 a.m., the University may make a charge of \$10 for such services.

If a specialist, other than one on the Medical Staff, is needed, the arrangement between the specialist and the student is private, and the financial responsibility is the student's.

Students will be charged for medical services which are requested by them for matters of a personal nature, such as vaccination for foreign travel and examinations for employment applications.

Every bill submitted to a student by a member of the Medical Staff is to be sent through Andrews House, in the case of students at The College, and through Doyle House, in the case of students at Pembroke College.

A group accident and sickness insurance policy providing coverage for expenses in addition to those allowed by the University Health Program is available at the rate of \$21 per year. This insurance will pay expenses up to \$500 plus supplementary expenses up to \$3,750 on an 80% participating basis. The coverage is underwritten by Liberty Mutual Insurance Company. Further information is available upon request from the Controller's Office.

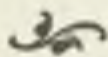
Students Participating in Intercollegiate Athletics

Special provisions at The College have been made by the University for the medical examination and care, by the Athletic Surgeon, of students participating in intercollegiate athletics.

Students who are not American or Canadian Citizens

Students in residence at the University who are not American or Canadian citizens are required to carry a suitable form of health insurance throughout their residency unless they have a sponsor living in the United States and willing to assume responsibility for their medical care. Applications for adequate policies handled by the Institute of International Education are available at the University.

Student Life and Organizations



Chapel

CHAPEL SERVICES are held regularly at twelve noon, on Monday, Wednesday, Thursday, and Friday, in Sayles Hall for students in The College and on alternate Tuesdays in Alumnae Hall for students in Pembroke College. These services, directed by the Chaplain of the University, recognize the unique values of corporate worship in a university community and are intended to enrich the moral and religious life of the University. The Chapel Choirs sing daily under the leadership of the Director of Chapel Music.

Students in The College are required to attend once a week, normally with their class. Students in Pembroke College are required to attend in alternate weeks with the entire college.

At Pembroke College, on the Tuesdays when the chapel services are not held, there is an all-college assembly in Alumnae Hall, at which attendance is required. The character of this assembly varies, but the primary purpose is to provide intellectual stimulation and give to the students the opportunity to hear various speakers from the faculty and administration and from off the campus. At noon on Thursdays each week, the Pembroke students themselves sponsor a required all-college Student Government Association meeting in Alumnae Hall for the discussion of various phases of their activities.

Services are also held periodically throughout the year to mark special occasions in the life of the University.

The Chaplain and other religious advisors are available regularly for counseling.

The University Christian Association

The University Christian Association is a voluntary organization of Brown and Pembroke students formed around a common concern for the discovery of meaning and truth, inquiry into the fundamental nature of the Christian faith, service in areas of human need, and worship of God.

A unique venture in ecumenical student groups, the University Christian

STUDENT LIFE AND ORGANIZATIONS

Association was formed in 1958 by the merger of many of the Christian organizations of Brown University students. Among these were two student activities of the University, the Brown Christian Association, founded in 1802, and the Pembroke Christian Association. These two associations were joined by the student groups of the neighboring churches, merging a number of different traditions into one united program. Like Janus, the new association faces two directions, toward the University and toward the Church.

The Association emphasizes rigorous criticism and free inquiry, and commitment and faith. Since belief, doubt, and searching are bound together for all men, but especially for collegians, the program deals with religion and life on a number of different levels and from different approaches. These include lectures by prominent authorities; discussion groups on such subjects as religion and contemporary literature or science; study groups; and social action projects. Within the life of the Association members try to deal critically with the message of the Christian faith, subject it to the test of other ideas and values, let it illumine the whole range of campus life, academic and social, and find ways to do its truth.

The Association's program is planned and directed by its elected officers and cabinet members. Membership is open to all students of The College, Pembroke College, and the Graduate School.

Dining Rooms

Brown University operates the Dining Rooms for the accommodation of students and other members of the University community. They include on the main campus the Sharpe Refectory, with the Ivy Room providing both fountain and cafeteria service, and the Coffee Lounge in Faunce House; on the campus at Pembroke College, they include the Andrews Hall Dining Room and The Gate (fountain service and snack lounge) in Alumnae Hall.

All students living in the University residences at The College have their meals in the Sharpe Refectory on a room-and-board arrangement; non-resident students at The College may have their lunches or dinners with the resident students at a semester rate. The dining room for all resident students at Pembroke College is in Andrews Hall within the upperclass quadrangle; non-resident students are accommodated in The Gate.

Student Residences—The College

The College provides living quarters for undergraduates in Ames House, Caswell Hall, Edwards House, Hegeman Hall, Hope College, Horace Mann House, Judson House, Littlefield Hall, Maxcy Hall, Slater Hall, and Stites House, all of which are on or very near the campus, and in the Wriston

STUDENT LIFE AND ORGANIZATIONS

Quadrangle, which includes nine dormitories (Buxton, Chapin, Diman, Goddard, Harkness, Marcy, Olney, Sears and Wayland Houses) and seventeen national fraternities. The fraternities are: Alpha Delta Phi, Beta Theta Pi, Delta Kappa Epsilon, Delta Phi, Delta Tau Delta, Delta Upsilon, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Psi, Pi Lambda Phi, Psi Upsilon, Sigma Chi, Sigma Nu, Theta Delta Chi, and Zeta Psi. The Wriston Quadrangle, dedicated in 1952, is located just south of the main campus and is traditional Georgian-Colonial in architectural style. Each dormitory and fraternity house in it is provided with a lounge room and a game room.

The West Quadrangle, first occupied in September, 1957, houses 540 students. The facilities and furnishings are comparable to those in the Wriston Quadrangle.

Plantations House (32 George Street) serves as a day-center for non-resident men who are not married or affiliated with a fraternity and offers a limited number of overnight accommodations.

It is a University rule that all students at The College who do not live with their parents or guardians must live in dormitories or fraternity houses unless excused by the Dean.

Accommodations are of three types—suites for three, double rooms, and singles. Each student is provided with a bed, including a mattress, pillow, and bed linens, a chest of drawers, a desk, a desk chair, and a lounge chair. Bed linens (sheets and pillow cases) are laundered by the University. Blankets, towels, desk lamps, and curtains are not provided by the University. Each student is responsible for damages to his room and furnishings beyond ordinary wear. Sub-rental of rooms is not permitted.

The University is not responsible for loss of students' personal property. Adequate insurance coverage is advised for each individual.

The housing accommodations at The College are under the direction of the Office of Student Residences, assisted by Resident and Associate Fellows.

Resident Fellows are faculty members, graduate assistants, and members of the administrative staff who reside in dormitory units to offer students intellectual companionship and mature counsel and to facilitate contact between students and faculty. Associate Fellows are faculty members who assume the obligations of Resident Fellows in dormitories that have no quarters for a resident fellow. The Fellows for 1958-59 are named below:

RESIDENT FELLOWS

West Quadrangle

Archibald House
Bronson House
Everett House

MARVIN C. RINTALA
LEA E. WILLIAMS
ROBERT M. HAYTHORNTHWAITE, *Senior Resident Fellow*

STUDENT LIFE AND ORGANIZATIONS

Everett House
Jameson House
Mead House
Poland House

PAUL ILIE
ELMER BLISTEIN
BOA-TEH CHU
PIETER J. VAN HETEREN

Wriston Quadrangle

Buxton House
Chapin House
Diman House
Goddard House
Harkness House
Marcy House
Olney House
Sears House
Wayland House

G. OUDEMANS
MARK W. EDWARDS
WALTER J. SCHNERR
JAMES O. BARNHILL
PHILIP H. ZOLDESTER
E. TURAN ONAT
IRWIN H. YELLOWITZ
JEAN-MARIE F. BUCHER
HENRY KUCERA, *Head Resident Fellow*

Other Dormitory Units

North Caswell Hall
South Caswell Hall
Horace Mann House
Judson House
Plantations House
(Day-center for non-resident students)

ERWIN L. LEVINE
HOWARD M. DUNN
D. BRUCE HUTCHINSON
ARTHUR TAYLOR
NORMAN SPRINTHALL

ASSOCIATE FELLOWS

Dormitories

Hegeman Hall
Littlefield Hall
Maxcy Hall
Slater Hall

KENNETH F. LEWALSKI
JOHN LADD
C. A. ROBINSON, JR.
DAVID KOSSOFF

Student Residences—Pembroke College

Resident students of Pembroke College live in an upperclass quadrangle consisting of East Andrews, West Andrews, Metcalf, and Miller Halls; in Snow House, in Stanton House; and in eight freshman houses, namely: 87 Prospect Street; Allinson House, 48 Lloyd Avenue; Angell House, 15 Keene Street, Bates House (a coöperative dormitory); King House, 34 Barnes Street; Mary Woolley House (also accommodating a limited number of sophomores), 99 Brown Street; Sharpe House, 130 Angell Street; and Whittier House, 171 Meeting Street.

West House, the campus residence (91 Brown Street) for non-resident students, serves as a day-center for these students and offers a limited number of overnight accommodations.

The halls of residence at Pembroke College are supervised by the Director of Residence, in cooperation with the Assistant Dean and a resident Head in each dormitory, as follows:

STUDENT LIFE AND ORGANIZATIONS

Allinson House

Angell House

Bates House

East Andrews Hall

King House

Mary Woolley House

Metcalf Hall

Miller Hall

87 Prospect Street

Sharpe House

Snow House

Stanton House

West Andrews Hall

West House

Whittier House

HATTIE THEO MESSNER

AILEEN HORTON LEMON (Mrs. ALFRED S.)

GRETCHEN HODGES ELLEFSON (Mrs. RAYMOND C.)

RUTH EMORY WELLS (Mrs. GUY W.)

MILDRED FOWLER GREEN (Mrs. FRANK O.)

PATRICIA ANN SCHILTZ

MARY SEYMOUR LANCE

SARA ELIZABETH MCGILLIVRAY (Mrs. JOHN R.)

ALICE CONSUELO HANDY (Mrs. EDWARD O.)

MARY CLAUDETTE AVERY

SHIRLEY ELIZABETH BRYAN

RAMONA MARION PUGSLEY

SALLY MCPHERSON

JEANNIE CALDER STEWART

ETHEL ROSE CUTLER

Faunce House

Faunce House is the headquarters for the social and recreational activities of undergraduate men and for student organizations. The building was erected and equipped by the generous gifts of Mr. John D. Rockefeller, Jr., of the class of 1897 and, at his request, it was named in memory of the late Dr. William Herbert Perry Faunce, President of Brown University. In Faunce House are numerous offices and service facilities; the offices of the University Christian Association, the offices and working quarters of student organizations, fountain service in the Coffee Lounge, the Theater, Central Post Office, the Art Gallery, and the study of the Chaplain of the University. The immediate administration of Faunce House is delegated to the Director of Faunce House.

The Faunce House Theater offers ample facilities for the dramatic productions of Sock and Buskin and other undergraduate dramatic organizations, and for the showing of motion pictures. It is also used for concerts and lectures.

Faunce House is designed to provide undergraduate men with facilities for the social and recreational activities essential to a well-rounded college life. Assisting in this objective is the Faunce House Advisory Board which includes representatives from the corporation, faculty, alumni, and undergraduates.

Faunce House maintains reading rooms and lounging rooms; it operates a bookstore, a billiard room, a barbershop, a post office, facilities for table tennis, dark rooms, a sign and poster service, and other service units; it provides space for formal or informal meetings of student groups; and it encourages and facilitates social contacts through receptions for the students

STUDENT LIFE AND ORGANIZATIONS

and the faculty, concerts, dances, tournaments, movies, and other social events.

All communications regarding Faunce House should be addressed to the Office of the Director.

Picture Lending Library

The Picture Lending Library was founded in 1933 and endowed in 1937 as the William Carey Poland Memorial Collection. From the funds available more than eight hundred pictures, representative of all periods, techniques, and "schools," have been acquired and may be borrowed by the students for their rooms at a nominal cost. This Picture Lending Library is under the auspices of Faunce House. At the beginning of each semester the pictures in the collection are placed on display in the Faunce House Art Gallery.

Physical Education—The College

In compliance with Brown University regulations, all freshmen will participate in a regularly scheduled Physical Education program of two classes per week, distributed over two days.

Students participating on recognized sports teams are excused from compliance. At the completion of the sport season, the student will return to his regular class or be assigned to a new class.

The Physical Education program will consist of conditioning exercises, elementary and advanced swimming, instruction in skills related to recreational sports, and participation in organized contests of an intramural nature. At the outset of the program, all activities will be carefully selected and the program will be progressive in nature in order not to impose strain upon students unaccustomed to regular physical exercises.

Intramural Athletics

Intramural athletics are voluntary and include fraternity, club, and dormitory leagues in badminton, basketball, foul shooting, handball, horseshoes, paddle tennis, sailing, softball, squash, swimming, tennis, touch-football, track, volley ball, and wrestling. College championships are held in each of the above sports. Interclass competition between freshman and sophomore classes is conducted for the Brown Jug trophy.

Intercollegiate Athletics

Intercollegiate athletics are under the management of the Director of

STUDENT LIFE AND ORGANIZATIONS

Athletics and the Brown University Athletic Advisory Council. A student on probation or on college discipline is not eligible to participate in inter-collegiate athletics. Questions of eligibility arising for other reasons will be determined by the Office of the Dean. Varsity and freshman teams are maintained in the following sports: baseball, basketball, cross country, track, football, hockey, soccer, swimming, tennis, and wrestling. A varsity team is maintained in golf.

Physical Education—Pembroke College

The Department of Physical Education cooperates closely with the University Health Service, working with the Medical Staff, to encourage habits of healthful living, to correct remedial defects, and to promote a program of physical activities adapted to the needs of the individual student. The program provides opportunity for students to develop the recreational side of physical activities by the acquisition of skills in and knowledge of sports and dancing for enjoyment during and after college.

For the requirements and the layout of courses, see Appendix A on page 315.

Student Organizations—The College

Fraternities, dormitories, class organizations, and extra-curricular student activities are under the general supervision of the Office of the Dean of Students.

The Committee on Student Organizations determines minimum eligibility requirements for membership in the more than one hundred student organizations and fraternities. This Committee, jointly with the Cammarian Club, also determines the status of both existing and proposed student organizations.

For further information on student activities and fraternities see the Brown University bulletins: "General Information Regarding Admission to the College" and "Student Life at Brown."

Student Organizations—Pembroke College

Student organizations are a vital part of life at Pembroke College. The initiative in these organizations and the direction of their activities are in the hands of the students but faculty advice and assistance is readily available, with the Advisor to Student Activities responsible for general supervision.

STUDENT LIFE AND ORGANIZATIONS

The Student Government Association, a representative body, of which all undergraduate students are members, is headed by a student board which works with all other organizations to maintain a coöperative, orderly, and constructive college community life. The Honor Council, which is sponsored by the Student Government Association, carries the responsibility for upholding the college honor code.

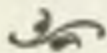
The Committee on Student Organizations in Pembroke College determines minimum eligibility requirements for membership in the various student organizations. This Committee, jointly with the Student Government Association, also determines the status of both existing and proposed student organizations.

"Pembroke," the book of general information for prospective students, describes the student organizations.

Committee on Dramatic Productions

The Committee on Dramatic Productions is responsible for the direction of the dramatic organizations of the University and for the definition of the general rules and regulations under which they operate. Membership of the Committee consists of the Provost, Chairman, Dean of The College, Dean of Pembroke College, Dean of Students of The College, Director of Dramatics, Technical Director of Dramatics, Chairman of the Department of English, Assistant Director of Dramatics, Controller of the University (Treasurer), a faculty member-at-large, a representative of Sock and Buskin, Inc., and the Director of Faunce House.

Other University Activities



Arrangements with Other Institutions

RHODE ISLAND SCHOOL OF DESIGN

AS A RESULT of a coöperative arrangement, approved students of Brown University may elect certain courses in art at the Rhode Island School of Design in addition to the courses offered by the Department of Art of the University. This arrangement makes studio courses at an art school of high standing available to students at The College and at Pembroke College.

In order to elect courses given at the Rhode Island School of Design for credit at Brown University, a student must first have the written permission of the chairman of the Department of Art.

AMERICAN SCHOOL OF CLASSICAL STUDIES AT ATHENS

Qualified graduates of Brown University who are admitted to the School are granted free tuition. It is sometimes possible for undergraduates to attend the Summer Session at the end of the Junior Year. For further information consult the Chairman of the Department of Classics.

AMERICAN ACADEMY IN ROME

Free tuition in the School of Classical Studies in the Academy is available to qualified graduates, and occasionally to undergraduates, of Brown University who are admitted to the Academy. For further information consult the Chairman of the Department of Classics or communicate directly with the Executive Secretary, American Academy in Rome, 101 Park Avenue, New York 17, N. Y.

AMERICAN SCHOOLS OF ORIENTAL RESEARCH

Qualified graduates of Brown University who are admitted to the Schools at Baghdad or Jerusalem are exempt from the payment of tuition charges. Students are not accepted for less than a full academic year of work. Information concerning the Schools may be obtained from the chairman of the Department of Religious Studies.

ART COLLECTIONS

In Sayles Hall at the University there is a collection of portraits of notable men associated with Brown University and with the State of Rhode

OTHER UNIVERSITY ACTIVITIES

Island. The Annmary Brown Memorial contains a collection of paintings by historical masters. The Faunce House Gallery Lounge shows, during the college year, exhibitions representative of various phases of art.

The Museum of Art of the Rhode Island School of Design owns important collections of Oriental, European, and American art.

Concerts

Students may attend at student rates the concert series of the Boston Symphony Orchestra, the Rhode Island Philharmonic Orchestra, the Community Concert Association, the Rhode Island Chamber Music Concerts (presented under the auspices of the Department of Music), and other musical events.

An annual schedule of musical programs at the University is arranged by the Department of Music. The performing groups are the Brown University Chorus, Brown University Orchestra, Brown Glee Club, Brown Band, the Pembroke Glee Club, the Brown and Pembroke Chapel Choirs, and the University String Quartet. The members of the Quartet are Professors Coolidge, Fischer, and van Koppenhagen, and Mr. Charles Dickerson of the Department of Music.

Informal concerts are presented in the Art Gallery of Faunce House under the combined sponsorship of the Board of Governors of Faunce House and the Department of Music.

Concerts are given on the large organ in Sayles Hall by the University Organist and Choir Director, Professor William Dinneen, and by other recitalists in coöperation with the Rhode Island Chapter of the American Guild of Organists. A visiting organist is presented each season on the occasion of the Memory Day for Edgar John Lownes.

The Department of Music makes it possible for selected students to appear in Senior Recital, and each semester a group of students of the Department is heard in audition-recital as a part of the work in course.

Training of Teachers

ARRANGEMENTS WITH THE STATE OF RHODE ISLAND

The Department of Education of the State of Rhode Island under act of the Legislature coöperates with Brown University for the professional instruction of college graduates who desire to become teachers in schools, principals of high schools or elementary schools, or superintendents, and of those who already hold such positions. For this purpose the State appropriates annually ten thousand dollars for scholarships covering tuition for

OTHER UNIVERSITY ACTIVITIES

graduate courses in education pursued by candidates for the degree of Master of Arts. Scholarships are also granted for individual courses. The courses must be approved by the chairman of the Education Department of the University. Appointment to these scholarships is made by the State Department of Education. Candidates must fulfill the requirements for graduate students regularly determined by the University.

PROVISIONS FOR PRACTICE TEACHING

The School Committees of the City of Providence and other neighboring communities, by special agreement, appoint as student-teachers in public schools a limited number of students who are pursuing courses in education at Brown University. By this arrangement the student may meet the State certificate requirement for practice teaching. The student-teachers are occupied in the schools each day for about half the usual school session. Each is placed under the guidance of a supervising teacher. An opportunity is thus afforded students to gain at the same time a knowledge of the theory of education and experience in the art of teaching.

Photographic Laboratory

The University operates a photographic laboratory fully equipped for the making of microfilms, positives, photoprints, copy negatives, enlargements, black-and-white and color slides, news and commercial photographs, 16 mm. motion pictures, photofinishing, art work and dry mounting, portraits, application and passport pictures, diazo prints, and photochemical stencils. Its services are available to students and to departments for the preparation of teaching materials and the microfilm reproduction of manuscripts, scholarly publications, and other materials. It is also used by scholars outside the University who desire reproductions of materials in the library collections. Among its major projects are the Mathematical Reviews microfilm service and the microfilm collection of books on South American History and Hispanic Culture.

Public Lectures

THE MARSHALL WOODS LECTURESHIP was established in 1871 by Marshall Woods of the class of 1845. The income is to be employed "in supplying lectures on the Fine Arts as applied broadly to human life and lectures on the Arts and Sciences as applied to all human progress." The series for 1957-58 included the following lectures on *New Directions in the Arts*:

Professor OTTO LUENING, Barnard College: New Directions in Music

Professor JOHN CIARDI, Rutgers University: New Directions in Literature

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Mr. PAUL RUDOLPH, architect: *New Directions in Architecture*

Mr. LEE STRASBERG, Director of the Actors' Studio, New York City: *New Directions in the Theatre*

Miss MARTHA HILL, Julliard School: *New Directions in the Dance*

THE CHARLES K. COLVER LECTURESHIP was established in 1915 by Jesse L. Rosenberger and his wife in honor of her father, Charles Kendrick Colver, of the class of 1842. The lectures usually comprise a course of three. Many of them have subsequently been published by the University. In February and March, 1958, three Colver Lectures were presented on *Geophysics in Alaska*, by Dr. C. T. Elvey, University of Alaska.

Single Colver Lectures were also presented during the year:

Professor RENE KONIG, University of Cologne, Germany: *Paternal Authority in postwar Germany*

Professor EMIL ARTIN, Princeton University: *The Foundation of Affine Geometry*

Professor HAROLD C. SYRETT, Columbia University: *Alexander Hamilton, History by Stereotype*

Professor J. GRAHAM D. CLARK, Cambridge University, England: *Stonehenge and the Greeks*

Admiral GEORGE J. DUFEK, United States Navy: *Operation Deepfreeze*

THE JOHN HOWARD APPLETON LECTURESHIP was established in 1923 by friends and former students of Professor Appleton, in appreciation of his service of over fifty years as teacher and professor of chemistry at Brown University, to provide special annual lectures on pure or applied chemistry, the lecturers to be selected by the Department of Chemistry. Appleton Lectures were presented in 1957-58 by Dr. J. A. A. Ketelaar, University of Amsterdam, Holland: *Infrared Spectroscopy of Compressed Gases*; and by Professor John D. Roberts, California Institute of Technology: *Nuclear Magnetic Resonance Spectroscopy and its Applications to Problems in Organic Chemistry*.

THE MOLLIE B. MANDEVILLE LECTURESHIP was established in 1924 by Frank N. Mandeville of the class of 1905, in memory of his wife.

The following Mandeville Lectures were given in 1957-58:

Dr. HOMER L. DODGE, former director of the Office of Scientific Personnel: *Soviet Education: A Challenge to America*

Professor ERICH HELLER, University College, Wales: *Thomas Mann: A Literary Destiny*

THE EDGAR JOHN LOWNES MEMORY DAY FUND, established in 1924 by Mrs. Therese K. Lownes in memory of her husband, provides an income to

OTHER UNIVERSITY ACTIVITIES

be used annually for an organ recital by some distinguished artist. The artist in 1957-58 was Mr. Fernando Germani of Rome.

THE PROFESSOR ALBERT BUSHNELL JOHNSON LECTURESHIP was established in 1930 under the terms of the will of Edward K. Aldrich, Jr. It provides for the holding of lectures primarily in the fields of French and Spanish Literature. The following Johnson Lectures were given in 1957-58: Professor Raymond Lebègue of the Sorbonne on *La farce, de Pathelin à Molière*; and Professor Jorge Guillén, Wellesley College, on *La poesía de Aldana*.

THE WETMORE FUND FOR LITERATURE was established in 1954 by Francis Whitney and Marguerite Reid Wetmore for the support of public lectures to be held at Pembroke College, principally on the subject of English Literature. A Wetmore Lecture was delivered in 1958 by Robert Penn Warren on *Thinking about Poetry and Making Poems*.

THE BROWN UNIVERSITY LECTURES, established by the Corporation in 1938, are designed primarily for the purpose of offering to members of the Faculty an opportunity to share their intellectual interests and the results of their scholarly work with the Brown community.

The 1957-58 Series, offered by the Department of History, included the following three lectures:

Discovery of a New World by Professor Donald Fleming; *Charles Grandison Finney and 'The Anti-Slavery Impulse'* by Professor William G. McLoughlin; *Rights Imply Equality: The Case Against Admiralty Justice in America* by Professor David S. Lovejoy.

UNIVERSITY LECTURES, as certain lectures are designated, included the following: *Gnosticism and Early Christianity* by Professor Robert M. Grant, Federated Theological Faculty, University of Chicago; *Geochemistry of Strontium* by Professor Karl K. Turekian, Yale University; *The Greek Tradition* by Professor Whitney J. Oates, Princeton University; *The Rate of Deposition of Deep Sea Sediments* by Dr. Richard Leahy, Woods Hole Oceanographic Institute; *The Politics of 1960* by Mr. George Lichtheim; a series of four lectures on *An Introduction to the Guide for the Perplexed* by Professor Leon Roth, Hebrew University, Jerusalem.

A NUMBER OF OTHER LECTURES are delivered at the University in the course of the year. A partial list would include the University convocations with addresses by well-known speakers; lectures under the auspices of the Rhode Island Philosophical Society, the English Club, the Amateurs of Ancient Greece, the Providence Archaeological Society, the University Christian Association, the History Club, the Friends of the Library, and the Skyscrapers. Lectures and addresses delivered at the University during

OTHER UNIVERSITY ACTIVITIES

1957-58 by other than members of the Brown University Faculty numbered 261.

COLLOQUIA, with more informal addresses, are a regular part of the program of several departments, and are also open to the Brown community.

University Extension

The University offers each semester, evening extension courses open to all who desire to register. Except rarely, there are no entrance requirements except ability to do the work.

Single courses comprise seven weekly sessions and provide fifteen periods of class instruction. *Double courses* comprise twelve weekly sessions and provide thirty periods of class instruction.

A course certificate is issued upon the satisfactory completion of each course, except in the case of certain special courses which are non-credit courses. On the satisfactory completion of fifteen double courses, or the equivalent, the Associate in University Extension diploma is granted as recognition by the University of the work that has been accomplished. Study in extension courses is not applicable to degrees at Brown University. Inquiries about extension courses and applications for registration should be sent to the Director of University Extension, 73 Brown Street.

In the academic year 1957-58, seventy-seven regular courses were given with a total registration of 1,777; in the fall term the special State Department of Education-Brown University-sponsored lecture series for teachers-in-service, entitled *School Health*, was given with the cooperation of the Rhode Island Medical Society and drew an enrollment of 161. During the year also the Extension Division conducted a Seminar in Practical Management for Small Manufacturers in cooperation with The Small Business Administration, and an Effective Fleet Operation course for local motor vehicle fleets in cooperation with the National Advisory Committee for Motor Fleet Supervision.

In-Service Institutes for Teachers of Science and Mathematics

Brown University is one of 125 colleges and universities conducting summer institutes for high school and college teachers of mathematics in 1958. As is the case with all of these institutes, the one at Brown has been made

OTHER UNIVERSITY ACTIVITIES

possible by a grant from the National Science Foundation in recognition of the important role of high school and college teachers in developing the nation's scientific manpower potential. Its purpose is to improve the professional competence of high school teachers by enriching their background and by acquainting them with developments in the fields in which they teach.

Five courses are offered in the Institute, each being taught by a full-time member of the Brown faculty:

Astronomy: Descriptive Astronomy. Mr. SMILEY.

Biology: Basic Ideas in Modern Biology. Mr. PETERS.

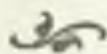
Chemistry: Equilibrium and Ionization Phenomena. Mr. CLAPP.

Mathematics: Modern Mathematics. Mr. HARRISON.

Physics: Fundamental Physics. Mr. BEYER and Mr. WILLIAMS.

The University, with funds supplied by the National Science Foundation, is offering an in-service institute during the 1958-59 academic year. Two courses in mathematics and one in physics are being offered to 56 high school teachers, all of them members of curriculum committees in these two subject fields in the school systems of Providence and Warwick. Each course is scheduled to run for 30 weeks, beginning September 18, 1958, two hours, one afternoon each week. It is expected that new courses of study in mathematics and physics for use in the school systems will be a by-product of the institute. Appropriate certificates will be awarded to successful participants. Since the courses differ from those regularly offered by the Graduate School, successful completion of them does not carry credit towards the University's masters' degrees, but one semester of credit will be available for transfer to other institutions.

Prizes, Premiums, Honors¹



In the earliest days of the college, various prizes and premiums, chiefly in classical studies and in oratory, were awarded, financed by the fines imposed upon classmates for minor infractions of the rigorous college regulations. In 1824 under guidance of Nicholas Brown, Treasurer of the College, an Alumni Fund of one thousand dollars was established to provide medals for the winners in prize speaking competitions. These contests were suspended by President Wayland, who later established the President Francis Wayland Prizes, and secured further sums for prize awards. Partial remission of tuition for indigent students was arranged in 1847. In 1858, under President Sears, the University established scholarship funds, and in 1859 Miss Lydia Carpenter initiated the Aid Fund. The University Premiums (bequeathed by Nicholas Brown) and some other moneys previously devoted to prizes and premiums were then converted into scholarships for aid to needy students.

Brown University has been advised that by law a prize (won by a contestant who has actively entered a scheduled competition) is now subject to federal income tax; a premium (awarded for excellence without participatory action by the recipient) is not so subject. In this announcement of prizes and premiums, the respective terms, "prize" and "premium" will be used in accord with this legal distinction. The University reserves the right to withhold any award. For dates on which prize essays or other materials are due or prize competitions are held, consult the University Calendar in this Catalogue.

Prizes for Excellence in Preparatory Studies

Prizes for excellence in certain preparatory studies are awarded each autumn to members of the entering classes on the basis of special examinations as described below. Examinations separately judged with separate awards but covering the same material are conducted simultaneously for men of The College and for women of Pembroke College.

The competitions in Greek, Latin, and Mathematics are each open to all freshmen. However, those in the French and German languages, respectively, are open only to those freshmen whose knowledge of the language concerned has been gained through secondary school studies rather than from family or community contacts.

THE PRESIDENT FRANCIS WAYLAND PRIZES, derived from the income of a fund presented in 1843 by President Wayland, and later increased, are awarded each year to those members of the freshman class, who upon examination are found to excel in preparatory Greek and Latin. At The College and similarly at Pembroke College, a single prize is awarded in Greek; a first and a second are awarded in Latin.

¹ For lists of Degrees with Distinction, Honors Program Awards, Honorary Degrees Awarded, and Recipients of the Rosenberger Medal, consult the next section: "Degrees Conferred."

PRIZES, PREMIUMS, HONORS

In Greek the examination presupposes three years' study of the language in a secondary school or its equivalent. The student must show knowledge of the language by translating passages from Xenophon's *Anabasis* (I-IV), selections from Homer's *Iliad* or *Odyssey* (I-III), and also a sight passage of simple Attic prose; by answering specific questions on grammatical forms and syntax; and by translating into Greek an easy passage of English prose, based on the *Anabasis*. The candidate must also show familiarity with the content of the works read and general data concerning their authors. In 1957-58 no prize in Greek was awarded.

In Latin the examination presupposes four years' study of the language in a secondary school or its equivalent. Ability to translate is tested by selections involving familiar vocabulary and construction. Knowledge of grammatical forms, syntax, and style is tested by translation into Latin of passages in connected discourse in English based on writings of Caesar and Cicero. In 1957-58 prizes for men were awarded as follows:

The first prize to RICHARD COREY MACKENZIE

prepared at Phillips Academy, Andover, Massachusetts

The second prize to GERALD DAVID ROSEN

prepared at Roxbury Latin School, West Roxbury, Massachusetts

Prizes for women were awarded as follows:

The first prize to KAREN LAUTER

prepared at Highland Park High School, Highland Park, Illinois

The second prize to ANN GAIL SCACCIOTTI

prepared at Classical High School, Providence, Rhode Island

THE HARTSHORN PRIZES IN MATHEMATICS, derived from the income of a prize scholarship fund presented to the University in 1872 by Joseph Charles Hartshorn of the class of 1841, a clergyman, are awarded each year to the two members of the freshman class of The College who are found to excel in an examination on elementary algebra (through quadratic equations and the binomial theorem) and plane geometry. In 1957-58 prizes were awarded as follows:

The first prize to NORBERT SAMUEL FLEISIG

prepared at Cranston High School, Cranston, Rhode Island

The second prize to ARTHUR MAX ROSENBERG

prepared at Nichols School, Buffalo, New York

THE HYPATIA PRIZES IN MATHEMATICS, derived from the income of a fund, named for Hypatia of Alexandria, and presented anonymously in 1951, parallel for freshmen at Pembroke College the Hartshorn prizes and supersede Entrance Prizes previously paid from other funds. In 1957-58 prizes were awarded as follows:

The first prize to SARA-JANE KORNBLITH

prepared at Francis W. Parker School, Chicago, Illinois

The second prize to JOANNE WATT RADUE

prepared at Sidwell Friends School, Washington, D. C.

PRIZES, PREMIUMS, HONORS

THE ALBERT BUSHNELL JOHNSON PRIZES IN FRENCH are derived from part of the income of the Albert Bushnell Johnson Fund bequeathed to the University in 1949 by Edward K. Aldrich, Jr. These supersede similar prizes paid at The College from 1890 to 1908 from the President Francis Wayland Prize Fund, and from 1909 to 1949 from the Ratcliffe Hicks Prize Fund, and at Pembroke College from other University funds. These prizes are awarded each year to the two members of the freshman class of The College and similarly of Pembroke College, who are found to excel in preparatory French. The examination presupposes not less than two years' study of the language in a secondary school or its equivalent. In 1957-58 one prize was awarded to a freshman at The College as follows:

ALLEN ANDERSON SMITH

prepared at Westtown School, Westtown, Pennsylvania

Prizes for women were awarded as follows:

The first prize to SARA-JANE KORNBLITH

prepared at Francis W. Parker School, Chicago, Illinois

The second prize was divided equally between the following:

JOYCE MARIE HOLLAND

prepared at Warwick Veterans Memorial High School, Warwick, Rhode Island

AMY KAREN LAUTMAN

prepared at Erasmus Hall High School, Brooklyn, New York

THE CAESAR MISCH PRIZES IN GERMAN established in 1913 by gift of Mrs. Marion L. Misch, are awarded to the two members of the freshman class at The College who are found to excel in preparatory German. The examination presupposes not less than two years' study of the language in a secondary school or its equivalent. In 1957-58 prizes were awarded as follows:

The first prize to DAVID DONALD PRILL

prepared at Amherst Central High School, Snyder, New York

The second prize to DAVID BENDER

prepared at Classical High School, Providence, Rhode Island

THE ASA CLINTON CROWELL PRIZES IN GERMAN (succeeding Entrance Prizes in German inaugurated in 1922), derived from the income of a fund established in 1928 by alumnae of the University, are awarded to the two members of the freshman class of Pembroke College who are found to excel in preparatory German. These prizes parallel for women the Caesar Misch Prizes. In 1957-58 prizes were awarded as follows:

The first prize to CAROL GANNON

prepared at Classical High School, Providence, Rhode Island

The second prize to KARIN ELIZABETH BOREI

prepared at Swarthmore High School, Swarthmore, Pennsylvania

PRIZES, PREMIUMS, HONORS

Prizes and Premiums for Excellence in Undergraduate Studies¹

These prizes and premiums are arranged in historical sequence.

THE SENIOR ORATORS at Commencement in June, 1958, were:

DAVID NOEL ELLENHORN

IRENE JOANNE WESTING

THE DAVID HOWELL PREMIUM is awarded from income of a premium scholarship fund presented to the University in 1866 by Gamaliel Lyman Dwight in honor of his grandfather, David Howell, who taught at The College from 1766 to 1825, was honorary alumnus of the first Commencement, the first tutor, the first Professor (other than President Manning), and Acting President 1791-92. David Howell was also a member of the Continental Congress, was appointed on a mission by George Washington, and became Associate Justice of the Rhode Island Supreme Court, and U. S. District Judge. The premium is given at the close of the first semester of the senior year to the student who, "having a good record of deportment, has the highest rank in Mathematics and Natural Philosophy." The qualifying subjects are mathematics, physics, mechanics, and astronomy. In making the award the amount and distribution of the candidate's work in these subjects is considered. In 1957-58 the premium was awarded to

WILLIAM LAWRENCE SILVERT

THE THOMAS CARPENTER PRIZES FOR ELOCUTION, derived from the income of a fund established in 1867 by Thomas Carpenter, are awarded each year to the three students of The College to whom are assigned the first, the second, and the third rank of excellence in elocution. The competition is open to all members of the sophomore class and to those members of the junior class who have not previously been contestants. The selections declaimed may be either prose or verse. All arrangements are in the hands of the professor of public speaking. For students at Pembroke College these prizes are paralleled by the Minnie Helen Hicks Prizes for Elocution. In 1957-58 prizes were awarded as follows:

The first prize to MICHAEL ARON GINSBERG

The second prize to WAYNE ALLEN STORK

The third prize to EDWARD CAMPBELL SIMMONS

THE THOMAS CARPENTER AND LYDIA CARPENTER PREMIUMS were established in 1869, by Lydia Carpenter, in behalf of her late brother. They are assigned at the end of the academic year to the two members of the senior class at The College who, "already on scholarships, shall, in the judgment of the Faculty, unite in the highest degree the three most important elements of success in life—ability, char-

¹ Prize essays should be typewritten and should bear the name and date of the competition. Each should be signed with a pseudonym and be deposited with the Recorder before 4 p.m. on the designated date, accompanied by a sealed envelope containing the author's name. A copy of each prize-winning essay may be retained for deposit in the archives of the University Library or for delivery to the donor of the prize.

PRIZES, PREMIUMS, HONORS

acter, and attainment." In 1957-58 these premiums were awarded, from income of the Ratcliffe Hicks Fund, respectively to

CHIN-TAI KIM

JOHN PETER LORAND

THE ROBINSON POTTER DUNN PREMIUM. The income of a premium scholarship fund presented to the University in 1872 by pupils and friends of Professor Robinson Potter Dunn, is given, at the end of the junior year, to the student at The College "with the highest standing in rhetoric, English composition, and public speaking." In making the award, regard is given to the number of such courses taken as well as to the rank attained in them. For students at Pembroke College this award is paralleled by the Tristram Burges Premium. In 1957-58 no premium was awarded.

THE CLASS OF 1873 PRIZES are derived from the income of a fund presented in 1877 by the class of 1873. Two prizes are awarded each year to seniors who submit the best papers under conditions designated by the Department of Economics. In 1957-58 the prizes were awarded as follows:

The first prize to ROBERT JOEL SELIG

The second prize to EDWARD DONALD ONANIAN

THE LAFAYETTE SABINE FOSTER PRIZE IN GREEK is derived from the income of a fund bequeathed in 1880 by the Hon. Lafayette Sabine Foster, of the class of 1828. This income is to be paid annually "to that scholar of the institution who passes the best examination in the Greek language, the examination to be made in the first, third, sixth, and twenty-fourth books of Homer's *Iliad*, or in the *Oration on the Crown* by Demosthenes." The examination is open to all undergraduate students. In 1957-58 the prize was divided equally between the following:

STEPHEN LEE DYSON

CHIN-TAI KIM

THE RATCLIFFE HICKS PRIZES AND PREMIUMS FOR EXCELLENCE IN DEBATE, established in 1891 by the Hon. Ratcliffe Hicks, of the class of 1864, and by bequest in 1907, are awarded annually as follows:

I. Equal premiums to each of the two representatives of The College in the major intercollegiate debates who have shown the greatest ability in both the preliminary trials and the final debate. In awarding the premiums, regard is given to thought, style, and delivery. In 1957-58 the premiums were awarded respectively to

ROBERT SPOTSWOOD BRÉGY

WAYNE ALLEN STORK

II. A first and a second prize to the students of The College and likewise (since 1955), separately to the students of Pembroke College, showing the greatest ability in a public debate between the representatives of the junior and sophomore classes of The College and of Pembroke College, respectively. Each class is represented by three debaters, whom a committee appointed by the President of the

PRIZES, PREMIUMS, HONORS

University chooses from the preliminary contestants before the public debates. This committee also determines the subjects and makes the necessary arrangements. The prizes are awarded irrespective of the decision upon the debate as a whole. In making the award, regard is given to thought, style, and delivery. In 1957-58 prizes were awarded to men as follows:

The first prize to WAYNE ALLEN STORK

The second prize to WALLACE HOUSTON TERRY

Prizes were awarded to women as follows:

The first prize to LOUISE GOLDSBOROUGH PATTON

The second prize to EDWINA DELLA REPP

THE LUCIUS LYON PRIZES IN LATIN are derived from the income of a fund presented in 1893 by Mrs. Caroline L. Lyon, in memory of her husband, Lucius Lyon, of the class of 1844. Five-tenths of the income each year forms the first prize, three-tenths the second, and two-tenths the third. The prizes are awarded on the basis of a special examination held at the close of the senior year, open to students at The College and at Pembroke College. The examination may relate to any or all of the following subjects: the Latin language, Latin literature, Roman history. In 1957-58 prizes were awarded as follows:

The first prize to JANE ELLEN FRISHMUTH

The second prize to BETTY WOLIN BAER

The third prize to BRUCE STUART NIELSEN

THE WILLIAM GASTON PRIZE FOR EXCELLENCE IN ORATORY. From the income of a fund established in 1894 as a memorial to the Hon. William Gaston, LL.D., of the class of 1840, a medal and a cash prize are awarded annually to the member of the graduating class of The College who delivers the best original address, not to exceed fifteen hundred words. To compete for the prize, a student must deposit with the Recorder a typewritten copy of his address at a designated date before the public competition. From these addresses, not more than five are selected for delivery. In making the award in the final contest regard is given to thought, style, and delivery. In 1957-58 the prize was awarded to

LIONEL POTTER ETSCOVITZ

THE GASPEE CHAPTER DAUGHTERS OF THE AMERICAN REVOLUTION PRIZE. This prize, instituted in 1895, is now paid from the income of a fund presented to Brown University in 1899. The prize is awarded annually to that student (in good standing) of Pembroke College who, registered in a class in American History, presents the best paper under conditions designated by the Department of History. The professor of American History and the Gaspee D.A.R. Prize Committee serve as the judges. In 1957-58 no prize was awarded.

THE WILLIAM GASTON PREMIUM SCHOLARSHIP is provided by the income of a fund established in 1899 by the widow and the children of the Hon. William Gaston, LL.D., of the class of 1840. The scholarship is awarded at the Honors Convocation to a member of the senior class at The College solely upon merit. In 1957-58 the premium was awarded to

RALPH BERTRAM GINSBERG

PRIZES, PREMIUMS, HONORS

THE PHILO SHERMAN BENNETT PRIZE was established in 1904 by Philo Sherman Bennett for the "best essay discussing the principles of free government." A prize is awarded each year to that undergraduate who submits the best paper under conditions designated by the Department of Political Science. In 1957-58 the prize was awarded to

CHARLES BRENT HAROLD

THE BISHOP McVICKAR PRIZES were instituted in 1909 by the Rt. Rev. William Neilson McVickar, Bishop of the Protestant Episcopal Diocese of Rhode Island, 1898-1910, and are now awarded from the income of a fund established in 1923 in his memory by his sister, Miss E. C. McVickar. The prizes are awarded for the best papers submitted under conditions designated by the Department of Religious Studies. The competition is open to all undergraduates. In 1957-58 prizes were awarded as follows:

The first prize to WILLIAM HENRY HERRMAN

The second prize to ROGER CHARLES MITTEN

THE RATCLIFFE HICKS PREMIUM IN ENGLISH established in 1915, from income from the Ratcliffe Hicks Fund of 1907, is awarded at the end of the senior year to the student at The College who has "the highest standing in the courses in English literature and language." For students at Pembroke College, this premium is paralleled by the Minnie Helen Hicks Premium in English. In 1957-58 the premium was awarded to

RALPH BERTRAM GINSBERG

THE SUSAN COLVER ROSENBERGER PRIZES were established in 1919 by Jesse L. Rosenberger, as a memorial to his wife, who was the daughter of Charles K. Colver, of the class of 1842. The awards are to be made under conditions to be laid down by the University. It is a stipulation of the endowment that the prizes "shall not be assigned permanently to any one department of the University, nor continuously for any one thing, but shall be awarded for whatever, from year to year, or from time to time, it is believed will, at the time, do the greatest good, either in the interests of scholarship, or for the development of character."

In 1957-58 prizes from the income of this fund were offered in each of the following competitions open to all undergraduates:

I. In Physics: Awarded for the best work submitted under conditions designated by the Physics Department. Prizes were awarded as follows:

The first prize to WILLIAM LAWRENCE SILVERT

The second prize to MARTIN EDWARD PLAUT

II. In Psychology: Awarded for the best work submitted under conditions designated by the Psychology Department. Prizes were awarded as follows:

The first prize to WILLIAM EDWARD VOGEL

The second prize to MARTIN LEONARD FELDMAN

In 1958-59 two prizes from the income of this fund are offered in each of the following competitions:

PRIZES, PREMIUMS, HONORS

I. In Mathematics: Awarded for the best work submitted under conditions designated by the Mathematics Department.

II. In Philosophy: Awarded for the best work submitted under conditions designated by the Philosophy Department.

THE ENGINEERING PREMIUM, awarded since 1920 and now derived from the income of a premium scholarship fund presented to the University in 1930 by the Brown Engineering Association, is awarded to the member of the senior class who, a candidate for the degree of Bachelor of Science in Engineering, has maintained high standing in the fundamental engineering courses of the first three years, and gives marked promise of future usefulness in some branch of the profession of engineering. In 1957-58 the premium was divided equally between the following:

JOHN EARLY GAMES

DAVID BARNES PETERSON

THE JAMES ALDRICH PIRCE PRIZE is awarded from the income of a fund established in 1927 by Miss Florence Pirce in memory of her brother, a member of the class of 1892. The fund is designed "to promote among students an understanding of order and beauty in life." The prize is currently awarded to the undergraduate at The College who presents the best paper in the course in Greek Art and Archaeology (Classics 117, 118; Art 117, 118) or in Greek and Roman History (Classics 121, 122), these being offered in alternate years, and for undergraduates at Pembroke College is paralleled by the Minnie Helens Hicks Prize in Classical Appreciation. In 1957-58 the prize was awarded to

STEPHEN LEE DYSON

THE PRESTON GURNEY LITERARY PRIZES are derived from the income of a fund bequeathed in 1928 to Brown University by Preston Gurney, of the class of 1866. From the income of the endowment two prizes are awarded annually to members of the senior classes for the best essays on approved literary topics. Two-thirds of the income constitutes the first prize, and one-third the second prize. In 1957-58 the prizes were awarded as follows:

The first prize to RICHARD HARVEY GOLDBERG

The second prize to RALPH BERTRAM GINSBERG

THE CHEMISTRY PREMIUM is awarded annually (since 1930) to the most outstanding student in the junior class concentrating in the Department of Chemistry, the recipient to be chosen by the department on the basis of past accomplishment and future promise. The premium consists of a year's membership in the American Chemical Society. In 1957-58 the premium was awarded to

KYU TAI LEE

THE RUTH ELECTA COLLINS PREMIUM IN FRENCH is derived from the income of a fund established in 1936 by Mrs. Clarkson Abel Collins in memory of her daughter, Ruth Electa Collins. It is awarded annually to that senior, "distinguished as an outstanding scholar in French." In 1957-58 the premium was awarded to

BEVERLY THOMSON ANDERSON

PRIZES, PREMIUMS, HONORS

THE HENRY PARKER MANNING MATHEMATICAL PRIZES, instituted in 1936 by annual gift, as the "Calculus Prizes," are now paid out of not more than half of the annual income of a fund established anonymously in 1949, on the ninetieth birthday of Henry Parker Manning, Brown 1883, mathematician and scholar of ancient languages. The portion of the annual income not so expended is added annually to the principal. A first and a second prize are currently awarded on the basis of a special open-book examination in the Calculus, open to juniors. In 1957-58 prizes were awarded as follows:

The first prize to EDWARD STEPHEN GINSBERG

The second prize to STEPHEN LEWIS MORSE

THE IRVING LYSANDER FOSTER PREMIUM IN FRENCH is awarded from the income of a fund established in 1940 by Warren Woden Foster and Hattie Foster Moore in memory of their father, Irving Lysander Foster, of the class of 1893. The premium is awarded at the end of the academic year to that freshman, who, not a person of French lineage nor educated in a French-speaking community, excels in the work in French. In 1957-58 the premium was awarded to

PATRICIA FRANCES GETZ

THE ADOLPH CONRAD ELY PREMIUM IN GERMAN is derived from a fund bequeathed in 1941 to Brown University by Adolph Conrad Ely, teacher, of the class of 1894. A premium is awarded annually on recommendation of the Department of German to the senior with highest standing in Germanic Languages and Literature. In 1957-58 the premium was awarded to

STANLEY CHARLES DOBSON, JR.

THE CLARKSON ABEL COLLINS, JR., PRIZE IN AMERICAN MARINE HISTORY is derived from the income of a fund given to Brown University in 1941 by Letta I. Collins in memory of her son. An annual prize is offered for the best paper on any approved topic dealing with the American Merchant Marine or Navy prior to 1865. Currently, the competition is open to students at The College under conditions specified by the Department of Naval Science. In 1957-58 the prize was awarded to

GLENDON ROWELL

THE MINNIE HELEN HICKS PRIZE FUND was bequeathed in 1942 to Brown University by Minnie Helen Hicks. The income is used to provide for various prizes and premiums awarded to students of Pembroke College as announced elsewhere.

THE SAMUEL C. LAMPORT PRIZES IN INTERNATIONAL UNDERSTANDING, first offered in 1943 by annual gift of the Trustees of the Samuel C. and Miriam D. Lamport Foundation, are now awarded from the income of a fund donated to Brown University in 1952 by these trustees. The prizes are offered to undergraduate students for papers on international understanding, with emphasis on cooperation and tolerance. Currently, prizes are awarded each year as follows: in 1952-53, and in alternate years thereafter, two prizes in History and two in Political Science; in

PRIZES, PREMIUMS, HONORS

1953-54, and in alternate years thereafter, two prizes in Economics and two in Sociology. In 1957-58 the following prizes were awarded:

ECONOMICS

The first prize to BERNARD PAUL LANE

SOCIOLOGY

The first prize to JOHN TILLINGHAST SPICER

The second prize to HARRY CONRAD BATCHELDER, JR.

THE ISABEL HARRIS METCALF PRIZE was instituted in 1943. It is offered annually for the best paper submitted by any student of Pembroke College under conditions designated by the Department of Political Science. In 1957-58 no prize was awarded.

THE MURIEL PORT STEVENS PREMIUM IN MUSIC, inaugurated in 1944 by annual gift from Mrs. Eli Port in honor of her daughter, of the class of 1940, Pembroke College, is awarded annually on recommendation of the Department of Music, for high achievement in composition, performance, historical study, or a combination of these fields. The premium, open to all undergraduate students, will not be given twice to the same student. It will ordinarily be awarded only to a student who has completed four semesters of work in the Department of Music. In 1957-58 the premium was awarded to

ADELE ADAMS

THE HOPE CHATTERTON PRIZE IN MUSIC, to memorialize Hope Chatterton, was instituted in 1946, by annual gift, donated anonymously. The fund was endowed in 1952. A prize is given in the spring to a student of Pembroke College, enrolled in the Department of Music, who in public audition is deemed to excel in piano performance. In 1957-58 the prize was awarded to

MARCIA FRANCESCA SALEMME

THE MINNIE HELEN HICKS PRIZES FOR ELOCUTION, paid since 1949 from income of the Minnie Helen Hicks Prize Fund, parallel, for students of Pembroke College, the Thomas Carpenter Prizes for Elocution established in 1867 for students in The College. The contests separately judged are conducted concurrently, and under similar conditions. Two prizes are offered. In 1957-58 one prize was awarded to

JUDITH ANN CAMERON

THE ALBERT ARNOLD BENNETT, CLASS OF 1872, AWARD FUND was established by an anonymous donor through several gifts made between 1941 and 1949. The fund is in memory of the Reverend Albert A. Bennett, D.D., pioneer missionary to Japan. A sum not to exceed half the annual income is available annually for award purposes, but not continuously for any one object. Specifically approved as possible beneficiary is the principal of any scholastic award fund of the University, which though long established at the time of the award is then deemed by the President of Brown University to be relatively inadequate. The portion of the annual income not expended for other awards is added annually to the principal.

PRIZES, PREMIUMS, HONORS

In 1957-58 an addition was made from income of this fund to the principals of the Thomas Carpenter and Lydia Carpenter Premiums.

THE HELEN WHEELWRIGHT PREMIUM IN MUSIC, inaugurated in 1950 by the Monday Morning Musical Club of Providence as a memorial to Miss Helen Wheelwright, is awarded to an undergraduate who in the opinion of the Department of Music displays musical gifts of a high order. In 1957-58 the premium was awarded to

ROBERT STOCKTON ROGERS

THE MINNIE HELEN HICKS PRIZES IN ART are awarded, since 1951, from income of the Minnie Helen Hicks Fund, for creative work in Art to students in Pembroke College. A committee appointed by the Department of Art selects the winners on the basis of a limited group of works done by each candidate during her college career and submitted in competition at a public exhibit. The department may retain one work by each prize winner. The winner of the first prize in any year is not eligible to compete in a subsequent year. These prizes parallel the Gilbert Stuart Prizes in Art, awarded since 1955, to students in The College. The contests, Stuart Prizes in Art, awarded since 1955, to students in The College. The contests, separately judged, are conducted concurrently. In 1957-58 prizes were awarded as follows:

The first prize to CYNTHIA NANCE PETERSON

The second prize to SUSAN MARY HANEMAN

THE ALEXANDER MEIKLEJOHN PREMIUM IN LOGIC is paid from income of a fund established anonymously in 1951. The premium is awarded to a freshman, sophomore, or junior who excels in Logic and related subjects. It consists of books selected by the winner after consultation with a member of the Department of Philosophy, at a cost not exceeding half the annual income from the fund, the rest being added to the principal. In 1957-58 the premium was awarded to

ROBERT DAVIES CROTHERS

THE MURIEL FAIN SHER MEMORIAL PREMIUM IN PSYCHOLOGY is derived from the income of a fund established in 1952 by the friends of Muriel Fain Sher. It is awarded annually to the most outstanding student in the senior class of Pembroke College concentrating in the Department of Psychology, the recipient to be chosen by the Department on the basis of past accomplishment and future promise. In 1957-58 the premium was awarded to

GERALDINE ROSE OLIVER

THE CLASS OF 1952 PREMIUM is derived from three-fourths of the income of a fund established in 1952 by the Class of 1952, at The College. It is awarded annually to an outstanding student of The College at the end of his junior year, on the basis of excellence in scholastic achievement and extra-curricular activity. The remainder of the income is added annually to the principal. In 1957-58 the premium was awarded to

JOHN CAMPBELL CHRISTIE, JR.

PRIZES, PREMIUMS, HONORS

THE WOODS HOLE PRIZE IN BIOLOGY is awarded by an anonymous donor, by annual gift since 1952. The prize is an opportunity for a summer course with tuition paid at the Marine Biological Laboratory, Woods Hole, Massachusetts. It is awarded to a junior or senior for the best paper or demonstration for presentation at the Biological Conference of Eastern New England Colleges in the spring. In 1957-58 the prize was not awarded.

THE TRISTAM BURGESS PREMIUM IN ENGLISH, instituted in 1953, is given at the end of the junior year to the student at Pembroke College "with the highest standing in rhetoric, English composition, and public speaking." It parallels the Robinson Potter Dunn Premium in English awarded in The College since 1872. In making the award, regard is given to the number of such courses taken as well as to the rank attained in them. The fund, donated anonymously, is in honor of Tristram Burgess, Brown 1796, first professor of English at Brown, "Professor of Oratory and Belles-Lettres," 1815-28, Trustee, 1813-53, Chief Justice, R. I. Supreme Court, 1815-16, LL.D., Brown, 1823. In 1957-58 no premium was awarded.

THE MINNIE HELEN HICKS PREMIUM IN ENGLISH, paid since 1953 from income of the Minnie Helen Hicks Prize Fund, is awarded at the end of the senior year to the student at Pembroke College, who has "the highest standing in the courses in English literature and language." It parallels the Ratcliffe Hicks Premium in English awarded in The College since 1915. In 1957-58 the premium was awarded to

ANN THORNDIKE

THE MINNIE HELEN HICKS PRIZE IN CLASSICAL APPRECIATION, instituted in 1953 from income of the Minnie Helen Hicks Prize Fund, is currently awarded to the undergraduate at Pembroke College, who presents the best paper in the course in Greek Art and Archaeology (Classics 117, 118; Art 117, 118) or in Greek and Roman History (Classics 121, 122), these being offered in alternate years. It parallels the James Aldrich Pirce Prize offered at The College since 1927. In 1957-58 the prize was awarded to

SUSAN VIRGINIA GOFF

THE LESTER WELLS BOARDMAN PREMIUM IN AMERICAN LITERATURE was instituted by annual gift, in 1954, in memory of Lester W. Boardman, Brown 1899, A.M., 1902, by his widow, Mrs. Abigale C. Boardman. The premium is awarded to a student in The College, for excellence in the field of American Literature. In 1957-58 the premium was awarded to

ROBERT ALAN FELDMAN

JOEL MARVIN GOLDBERG MEMORIAL PREMIUM IN HISTORY was instituted in 1954 and is maintained by annual gift of the Tower Club of Brown University, in memory of Joel Marvin Goldberg, Class of 1955. "In view of his outstanding ability and interest in the Social Studies, this award is presented at the Honors Convocation to a man in his seventh semester whose past achievement in histori-

PRIZES, PREMIUMS, HONORS

cal study gives promise of future accomplishment." The candidate is nominated by the History Department. In 1957-58 the premium was awarded to

DONALD STEVEN CARLISLE

THE GILBERT STUART PRIZES IN ART are awarded since 1955, from income of the Gilbert Stuart Prize Fund, established in 1955-56 by friends of Brown University and of the Art Department, and named in honor of the renowned painter, a native of Rhode Island, for creative work in Art to students in The College. A committee appointed by the Department of Art selects the winners on the basis of a limited group of works done by each candidate during his college career and submitted in competition at a public exhibit. The department may retain one work by each prize winner. The winner of the first prize in any year is not eligible to compete in a subsequent year. These prizes parallel the Minnie Helen Hicks Prizes in Art, awarded since 1951, to students of Pembroke College. The contests, separately judged, are conducted concurrently. In 1957-58 a prize was awarded to

ROBERT WILLIS WATSON

THE MARIO DI SANDRO PREMIUM IN ITALIAN is paid from an expendible fund donated in 1955 to Brown University by Mario di Sandro, Class of 1958. A premium is awarded to an undergraduate who in the opinion of the teaching staff has shown most improvement or distinction in a year course in Italian. In cases of exceptional merit the committee may increase the amount of the premium. In 1957-58 the premium was awarded to

MARY MERCEDES MARINELLI

THE CLASS OF 1906 MEMORIAL PREMIUM was established in 1956 by the will of Harry Knowles, Brown, 1906. Currently the premium is awarded to a student who has completed with highest distinction the Honors Program in Russian Studies and consists of books selected by the winner in consultation with advisers. In 1957-58, no premium was awarded.

THE WALTER JOSEPH NELSON MEMORIAL PREMIUM IN MUSIC, instituted in 1957, is paid from an expendable fund given to the University by friends of the late Dr. Walter J. Nelson, Brown, 1934. In 1957-58 the premium was awarded to

ULYSSES SAMUEL JAMES

THE LINDA MAY LOWELL PRIZE was given in 1957 by the Afternoon Reading Group of the Providence Pembroke Club in memory of Linda May Lowell, Pembroke College, 1904. In 1957-58 the prize was awarded to

AMANDA NORRIS LOVELL

THE CURT JOHN DUCASSE PREMIUM IN METAPHYSICS is paid from income of a fund established anonymously in 1958. The premium is awarded to a freshman, sophomore, or junior who excels in Metaphysics and related subjects. It consists of books selected by the winner after consultation with a member of the Department of Philosophy, at a cost not exceeding half the annual income from the fund, the rest being added to the principal.

PRIZES, PREMIUMS, HONORS

Advanced Awards

THE WILLIAM ROBERT POTTER, 1887, PREMIUM IN CHEMISTRY, was established in 1942 from income of a fund bequeathed by William R. Potter. The premium is awarded "on the basis of a thesis of highest merit submitted by a post graduate student specializing in Chemistry." In 1957-58 the premium was awarded to

FRANK VAN LOON SHALLCROSS

THE BROWN CHAPTER OF SIGMA XI AWARD FUND was given to Brown University in 1954 by the Brown Chapter of Sigma Xi. Annual interest from this fund is available to pay (in part or in whole) an award toward the encouragement of science, whether for research projects, for science teaching, or otherwise, under such conditions, approved by the President of Brown University, and subject to modification from time to time, as may be recommended by the Brown Chapter of Sigma Xi, acting through a Committee of Award, the latter having such power as may be delegated by the Executive Committee of the Chapter. All unexpended interest is added annually to the principal.

Honor Scholarships

"To encourage proficiency in studies and to provide recognition for successful application to college work," the Faculty, in 1909 at The College and in 1922 at Pembroke College, established Honor Scholarships without financial stipend. These scholarships are awarded (1) since 1922, at the respective Honors Convocations in November, to current undergraduates for scholastic achievement during the previous college year, and (2) since 1949, at Commencement, to graduating students for scholastic achievement during the senior year. An Honor Scholarship becomes effective upon the date of announcement.

THE JAMES MANNING AND FRANCIS WAYLAND SCHOLARSHIPS are awarded to students of The College whose college work throughout the academic year preceding, or just completed, has been of such excellence that they are deemed worthy of high academic distinction and of academic distinction respectively. For awards at Honors Convocation, at the instigation of Alexander Meiklejohn, from the Ratcliffe Hicks Fund of 1907, a premium book is presented to each James Manning and Francis Wayland Scholar.

THE ELISHA BENJAMIN ANDREWS SCHOLARSHIPS are awarded to students of Pembroke College, whose college work throughout the academic year preceding, or just completed, has been of such excellence that they are deemed worthy of high academic distinction. For awards at Honors Convocation, from the Lida Shaw King Prize Book Fund of 1929, a premium book is presented to each Elisha Benjamin Andrews Scholar.

PRIZES, PREMIUMS, HONORS

During the academic year 1957-58, Honor Scholars were announced as follows:

JAMES MANNING SCHOLARS

Seniors, at Commencement

RALPH BERTRAM GINSBERG
CHIN-TAI KIM

ROGER CHARLES MITTEN
EDWARD DONALD ONANIAN

Seniors, at Honors Convocation

DONALD STEVEN CARLISLE
CHIN-TAI KIM
PETER CLYMER MARLAY

RICHARD ALLEN MURPHY
JOSEPH WILLIAM VANABLE, JR.

Juniors, at Honors Convocation

STEPHEN LEE DYSON

NACK-CHUNG PAIK

Sophomores, at Honors Convocation

STANLEY ALLEN ARMSTRONG
THEODORE JENWEN CHU
JUSTIN RICHARD EDGERTON

RICHARD EFRON
JOHN LOUIS MARYAK
JOHN JACOB MUELLER

FRANCIS WAYLAND SCHOLARS

Seniors, at Commencement

HERMAN LOUIS AMMON
HARRY CONRAD BATCHELDER, JR.
DONALD STEVEN CARLISLE
THEODORE PAUL COHEN
ROBERT ALAN FELDMAN
DAVID JACOB FINKELSTEIN
BERTRAM ALLEN FLAXMAN
PETER JOHN FREYD
JOHN EARLY GAMES
RICHARD HARVEY GOLDBERG

ULYSSES SAMUEL JAMES
GEORGE FRANCIS KENNEDY
PETER CLYMER MARLAY
EUGENE KENNETH MCGEE
RICHARD ALLEN MURPHY
BRUCE STUART NIELSEN
WILLIAM WALTER PARAY, JR.
JOHN STARK SHAPIRA
PETER SHELDRIK
WALTER JOSEPH TRELA

Seniors, at Honors Convocation

NELSON STROTHER DEARMONT
DAVID NOEL ELLENHORN
DAVID JACOB FINKELSTEIN
BERTRAM ALLEN FLAXMAN
RICHARD HARVEY GOLDBERG
PETER ANTHONY HORBOSTEL

GEORGE FRANCIS KENNEDY
JOHN PETER LORAND
EDWARD DONALD ONANIAN
DONALD ANDREW PARKER
WILLIAM LAWRENCE SILVERT
THOMAS FREUD WIENER

Juniors, at Honors Convocation

DAVID LYMAN BRYSON
HARRY MARVIN CRONSON
GERALD STANLEY CROUT
EDWARD STEPHEN GINSBERG
ALBERT PETER JONIKAS

JOHN LOUIS LAZZATTI, JR.
BRUNO MODICA
PAUL ANTHONY RUSSO
ROBERT DAVID STEIN
WILLIAM EDWARD VOGEL

PRIZES, PREMIUMS, HONORS

Sophomores, at Honors Convocation

FREDERIC MARK ALPER
MILTON EARL BOYD, JR.
JOEL IRA BREST
ARTHUR DAVID FINE
PETER EMANUEL GOLDMAN

ROCKWELL GRAY, JR.
JAMES MICHAEL HITTLE
HARRY ROBERT LEGGETT
JOHN VICTOR SOLOMON

ELISHA BENJAMIN ANDREWS SCHOLARS

Seniors, at Commencement

JANE BERTRAM
ELIZABETH BURGHARDT COE
PATRICIA ELIZABETH FOGARTY
JUDITH HILLERY
CAROL ANN JOHNSON

ELIZABETH NORCROSS MORRISS
ALICIA MARGARITA PIANCA
ANN THORNDIKE
RAYANNE LUCILLE WALTER
IRENE JOANNE WESTING

Seniors, at Honors Convocation

ELIZABETH BURGHARDT COE
GAIL STEPHANIE FARAGO
PATRICIA ELIZABETH FOGARTY
ISABEL HAHN
JUDITH HILLERY
LOIS ANN HODGINS

CAROL ANN JOHNSON
GERALDINE ROSE OLIVER
ALICIA MARGARITA PIANCA
ANN THORNDIKE
RAYANNE LUCILLE WALTER
IRENE JOANNE WESTING

Juniors, at Honors Convocation

JANE GRIFFIN ALLISON
ELLEN HARDMAN ALMOND
JANET MARGARET BALTREN
BARBARA GRACE CRUDEL
KATHLEEN FRANCES HALBING
RUTH ANN PITTS

JOAN TRUDY ROSENSWEIG
VICTORIA LUCILLE SANTOPIETRO
DORIS LOUISE STEARN
FRANCES IRENE TABER
CYNTHIA ANN WAYNE
NANCY LOUISE WERNICK

Sophomores, at Honors Convocation

ELLEN MADELINE COHEN

BARBARA MUNRO LEHMAN

Scholastic Trophies

On Scholastic Trophies Day in the autumn (since 1956), trophies are awarded to dormitories, fraternities, and individuals for high academic standing, for scholastic improvement, and for intramural debate, respectively—on the basis of achievement during the previous academic year. Where two trophies are awarded to the same recipient for a single event, one is an ambulatory trophy bearing the names of successive annual winners and is held for one year only; the other bears the name of the current winner only and is retained permanently by the recipient.

PRIZES, PREMIUMS, HONORS

FOR HIGH ACADEMIC STANDING

THE ARTHUR LEVERETT WASHBURN TROPHIES FOR DORMITORY SCHOLARSHIP: Two plaques are awarded annually to the dormitory achieving the highest academic average during the previous year. In 1957 the plaques were awarded to

MARCY HOUSE

THE ASSOCIATED ALUMNI TROPHY FOR FRATERNITY SCHOLARSHIP: A cup is awarded annually to the fraternity achieving the highest academic average during the preceding year. In 1957 the cup was awarded to

PI LAMBDA PHI

THE J. ACKERMAN COLES ATHLETIC TROPHY: A plaque, from interest of a University fund, instituted in 1907 and increased in 1925 by its donor, Dr. J. Ackerman Coles, is awarded annually to the senior who at the close of the preceding academic year was the varsity letterman of the junior class achieving the highest scholastic record for that year. In 1957 no award was made.

FOR SCHOLASTIC IMPROVEMENT

THE JAMES MANNING TROPHIES: Two plaques, given by Alan P. Cusick, 1932, are awarded annually to the dormitory achieving the greatest academic improvement over the previous year. In 1957 the plaques were awarded to

CHAPIN HOUSE

THE FRATERNITY SCHOLASTIC IMPROVEMENT TROPHIES: A cup and a plaque, given by the Interfraternity Council and Edward T. Richards, 1927, respectively, are awarded annually to the fraternity achieving the greatest academic improvement over the previous year. In 1957 the cup and the plaque were awarded to

DELTA UPSILON

FOR INTRAMURAL DEBATE

THE BRUCE M. BIGELOW TROPHIES: Two cups are awarded annually to the Intramural Debate Champion (dormitory or fraternity) during the preceding year. In 1957 the cups were awarded to

SIGMA CHI

THE INTRAMURAL DEBATE CHAMPIONSHIP RUNNER-UP TROPHY: A plaque is awarded annually to the runner-up (dormitory or fraternity) in the Intramural Debates during the preceding year. In 1957 the plaque was awarded to

SOUTH SLATER HALL

PRIZES, PREMIUMS, HONORS

Honorary Societies

Phi Beta Kappa

OFFICERS, 1958-59

President: PROFESSOR SHARON BROWN, A.B.

Vice-President: WALTER ADLER, A.B., A.M., LL.B.

Secretary: PROFESSOR ELMER MILTON BLISTEIN, Ph.D.

Treasurer: RONALD BANCROFT SMITH, A.B., LL.B.

Historian: PROFESSOR WILLIAM THOMSON HASTINGS, A.M., Litt.D., Ed.D.

Auditor: GEORGE LELAND MINER, A.B.

The Rhode Island Alpha of the Phi Beta Kappa Society was established at Brown University in 1830. The Women's Section was organized in 1900. The chapter annually elects to membership a certain number of the leading scholars of the senior and junior classes.

Candidates for the degree of Bachelor of Arts are eligible for election to Phi Beta Kappa. Not more than one-sixth of the candidates for this degree may be elected, and not more than one-third of the members from each class are elected in the junior year.

Two elections are ordinarily held each year, one at midyear and one in May. At midyear the juniors and about half of the seniors are elected, the choice being based primarily upon their scholastic standings as shown by the official college records. In May the remaining seniors are selected. They are elected "only after a scrutiny of their whole academic record in detail, including (a) such evidence as their success in candidacy for Honors," and (b) opinions of members of the Faculty regarding their general qualifications, particularly the extent to which they possess liberal culture.

MEN ELECTED IN 1957-58

Seniors

DONALD STEVEN CARLISLE
THEODORE PAUL COHEN
BRADLEY ROBERT COLEMAN
WILLIAM THOMAS COTTER
NELSON STROTHER DEARMONT
RONALD ROBERT EDWARDS
ROBERT ALAN FELDMAN
DAVID JACOB FINKELSTEIN
PETER JOHN FREYD
PETER ANTHONY HORNBOSTEL
GEORGE FRANCIS KENNEDY
EUGENE KENNETH MCGEE
PETER CLYMER MARLAY
WALTER ISIDOR NATHAN
BRUCE STUART NIELSEN
EDWARD DONALD ONANIAN

WILLIAM WALTER PARAY
DAVID SIGFRID RIDDERHEIM, JR.
MARTIN GEORGE STEIN
MICHAEL HAMILTON TROTTER

Juniors

DAVID LYMAN BRYSON
BRUCE ELLIOT DONOVAN
STEPHEN LEE DYSON
EDWARD STEPHEN GINSBERG
NACK-CHUNG PAIK
PAUL ANTHONY RUSSO
WILLIAM EDWARD VOGEL

Candidates for the Ph.D. Degree

DANIEL JOHN HUGHES
BEONGCHEON YU

PRIZES, PREMIUMS, HONORS

WOMEN ELECTED IN 1957-58

Seniors

SHIRLEY SANDERSON AVERY
ELIZABETH BURGHARDT COE
GAIL STEPHANIE FARAGO
PATRICIA ELIZABETH FOGARTY
ISABEL HAHN
CYNTHIA GILLIAN HIRST
LOIS ANN HODGINS
LOUISE LADD
ELIZABETH NORCROSS MORRISS
GERALDINE ROSE OLIVER

JUDITH ANN PERLIN
ABBE BETH ROBINSON
BARBARA ANN SCOTT

Juniors

JANET MARGARET BALTREN
JUDITH ELLEN COHEN
RUTH ANN PITTS
JOAN TRUDY ROSENSWEIG
DORIS LOUISE STEARN
NANCY LOUISE WERNICK

Sigma Xi

OFFICERS, 1958-59

President: ROBERT HUGH COLE

Vice-President: WILLIAM SCHUMACHER MASSEY

Secretary: ELIZABETH HORTENSE LEDUC

Treasurer: PHILIP JAMES BRAY

The Society of the Sigma Xi was founded in 1886 for the encouragement of original investigation in science, pure and applied. The Brown University Chapter, established in 1900, holds meetings throughout the academic year. The annual initiation of new members regularly occurs on the Thursday following the first Sunday in March.

Nominations are made by the active members of the Chapter. From the list of nominees the Board of Electors, meeting in February each year, elects those deemed eligible. This Board consists of the Chapter President, who acts *ex-officio* as Chairman, and a representative from each of the following departments: Applied Mathematics, Astronomy, Biology, Botany, Chemistry, Engineering, Geology, Mathematics, Physics, and Psychology. The Board has full discretionary power within the conditions set forth in the Constitution of the Society and the By-Laws of the Chapter. The following are typical and traditional designations of persons eligible for election.

As Members:

(a) Any professor, instructor, or other member of the staff of Brown University who has shown noteworthy achievement as an original investigator in some branch of pure or applied science.

(b) Any graduate student in Brown University who, judged by actual work of investigation, has exhibited an aptitude for scientific research.

(c) Any graduate of Brown University of not less than five years standing, who has shown noteworthy achievement as an original investigator in some branch of pure or applied science, is eligible to alumni membership.

(d) Any professor, instructor, or investigator connected with a neighboring educational, scientific, or professional institution not having a chapter who would otherwise be eligible for active membership.

PRIZES, PREMIUMS, HONORS

(e) Any associate within five years after graduation on the condition prescribed in (b) of this section.

As Associates:

(a) Any graduate student in Brown University who has shown marked excellence in one or more departments of pure or applied science, and has given evidence of an aptitude for research in some field of science.

(b) Any senior undergraduate student who has shown marked excellence in two or more departments of pure or applied science.

In March, 1958, the following were initiated:

MEMBERS

By Promotion

PHILIP ANTHONY CASABELLA
JOSEPH HENRY CLARKE
GEORGE RICHARD COWPER
WALTER GERARD DRISCOLL
ERNEST DZENDOLET
GORDON JOSEPH EATON
NORMAN GERALD EINSPRUCH
ROBERT PORTER ERICKSON
DONALD H. FORTNUM
SIVERT GLARUM

ALLEN MANUEL GRANDA
THOMAS FRANCIS KELLEY, JR.
GIDEON MAIDANIK
JOHN MACCLENAHAN MARSH
KENNETH LEE MILLER
GORDON WOLFE MORRISON
WILLIAM STEPAC
GEORGE DEWEY WALDMAN
FORREST GEROME WEST, JR.

Directly

JACK BRESLER
JAMES HARRY BICK
MAURICE W. LAUFER
BERNARD GEORG LIEBMANN
RICHARD ERNST MEYER

JERZY ROBERT MOSZYNSKI
TORE OLSEN
JUDY FRANCIS ROSENBLITH
ALLEN SHELTON

ASSOCIATES

Graduates

STANLEY ALLAN BERGER
SANG IL CHOI
JOSEPH COLCORD CURTIS
ROZANNE DELSON
ARTHUR BURT EDMUNDS, JR.
DENNIS EISEN
JOHN DAVID GAVENDA
ROBERT DILWYN HALL
ALICE CATHERINE HANAWALT
HENRY OLCOTT HOOPER
KHAIRAT M. IBNE-RASA
RICHARD ERMINE KEESEY, II
YEONG WOOK KIM
CHARLES DWAIN KNOTSON

KENNETH LAWRENCE KOWALSKI
SAMUEL JOSEPH KOZAK
FRANK CHUNG-YEN LIU
JAMES WINFORD NAGLE, III
TORSTEN NORVIG
HOWARD MAHLON ROBERTS
RICHARD W. ROBERTS
YUN-YUAN SHI
DANIEL GEORGE STANLEY
KENNETH MCCARN TOWE
NANCY LOU TROTTER
HUBERTA EVA VAN HEYNINGEN
JEUNG SOON YUN

PRIZES, PREMIUMS, HONORS

Seniors

HERMAN LOUIS AMMON
RALPH PIERCE ANDERSON
DONALD COHEN
GEORGE W. COOPER, JR.
MARGARET ANN DAVIS
GAIL STEPHANIE FARAGO
JAMES NEWTON FAVOR
BERTRAM ALLEN FLAXMAN
JOHN EARLY GAMES
SCOTT GARRETT
JOYCE ELLEN GILLESPIE
ROBERT BRUCE GRAFTON
HERBERT ARNOLD LAVANHAR
JOHN PETER LORAND
ALVIN PAUL MULLERY

WALTER I. NATHAN
GERALDINE ROSE OLIVER
DONALD ANDREW PARKER
VALVO RAAG
DAVID SIGFRID RIDDERHEIM, JR.
HARRIS BENJAMIN SAVIN
PETER SHELDRIK
KATHARINE SHERER
WILLIAM LAWRENCE SILVERT
WALTER JOSEPH TRELA
JOSEPH VANABLE
BRUCE ALBERT VANAUKEN
THOMAS FREUD WIENER
RUFUS SAXTON WILSON, JR.

Tau Beta Pi

OFFICERS, 1958-59

President: JAMES ROBERT MOODY

Vice-President: HARRY WARREN TOWNES

Recording Secretary: HARRY MARVIN CRONSON

Corresponding Secretary: KIRK WESTERN SMITH

Treasurer: PETER BURT HOWARD

Cataloguer: STEPHEN LEWIS MORSE

The Tau Beta Pi Association, national engineering honor society, was founded at Lehigh University in 1885 to mark in a fitting manner those who have conferred honor upon their Alma Mater by distinguished scholarship and exemplary character as undergraduates in engineering, or by their attainments as alumni in the field of engineering, and to foster a spirit of liberal culture in the engineering colleges of America. Each chapter has full control of its individual affairs, the control being vested primarily in the undergraduate members. An alumni advisory board may act in an advisory and judiciary capacity.

To be eligible for election to membership as an undergraduate, the student must be in either the junior or senior year. To be eligible as a junior, scholastic records must fall within the top eighth of the class and as a senior the top fifth. Distinguished scholarship, while the primary requisite for admission, is not considered the sole criterion. After the scholarship requirements have been fulfilled, the selection is based on integrity, breadth of interest both inside and outside of engineering, adaptability, and unselfish activity. An alumnus, either of Brown University or other accredited engineering schools, may be elected to membership if he has a proven record of character, ability, and integrity, the election still being made by the undergraduate chapter.

The Rhode Island Alpha Chapter was installed at Brown University on February 12, 1954. At the time of the installation of the chapter, in addition to the charter

PRIZES, PREMIUMS, HONORS

members, 128 alumni members were initiated, mostly alumni who would have been eligible for membership in the society had the chapter existed prior to their graduation.

MEN ELECTED IN 1957-58

Seniors

SCOTT LEE GARRETT
ROBERT BRUCE GRAFTON
ALVIN PAUL MULLERY

PETER BURT HOWARD
JAMES ROBERT MOODY
STEPHEN LEWIS MORSE
KIRK WESTERN SMITH
HARRY WARREN TOWNES

Juniors

HARRY MARVIN CRONSON

Degrees Conferred



Degrees in Course Conferred by the University in 1958

The College

June 2, 1958

BACHELOR OF ARTS

A.B., summa cum laude

Donald Steven Carlisle
Bertram Allen Flaxman
Ralph Bertram Ginsberg
Chin-Tai Kim

Peter Clymer Marlay
Richard Allen Murphy
Edward Donald Onanian
Joseph William Vanable, Jr.

A.B., magna cum laude

Bradley Robert Coleman
Kenneth Henry Craik
Nelson Strother Dearmont
David Noel Ellenhorn
Robert Alan Feldman
David Jacob Finkelstein
Peter John Freyd
Richard Harvey Goldberg

John Kirkland Goodridge
Peter Anthony Hornbostel
George Francis Kennedy
Kenneth Adolf Kurze
Walter Isidor Nathan
Bruce Stuart Nielsen
William Walter Paray, Jr.
David Sigfrid Ridderheim, Jr.

A.B., cum laude

Harry Conrad Batchelder
Stephen Koplik Bierman
Theodore Paul Cohen
Charles Roy Connell
George Wallace Cooper, Jr.
William Thomas Cotter, Jr.
Ronald Robert Edwards
Walter William Fisher, Jr.
Mark Peter Heilbrun
Edward Marshall Holtzmann
Henry Emil Jakubiak
Ulysses Samuel James
Robert James Keefe
Robert Samuel Krauskopf

David Ephraim Labovitz
Charles James Lynch, Jr.
Robert Bruce McFadden
Eugene Kenneth McGee
Thomas William McNeill
Charles Powell Mead, Jr.
James Francis Mello
Herbert Frederick Ostrach
Paul Majer Schaffer
John Stark Shapira
Peter Sheldrick
Martin George Stein
Edward Charles Sullivan, Jr.
Michael Hamilton Trotter

DEGREES CONFERRED

A.B.

Randolph Marshall Adell	Harold Edward Canning
Ronald Dale Agnes	William Norman Capalbo
James Gerald Alaimo	Scott Oberle Carleton
Arthur Ames	Raymond Arthur Carlson
Michael Paul Andronico	Robert McShane Carney
George Peter Antone, Jr.	Richard Francis Carolan
William Aaron Arbitman	William Francis Carroll, Jr.
Carl Edward Aronson	Francis Charles Carullo
Richard Joseph Arroll	Thomas Jefferson Cashill
Bernard Wolff Asher	Richard Ignatius Champa
Robert Anthony Axley	Alfred McCrea Chapman
Donald Birkenhead Bailey	Peter Charles Charron
Pearce Horne Baker, Jr.	Ronald Lewis Cheney
Stephen D. Barkin	Choo Dip Chin
Barrett Barnard	Cosmo Salvatore Chirico
William Francis Barry	Albert Franklin Clark
Wortham Robinson Farmer Baskerville	Jeremy Carew Clark
Charles Frederick Batchelder	Davis Clayson
Bruce Lee Beatty	Gary Edwin Clipper
John Philipp Becker	John Edmund Coffin, Jr.
Gerald Paul Beezley	Gilbert Philip Cohen
George Alfred Benway, Jr.	John Phillips Colton
Martin Bernheimer	James Allison Cook, Jr.
Thomas Blackmer Bigford	John Michael Corbett
Lenard Donald Blackman	William Edward Corrigan, Jr.
Robert Fletcher Blakeley	Stephen Richard Cottrell
John Arthur Bloom	James Warren Cox
Joseph James Bologna	Wallace Burton Crowell
William Arthur Peter Bolton	Thomas Kenneth Crowl
Anthony Crawford Booth	John Morton Cummings
Kenneth Parker Borden	Donald Ludger Dalbec
Roland Cameron Borton	Edward Victor Damutz
David Glenn Bosland	Ronald John Darling
John Bowles, IV	Rodney Fredrick Dashnaw
David Burford Bradley	James Davidson
William T. Bride, Jr.	Clive Cameron Day, Jr.
Joseph Edward Brogunier	Charles Joseph Deignan
Francis Adams Brooks, Jr.	Jack Samuel Deitch
Eric Brown	Lawrence Raphael Delhagen
John Wilson Brown, Jr.	Edouard Paul de Merlier
John Joseph Bucchiere, Jr.	Thomas Preston Develin
Peter Stuart Buchanan	Richard James DeVenuto
David Owen Buffett	Warren Arthur Dingleman
Edwin Vernon Burkholder, Jr.	Stanley Charles Dobson, Jr.
Arthur Moore Bylin	John Livermore Dodge

DEGREES CONFERRED

John Beecher Doolittle
Donald Cullinan Dowling
Don Downing
Charles Edward Drake
Henry Mills Drake
Norman Francis Drapelick
James Raymond Driscoll
Philip Galusha DuMond
Bernard Alfred DuPont
Elisha Dyer, Jr.
Andrew Edgar Dzelzitis
Thomas Granville Ebbert
William Dryden Eberhart
Richard Leslie Emmons
William Richard Engelsmann
Michael Taylor Epstein
Lionel Potter Etscovitz
John Joseph Fahey, Jr.
Stephen John Feinstein
Martin Leonard Feldman
Robert Arthur Ferguson
Joseph Feuchtwanger, III
Edward Robert Finnegan
Stewart Younglove Fish
Walter Hamilton Fish
Edward Samuel Flattau
Henry John Flynn, Jr.
Robert Norman Forest
James Milton Foster
Bruce Leigh Fowler
Harry L. Franc, III
William Edward Frank
Robert Arthur Freeman
Henry Atwater French
James Castle Furlong
Maxson Wells Furness
David Allan Galligan
John White Gamwell
Adolfo Luis García
Thomas Lockwood Gardner
Peter Gemski, Jr.
Michael Charles Geremia
Morgan George Gilman
Henry Morton Gilstein
Paul Ginalsiki
William Boulay Glen

Gordon Gray Glover
John Calvin Goddard
Don Fielding Goodwin
Charles Fox Gordon, Jr.
Henri Gordon
Douglas Stewart Gould
Norman David Grace
Norman Grad
Gilbert Robidoux Grady, Jr.
David Graham, Jr.
Lawrence Charles Grebstein
Charles Marquis Greer
Stephen Hale Gushée
Charles Dudley Hackett, Jr.
James Howard Hackett
Bron David Hafner
Seymour Brewster Hall
John Thomas Halley, Jr.
William Charles Hallstein
James Wolcott Hanner
Reese Harvey Harris, III
Richard Elton Harris
Michael Harvey-Smith
Roy Donald Hawkinson
Warren Robert Healey
Sheldon Hearst
Maxton Carlisle Held
Robert Gordon Hellstrom
William Henry Herrman
Donald George Higdon
Donald Parker Higgins
Michael Stephen Hinebaugh
Owen O. Hobermann
Robert Woodford Holt
Ralph Henderson Hood
Winfield Grier Horner, IV
Calvin Ewart Horsman
John Arnold Howard
Alfred Upham Howes
Herbert Henry Hulse, Jr.
Samuel Clay Hurley, III
David Price Jenkins
Jon George Jensen
Bruce Johnson
Gary Rollander Johnson
Paul Harry Johnson

DEGREES CONFERRED

Henry Oliver Johnston
Edward Thomas Jones
Ernest Richard Jones
Robert Lawrence Jones
Chris James Kachulis
Lawrence Frank Kalesnik
Edward Simons Kapp
Joel David Katz
Richard Edmund Joseph Katz
Elliot Martin Kaufman
Anson More Keller
Charles Henry Kershaw, III
Jack Raymond Kleiderlein
Donald Roth Klein
Sanford Kluger
Lawrence Taylor Kocher
Peter William Kopke
Franz Walter Kretzmann
Richard Edmund Krolicki
Peter Ian Kuniholm
Stephen Joseph Kurtz
Manuel Kyriakakis
Paul George Laffoley, Jr.
Richard Forrest Lamb
Stephen Tallant Lambert
William Wallace Lane
Richard Lewis Lang
William Bernard Lange, Jr.
Charles Markham Langham, Jr.
Michael Forbes Larratt
Jerry Kingsley Lasley
Karl Frederick Lauenstein
David Mayoh Lawton
Alan Harvey Leader
Jay Allen Leavitt
Jae Num Lee
Robert Evans Lee, Jr.
Ben Zion Levine
Gerald Richard Levine
Richard Neil Levine
Edwin Arnold Levy
William Edward Lewis
Edward Harrison LeZotte
Stephen Leonard Lloyd
Ralph Blais Lombardo, Jr.
Gilbert William Lugossy
Peter Macioci, Jr.

Donald MacKenzie, III
Stephen Maclachlan
Edgar George Mailhot
Hugo Reno Mainelli, Jr.
Andrew Anthony Mantineo, Jr.
Harold Mark
John Mazzanovich, III
Robert Jones McBride
Maxwell Rodgers McCreery, Jr.
Martin Francis McDonald, III
David John McIntire
Lauren Leslie McMaster, III
Peter Megrđichian
Burnley Lankford Miles
Joseph Charles Miller, Jr.
Ludlow Miller
David Aram Milot
Joseph John Miluski
Roger Charles Mitten
Richard Clinton Montgomery
Terrence Aue Moore
William Thomas Moore
Martin Joseph Moran, Jr.
Reginald Giles Morse
Richard Hart Morse, Jr.
Robert Wallace Morse
Gilbert Henry Mortensen
Thomas Lanier Moses, III
Charles J. Mosler
Robert Atkins Moss
James Harvey Moulton
Joseph Alan Moyer
William Wade Murck
Robert Joseph Murphy, III
Richard Erwin Neal
Donald Anders Nelson
William Russell Nelson
John Spencer Newhouse, Jr.
William George Nicholson
James Joseph Noonan
Fred Wood Nordenholz
Lee Edward Norton, Jr.
Ronald Ernest Oberg
Robert Vincent O'Brien, Jr.
Ronald Joel Offenkrantz
John Philip O'Hara
Jerrold Alan Olanoff

DEGREES CONFERRED

James Forgan Ott
Matthew Nelson Ott, Jr.
Josiah Bartlett Page
Arthur Holmes Parker, II
Gardner Patrick
Robert King Patterson
Warren Galloway Paul
Hugh Walter Pearson, III
Ralph Alan Peel
Barrie Glenn Phelps
Pasquale Vincent Picchione
Everett Vincent Pizzuti
Arnold C. G. Platzker
Martin Edward Plaut
Edward Warren Poitras
Warner Edward Poor
Ronald Ellsworth Prouty
John Foster Puccinelli
John Canning Quinn
Evandro Renato Radoccia, Jr.
Lewis Samuel Rafkin
Thomas Lawrence Raftery
Andrew McCall Rasmussen
Joseph Vincent Richardson, Jr.
William Lewis Riddle
Edmund Peter Rihbany
Jordan Evan Ringel
Martin L. Ritter
John Joshua Roach, Jr.
Walter Scott Roberts
Gilbert Edward Robertshaw
Herbert William Robinson
Hays Hamilton Rockwell
Jerry Anthony Romano
Alan Stephen Rosenberg
Richard Saul Rosenberg
Edward John Rossetti
Arnold Morton Rothstein
Glendon Rowell
Philip John Bleriot Rubel
Ralph Gedeon Salvagno
Lawrence Edward Salzman
Robert Pochon Sanchez
Joseph Anthony Santangini
George David Sarkisian
Marshall M. Sawyer
Steven Allen Schwartz

Robert Louis Schwartzman
Gordon Fraser Scott
Theodore Dwight Seager
Palmer Sealy, Jr.
Richard Albert Seid
John Jandorf Selig
Robert Joel Selig
Michael Bruce Seligman
Dwight Thompson Seward
Louis Albert Sgarzi
Douglas Maxwell Sherburne
Leslie Michael Silverstein
Louis Solomon Silverstein
Dikran Vahan Simidian
Harold Kurt Simon
James Everett Smith, Jr.
Roy Harmon Smith, III
Loring Wolcott Smithies
Robert John Smythe, IV
Harry Leroy Snyder
Gustaf Peter Sobin
Ronald George Speckmann
John Tillinghast Spicer
Kenneth Ralph Spiewak
Peter Schniewind Stanley
William Ralph Starke
Arthur Keeney Stedman
Robert Baker Stevenson
Charles Arthur Stewart, III
Joel Carruth Stokes
John Kennard Streett
Michael Edward Strem
Henry Meade Summers, Jr.
Charles William Swanson
Edward Allen Tamm, Jr.
Harold Allen Taylor, Jr.
Robert Fairchild Taylor
Joseph James Tebo
Joseph M. Thier
William Harley Tozier
Michael Hamilton Trotter
Charles Hamilton Turner
Alfred Fox Uhry
Terry Jun Uyeyama
Joseph William Vanable, Jr.
Thomas James Vetter
Lloyd Raymond Wackerling

DEGREES CONFERRED

James Cameron Wakefield
Charles Stiles Watson
Richard Ellsworth West
Thomas Austin Westbrook
Robert William Westgate
Ralph Eugene Whitman
John Barton Whitney
James Evans Whittaker
Charles Richard Whittemore, Jr.
John Bacon Willenbecher
Elliott Bruce Williams
Marshall Louis Williams

Edward James Williamson, Jr.
Abbott Eldridge Wilson, Jr.
Leigh Alan Wilson
Paul Theodore Wilson, Jr.
Thomas Matthew Wilson, III
Martin Wolman
John Edward Wright
Harold Lee Yeaton
Bruce Dee Yeutter
Albert Donald Zorabedian
Leonard Peter Zych

BACHELOR OF SCIENCE IN ENGINEERING

Sc.B., *magna cum laude*

John Early Games
Donald Andrew Parker

David Barner Peterson
Thomas Freud Wiener

Sc.B., *cum laude*

James Newton Favor
Scott Lee Garrett
Robert Bruce Grafton
Herbert Arnold Lavanhar

Alvin Paul Mullery
Bruce Albert Van Auken
Rufus Saxton Wilson, Jr.

Sc.B.

Ralph Pierce Anderson
Oscar Edward Arpin
John Peter Bird
Leonard Richard Bradley
Norman Terry Brust
James Edward Bullock, Jr.
Laurence Martin Coyle
Robert Frank Cunningham
Domenic Emanuel D'Eramo
Richard Alexander Dornon
Daniel Cummings Dunlap
Richard Mason Dunn
Thomas Brian Foley
John Philip Gould
Conrad Leo Hamel

Donald Jack McLain
William Homer Miller
Neal Burgess Mitchell, Jr.
William Rector Murphy
George Berryman Newton, Jr.
Robert Allen Nuttall
Clifford Emil Olivera
William Gilmour Olsen, Jr.
George Hawley Perry, Jr.
James Harlan Rich, Jr.
Richard Nelson Sauter
John Richard Sczepanski
Robert Leon Sierakowski
Stuart Breary Spence

BACHELOR OF SCIENCE IN CHEMISTRY

Sc.B., *magna cum laude*

Herbert Louis Ammon

John Peter Lorand

DEGREES CONFERRED

Sc.B.

Thomas Capiris
Walter Wilson Gale

Richard Calder Hatch
Robert Everett Manning

BACHELOR OF SCIENCE IN PHYSICS

Sc.B., *magna cum laude*

William Lawrence Silvert

Walter Joseph Trela

Sc.B., *cum laude*

Joseph Domenic Fera
Valvo Raag

Andrew Michael Rauth

Sc.B.

Robert Ogden Doyle
David Fischel

James Clinton Hart
Bruce Highland Taylor

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

Sc.B., *cum laude*

Paul Robert Milch

Sc.B.

Robert Milton Barta

Howard Miller

Pembroke College

June 2, 1958

BACHELOR OF ARTS

A.B., *summa cum laude*

Patricia Elizabeth Fogarty
Judith Hillery
Carol Ann Johnson
Alicia Margarita Pianca

Ann Thorndike
Rayanne Lucille Walter
Irene Joanne Westing

A.B., *magna cum laude*

Shirley Sanderson Avery
Elizabeth Burghardt Coe
Gail Stephanie Farago
Isabel Hahn
Lois Ann Hodgins

Macey Blackburn McKee
Elizabeth Norcross Morriss
Geraldine Rose Oliver
Abbe Beth Robinson
Barbara Ann Scott

A.B., *cum laude*

Jane Bishop Arnold
Betty Wolin Baer
Jane Bertram

Marilyn Beemus Buzzard
Janet Cohen
Ann Pemberton Cutler

DEGREES CONFERRED

Margaret Ann Davis
Lenore Angela D'Onofrio
Hilda Johanna Joan Edgley
Gail Frances Ephraim
Joyce Ellen Gillespie
Paula Koffler Granoff
Anne Elisabeth Guerry
Penelope Wallace Hall
Cynthia Gillian Hirst
Kathryn Boylan Kissane

Louise Ladd
Mary Mercedes Marinelli
Marion McFarland
Beverly Munter
Judith Ann Perlin
Nancy Gertrude Redden
Dawn Palmer Ridley
Katharine Sherer
Annette Winter

A.B.

Judith Dwight Abbott
Adele Adams
Susan Beth Adler
Beverly Thomson Anderson
Judith Hammell Applegate
Merklee Lockwood Arnold
Susan Lamscha Asselin
Pauline Howell Barnes
Carol Jean Batchelder
Noel Jeanne Beaulac
Betsy Jo Becker
Mary Bell
Lillian Shoushan Berberian
Janet Farr Biehn
Constance Kirkland Black
Cyrille Ethel Bloom
Claudette Monique Bogdan
Ann Hotchkin Bowman
Martha Brown
Nancy Jo Burgatti
Barbara Anne Burgess
Barbara Ann Burns
Linda Cadmus
Catherine Mary Calvo
Joan Castronovo
Barbara Whipple Chaplin
Harriet Sandra Chipurnoi
Judith Somerset Clark
Judith Cole
Virginia Coley
Martha Francis Collins
Iris Helene Cornelius
Dorothy Anne Cox
Mary Critikos
Dorothy Ruth Davis

Lois Dean
Sallie Ann Decker
Lois Estelle Delaney
Corinne Delyanis
Diane Marguerite Demirjian
Hannah Austin Dunn
Valerie Edwards
Marietta Joan Fay
Leslie Ann Feifer
June Elizabeth Fletcher
Barbara Joan Florop
Jane Ellen Frishmuth
Salley Arlene Fusco
Janet Roger Ganung
Mary Benbow Gerhart
Arlene Entrican Gibson
Martha Elizabeth Gulesian
Nancy Hageman
Judith Toy Hamilton
Susan Mary Haneman
Barbara Jane Harvey
Alice Shaal Hazlehurst
Mary Elizabeth Hitchcock
Carol May Jadick
Deborah May Karp
Judith Katz
Maureen Marcellian Kelly
Rosalind Damon Kennedy
Rosalind Miriam Kenny
Ann Shirley Kimball
Priscilla Kingston
Joan Catherine Kopf
Barbara Hall Kramer
Judith Ann Lamb
Susan Taft Langdon

DEGREES CONFERRED

Suzanne Johnson Licht
 Katherine McKee Lockhart
 Jean Rutherford Lowrie
 Arlene Rose Mackey
 Benita Elvira Mangini
 Lorraine Chiello Mansolillo
 Eleanor Avis Marks
 Janet Melkonian
 Sally Cameron Mello
 Marilyn Mohnkern
 Prudence Goodrich Morton
 Irene Mungiu
 Barbara Elizabeth Murphy
 Sandra Nelson Murray
 Elizabeth Anne Mushinsky
 Marilyn May Nahabit
 Janet Marilyn Nelson
 Sally Elizabeth Nichols
 Lorna Paster Osiason
 Patricia Mary Patricelli
 Priscilla Ellen Peirce
 Cynthia Nance Peterson
 Judith Ann Peterson
 Janina Anna Piasta
 Ann Pickering
 Helen Dixon Pillsbury

Gertrude Anne Prior
 Ann Richards
 Judith Ann Riley
 Margaret Anne Roy
 Mary Louise Sabin
 Judith Virtue Sargent
 Katherine Eloise Schutt
 Mary Jane Sheldon
 Barbara Shipley
 Carol Betty Smola
 Doria Alice Tenca
 Anne Hale Thielens
 Sylvia Ann Thorley
 Katherine Ann Ulry
 Judith Ann Wallace
 Jane Watman
 Mary Lee Wegner
 Carolyn Ruth Wells
 Nancy Elizabeth Werneth
 Sarah Lowell Whitcomb
 Jean Rona Fletcher White
 Margaret Lynn Whittum
 Brenda Ann Williams
 Jane Winslow
 Nancy Ann Worcester

BACHELOR OF SCIENCE IN PHYSICS

Susan Lynn Bengtson

Frances Stein

BACHELOR OF SCIENCE

*Conferred in connection with the granting of a diploma by the Rhode
 Island Hospital School of Nursing*

Carol Elaine Jodat
 Hazel Belle Kingsley

Jeanne Burdett Maxwell

Honors Program Awards in June, 1958 The College

HIGHEST HONORS

BERTRAM ALLEN FLAXMAN
Biology
 PETER JOHN FREYD
Mathematics
 RALPH BERTRAM GINSBERG
English Literature

CHIN-TAI KIM
Philosophy
 WILLIAM LAWRENCE SILVERT
Physics

DEGREES CONFERRED

HIGH HONORS

HERMAN LOUIS AMMON
Chemistry
PEARCE HORNE BAKER, JR.
English Expression
WILLIAM THOMAS COTTER, JR.
Mathematics and Economics
DAVID JACOB FINKELSTEIN
English Literature
RICHARD HARVEY GOLDBERG
English Literature
PETER ANTHONY HORNBOSTEL
International Relations
KENNETH ADOLF KURZE
International Relations
JOHN PETER LORAND
Chemistry
PETER CLYMER MARLAY
Spanish and English
EUGENE KENNETH MCGEE
History

RICHARD ALLEN MURPHY
Linguistics
BRUCE STUART NIELSEN
Classics
DAVID SIGFRID RIDDERHEIM
Psychology
PAUL MAJER SCHAFER
Russian Studies
PETER SHELDRIK
Chemistry
HARRY LEROY SNYDER
Psychology
MARTIN GEORGE STEIN
Biology
WALTER JOSEPH TRELA
Physics
THOMAS FREUD WIENER
Engineering
JOHN BACON WILLENBECHER
Art

HONORS

MARTIN BERNHEIMER
Music
STEPHEN KOPLIK BIERMAN
English Literature
KENNETH PARKER BORDEN
Russian Studies
THOMAS CAPIRIS
Chemistry
THEODORE COHEN
Economics
BRADLEY ROBERT COLEMAN
International Relations
KENNETH HENRY CRAIK
Psychology
NORMAN FRANCIS DRAPELICK
Art
WALTER WILSON GALE
Chemistry
JOHN KIRKLAND GOODRIDGE
International Relations
NORMAN DAVID GRACE
Chemistry and Biology
ROBERT JAMES KEEFE
English Literature

ROBERT SAMUEL KRAUSKOPF
English Literature
DAVID EPHRAIM LABOVITZ
Mathematics and Economics
CHARLES JAMES LYNCH, JR.
English Literature
ROBERT BRUCE MCFADDEN
English Literature
JAMES FRANCIS MELLO
Geology
WALTER ISIDOR NATHAN
Chemistry
ARNOLD C. G. PLATZKER
Biology
ANDREW MICHAEL RAUTH
Physics
ROBERT POCHON SANCHEZ
English Literature
JOHN JANDORF SELIG
English Literature
ROBERT JOEL SELIG
Economics
JOHN STARK SHAPIRA
Sociology

DEGREES CONFERRED

Pembroke College

HIGHEST HONORS

JUDITH HILLERY

English Expression

CAROL ANN JOHNSON

History

MACEY BLACKBURN MCKEE

Linguistics

ALICIA MARGARITA PIANCA

Spanish

ANN THORNDIKE

English Literature

RAYANNE LUCILLE WALTER

Art

IRENE JOANNE WESTING

History

HIGH HONORS

MARY BELL

Biology

ELIZABETH BURGHARDT COE

English Literature

PATRICIA ELIZABETH FOGARTY

English Literature

ELIZABETH NORCROSS MORRISS

English Literature

GERALDINE ROSE OLIVER

Psychology

ABBE BETH ROBINSON

English Literature

HONORS

JANE BISHOP ARNOLD

Psychology

BETTY WOLIN BAER

Latin

JANET COHEN

English Literature

ANN PEMBERTON CUTLER

International Relations

LOIS ESTELLE DELANEY

Spanish

MARIETTA JOAN FAY

Music

LOIS ANN HODGINS

Sociology

LOUISE LADD

English Literature

BARBARA ELIZABETH MURPHY

History

Graduate School

June 2, 1958

MASTER OF ARTS

Daniel Cary Abbott, A.B.

Lyman Allen, II, A.B.

Marie Barbara Ammar, A.B.

Margaret Schuller Appel, A.B.

Maria-Carmen Gil Azpeitia

William John Beckett, A.B.

John Richard Billings, Sc.B.

Louis Michael Bronzi, A.B.

Conrad Peter Caligaris, B.B.A.

Ruth Sokol Dembo, A.B.

Arthur Burt Edmunds, Jr., A.B.

Roger Lee Emerson, A.B.

Zygmunt Jerzy Friedemann, A.B.

Nancy Jean Geiger, A.B.

Ernest Michael Grunebaum, A.B.

Robert Dilwyn Hall, A.B.

Dorothy Allen Hill, A.B.

Werner Georg Hoffmeister

James Herbert Kane, A.B.

Charles Joseph Brown Keller, A.B.

Winifred Elisabeth Kiernan, A.B.

Herbert Akiba Leibowitz, A.B.

Erwin Leon Levine, A.B.

James Joseph McKee, B.S. in Educ.

DEGREES CONFERRED

Bernard Gerard Masterson, A.B.	Elaine Cecile Richard, Ed.B.
Matthew Pierce Matheney, Jr., A.B.	Edith Talbot Rowe, A.B.
Mary Boat Miller, A.B.	Nancy Hoyt St. John, A.B.
James Karam Mish'alani, B.A.	Malcolm Loran Searle, A.B.
Donald Alfred Murray, A.B.	Sylvia Lucille Short, A.B.
William Pattangall Nicolet, A.B.	Barbara Grace Silverman, A.B.
Joan Ellen Norek, Ed.B.	Gordon Burgess Small, Jr., A.B.
Margot Liljencrants Obolensky, A.B.	Sheila Stern, A.B.
Marian Regina O'Connor, A.B.	Elaine Sulka, A.B.
Morton David Paley, A.B.	Nabila el Taher, B.A.
Michael John Parenti, A.B.	Weslene Dolloff Troy, A.B.
James Saunders Pemberton, Sr., B.S. in Educ.	Robert Lynwood Westfield, A.B.
Irwin Herman Polishook, A.B.	Erich Herbert Wildgrube, Jr., A.B., B.D.
	Yung Jai Lee Yu, A.B.

MASTER OF ARTS IN TEACHING

Caroline Pierce Allingham, A.B.	William James Wallace, A.B.
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MASTER OF SCIENCE

Donald Richard Campbell, Sc.B. in Chem.	Frank Chung-Yen Liu, B.Sc. in M.E.
Harley Cohen, B.Sc.	Thomas Edward Mead, A.B.
Arvid Helge Corneliusen, Jr., Sc.B. in Math.	Earl Wayne O'Dell, Sc.B.
Daniel Rolfe Cristall, A.B.	Joseph Emilio Panarelli, Sc.B. in Applied Math.
Rozanne Delson, A.B.	Carmen Bernal Santos, B.S. in Educ.
Dennis Eisen, B.A.E.	Yun-Yuan Shi, B.Sc. in Engin.
Richard Henry Gustafson, Sc.B.	Marie Madden Smith, A.B.
Alice Catherine Hanawalt, A.B.	Daniel Georges Lucien Stanley, Sc.B.
Frank Lyman Hassler, Sc.B.	Carl Walter Stempin, Sc.B. in Chem.
Stephen Henry Howe, Sc.B.	Nancy Lou Trotter, A.B.
Nai-Chien Huang, B.Sc. in Engin.	William Bruce Woodward, Sc.B.
Richard Ermine Keesey, II, A.B.	John Francis Wosinski, Sc.B.
Samuel Joseph Kozak, Jr., Sc.B.	Jeung Soon Han Yun, B.Sc.

DOCTOR OF PHILOSOPHY

Israel Aluf, B.A., M.A.

Thesis: "The concept of integration in the works of Adalbert Stifter."

Annette Kar Baxter, A.B., A.M.

Thesis: "Parts of the mosaic: Henry Miller as expatriate."

Henry Victor Bohn, A.B., Sc.M.

Thesis: "Ultrasonic attenuation by electrons in metals at low temperatures."

William Edward Brady, A.B., A.M.

Thesis: "English satire in the sixteenth century."

George Brown Davis, A.B., A.M.

Thesis: "The *Histoire critique des journaux* of Denis-François Camusat: An evaluation as a source for the history of French learned journalism, 1665-1730."

DEGREES CONFERRED

Margaret McQuiston Dickie, A.B., A.M.

Thesis: "Adrenal tumors and other pathological changes in reciprocal backcross mice. I. Backcross to strain CE."

Ronald Kraft Eby, Sc.B. in Physics, Sc.M.

Thesis: "Sound propagation in shallow layers."

Robert Porter Erickson, Sc.B., Sc.M.

Thesis: "Responsiveness of single second order neurons in the rat to tongue stimulation."

James Etmekjian, A.B., A.M. in Teaching

Thesis: "The French influence on the Western Armenian renaissance."

Donald Holly Fortnum, Sc.B.

Thesis: I. "The Raman spectrum and structure of the aqueous silicate ion." II. "A kinetic study of the oxidation of bromide ion by peroxy monosulfuric acid."

Samuel Milton Genensky, Sc.B. in Physics, A.M.

Thesis: "Plane strain in a network of slightly extensible cords."

Peter Macdonald Guthrie, Sc.B., Sc.M.

Thesis: "CS-US interval as a parameter in avoidance conditioning in rats."

Russell Vandervort Hanks, Sc.B.

Thesis: "An experimental study of the viscosities of compressed gases."

Woodrow James Hansen, A.B., A.M.

Thesis: "The search for authority in California, 1822-1849."

John Everett Harris, Sc.B.

Thesis: "The structure of anemonin."

Stephen Havriliak, Jr., A.B.

Thesis: "The dielectric properties of hydrogen sulfide, hydrogen iodide, deuterium iodide, deuterium bromide in the condensed phases."

John Francis Hon, Sc.B. in Physics, Sc.M.

Thesis: "Nuclear magnetic resonance in neutron-irradiated alkali halides."

Daniel John Hughes, Jr., A.B., A.M.

Thesis: "Coleridge and Valery: An essay in modern poetics."

Harold Trainer Jones, A.B., A.M.

Thesis: "An application of the theory of linear operators in Hilbert space to a problem in potential theory."

Kenneth Francis King, Sc.B.

Thesis: I. "The reactions of vitamin C and related compounds with amphetamine." II. "The kinetics and mechanism of the methanolysis of α - and β -cholestanyl-*p*-toluenesulfonates."

Shigemi Kono, B.A., A.M.

Thesis: "The Japanese work force: A demographic analysis."

Frederick Strube Lee, A.B.

Thesis: "The x-ray crystal structure of perchloric acid monohydrate, at least squares refinement of the x-ray crystal structure of nitric acid monohydrate, and a preliminary x-ray investigation of ammonium hydrogen hyponitrite."

Stuart George Levine, A.B., A.M.

Thesis: "The Proper Spirit: A study of the prose fiction of Edgar Poe."

DEGREES CONFERRED

Stuart Estes Lovell, Sc.B.

Thesis: "Dielectric properties of normal and dideuterated sulfuric acid."

Ursula Renate Mahlendorf, *University of Bonn, 1952-1954*; A.M.

Thesis: "Georg Heym: Stil und weltbild."

John MacClenahan Marsh, Sc.B., Sc.M.

Thesis: "The nitrogen release by diaphragms of two inbred strains of mice and the effect of hormones on this release."

Kenneth Lee Miller, A.B., A.M.

Thesis: "Wave propagation in ring springs under general loading."

Joseph Timothy Mullhaupt, Sc.B.

Thesis: "The vibrational spectrum of the hydronium ion in crystals."

Oliver Enoch Overseth, Jr., Sc.B.

Thesis: "Angular distribution of proton groups from the Al^{27} (n,p) Mg^{27} reaction at 14 Mev."

Caroline Nestmann Peck, Ph.B., A.M.

Thesis: "Some decorated tombs of the first intermediate period at Naga-ed-Dêr."

Joseph Mason Proud, Jr., A.B., Sc.M.

Thesis: "Underwater sound reflection from randomly rough surfaces."

James Francis Ross, A.B., A.M.

Thesis: "A critical analysis of the theory of analogy of St. Thomas Aquinas."

Alex Thomas Rowland, A.B.,

Thesis: "Studies in ring B of the pregnane nucleus: The Favorskii rearrangement and the chemistry of 5,6-epoxides."

Frank VanLoon Shallcross, A.B.

Thesis: "An x-ray diffraction study of the crystal structures of cyanoacetylene, ethylenimine, and the cubic phase of ice."

Phoebe Bailey Shallcross, Sc.B., A.M.

Thesis: "Copper, nickel, and some of their alloys as catalysts for ortho-para hydrogen interconversion."

Doris Grove Skillman Stockton, Sc.B., Sc.M.

Thesis: "Singular parabolic partial differential equations with time dependent coefficients."

Louis Joseph Teutonico, Sc.B.

Thesis: "Theory of the thermal breakaway of a pinned dislocation line with application to dampening phenomena."

Hans Jakob Ulrich Thommen, Dipl. Ing.

Thesis: "On transonic flow about slender three-dimensional bodies."

Lawrence Moore Washington, A.B., A.M.

Thesis: "Gottfried Keller's literary theory and portrayal of men."

Peter Cary Waterman, Sc.B., Sc.M.

Thesis: "Multiple scattering of waves."

Howard VanName Young, Jr., A.B., A.M.

Thesis: "The evangelical clergy in the Church of England, 1790-1850."

Beongcheon Yu, B.A., A.M.

Thesis: "An Ape of Gods: A study of Lafcadio Hearn."

DEGREES CONFERRED

Honorary Degrees Conferred by the University during the Academic Year 1957-58

REDEDICATION OF THE FABRIC OF THE
FIRST BAPTIST MEETING HOUSE, APRIL 13, 1958

HOMER LEROY TRICKETT, *Doctor of Divinity*
EDWIN HURLBUT TULLER, *Doctor of Divinity*

COMMENCEMENT, JUNE 2, 1958

THOMAS FREEMAN GILBANE, *Master of Arts*
WILLIAM JAMES GILBANE, *Master of Arts*
WILLIAM CHESLEY WORTHINGTON, *Doctor of Humane Letters*
RAYMOND LOUIS WILDER, *Doctor of Science*
GORDON LANCASTER PARKER, *Doctor of Laws*
MARY ISABELLE HALL, *Doctor of Letters*
JOHN HUTCHINS CADY, *Doctor of Fine Arts*
WARREN RUSSELL WARD, *Doctor of Sacred Theology*
ARTHUR EDWARD WILSON, *Doctor of Divinity*
WILLIAM CLEMENT GAIGE, *Doctor of Laws*
HERMAN CANFIELD PITTS, *Doctor of Science*
ROBERT FRANCIS GOHEEN, *Doctor of Letters*
JOHN HAY WHITNEY, *Doctor of Laws*
SIDNEY EARLE SMITH, *Doctor of Laws*
HELEN HAYES MACARTHUR, *Doctor of Humane Letters*

Rosenberger Medal

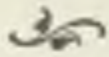
The Susan Colver Rosenberger Medal of Honor was provided for in 1919 by Jesse L. Rosenberger as a memorial to his wife. The Medal is awarded, by designation of the Faculty of Brown University, to a graduate of Brown who has contributed notably or beneficially to scholarship, letters, or the public welfare. The recipients and years of past awards are:

WILLIAM WILLIAMS KEEN	1925	HENRY DEXTER SHARPE	1944
CHARLES EVANS HUGHES	1928	ZECHARIAH CHAFEE, JR.	1947
JOHN DAVISON ROCKEFELLER, JR.	1931	WARREN RANDOLPH BURGESS	1953
CHARLES VALUE CHAPIN	1935	ROWLAND ROBERTS HUGHES	1955
MARY EMMA WOOLLEY	1937	THEODORE FRANCIS GREEN	1956
FRED TARBELL FIELD	1940		

Summary of Degrees

At the close of the one hundred and ninetieth commencement of the University in 1958, there were enrolled the names of 28,747 graduates, both men and women. Of this number 19,668 men and 5,782 women had received the Bachelor's degree; 2,212 had received advanced degrees; 69 received the degree of Doctor of Medicine, 1,016 had received honorary degrees.

Graduate School



DETAILED INFORMATION concerning the Graduate School (admission, requirements for degrees, fellowships, etc.) will be found in the Catalogue of the Graduate School, which may be obtained by writing to the Registrar of the Graduate School.

It is the aim of the Graduate School to serve the needs of men and women of college training who desire a broader and deeper acquaintance with the ideals and methods of modern scholarship and research. It seeks to give its students a discipline that will equip them not only to pass on to others the accumulated treasures of the world's knowledge, but also to increase that store. It offers programs of study leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy in nearly all departments.

The Graduate School is administered by the Faculty of the University which delegates certain of its powers to the Graduate Council. The Council consists of the President, the Dean of the University, and the Dean of the Graduate School, *ex-officiis*, and six members elected annually.

Graduate work was formally established in 1887, although before that time requests for graduate instruction had been received and met in part. During the following years graduate work increased in quality and importance and in 1927 the Corporation established the Graduate School to take care of the need for a more formal organization. In 1929 a limitation was set to the number of students to be admitted.

Graduate courses in Engineering are offered in the late afternoon and evening. Individual courses may be selected or a program leading to the degree of Master of Science or Master of Engineering may be arranged with the Division of Engineering and the Graduate School.

The Master of Arts in Teaching Program was recently established. The Program, leading to the Degree of Master of Arts in Teaching, is designed for experienced teachers and for college graduates who intend to make a career of teaching in the secondary schools. Courses are scheduled at times convenient for teachers-in-service.

Admission and Fees

Graduates of colleges and scientific schools of recognized standing, who have completed the normal four-year program for the bachelor's degree, may apply for admission. The number of students that Brown University can admit to the Graduate School is strictly limited, both according to

GRADUATE SCHOOL

departments and in the total. Selection in all departments is based on the students' ability to do graduate work of high quality as shown by the distinction of their scholastic record, particularly in their special field of study, and on the recommendations of their instructors. The minimum standards of admission determine whether applicants will qualify for a place in the group from which final selections will be made. As a general rule, applicants are accepted as candidates for a degree only if they stood in the upper third of their class as undergraduates. In the case of applicants who have already done graduate work, considerable attention will also be given to the graduate record.

Students who wish to complete essentially undergraduate preparation cannot be admitted to the Graduate School except under very special circumstances.

Students seeking admission should make application at as early a date as possible. They should obtain from the Registrar of the Graduate School an application blank to be filled out and returned together with an official transcript of their undergraduate record, transcripts of record of any graduate work done, and three letters of recommendation from professors in the field in which graduate work is contemplated. There is an application fee of \$5.

The tuition fee in the Graduate School is \$500 for a full semester of work. For part-time work the charge is in proportion.

Requirements for Degrees

Candidates for the masters' degrees are accepted in almost all departments of the University, but admission to the Graduate School does not imply acceptance as a candidate. The ordinary requirement for a master's degree (A.M., Sc.M., M.E., M.A.T.) for a graduate of an approved college, who is well prepared in a special subject, consists of eight semester credits in advanced work and the preparation of a thesis or report. Ordinarily at least one-half of the student's work must be done in one department. A reading knowledge of French, German, or Russian is also required of candidates for the Master of Arts and Master of Science degrees.

The requirements for the degree of Doctor of Philosophy are qualitative rather than quantitative, and no definite statement of the time necessary for obtaining the degree can be made, but in no case will the degree be granted for less than the equivalent of three years of graduate study (or twenty-four semester courses including the thesis). The student must devote at least two semesters beyond the master's degree exclusively to study in residence at Brown University. Final acceptance for the degree takes place only after the successful completion of the language examinations and the preliminary examination, which is designed to test the student's mastery

GRADUATE SCHOOL

of the field of study and is ordinarily held not earlier than toward the close of the second year of work. The candidate must present a thesis on a topic related to the major subject, which shall embody the results of original research and give evidence of high scholarship. The candidate must also pass a final examination conducted by the Dean of the Graduate School or his representative, the officers of professional rank in the departments concerned, and such other members of the Faculty as may be appointed.

Fellowships, Scholarships, and Assistantships

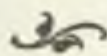
Fellowships are designed for those who have already demonstrated capacity of a high order for graduate study. Preference is given to those who plan to proceed to the doctorate. Scholarships are available for first-year students whose undergraduate records in their chosen fields are exceptionally good. Fellowships and scholarships are in general open to men and women alike. Two fellowships are designated especially for award to members of the graduating class at Brown University.

Fellowships range in value from \$1000 up. Scholarships cover the tuition fee and sometimes carry an additional stipend.

In most departments appointments as research assistants, teaching assistants, teaching associates, or half-time instructors, which enable the holders to study part time, are available. Appointees teach half time, assist in instructional and research laboratories, read papers, or help in the departmental libraries; the remuneration depends upon the amount of assistance rendered.

Official forms for applications may be obtained from the Registrar of the Graduate School; no application will be considered unless made on this form and accompanied by the required fee of \$5.

The Associated Alumni of Brown University



Honorary Chairmen

Harold Brooks Tanner '09	Providence, R. I.
Henry Merritt Wriston	Providence, R. I.
Barnaby Conrad Keeney	Providence, R. I.

Officers, 1958-59

<i>President:</i> Foster B. Davis, Jr. '39	Providence, R. I.
<i>Treasurer:</i> Richmond H. Sweet '25	Barrington, R. I.
<i>President-Elect:</i> C. Manton Eddy '22	W. Hartford, Conn.

Vice Presidents:

<i>New England Region:</i> Benjamin A. Chase, II '38	Orange, Conn.
<i>Rhode Island Region:</i> Edward T. Richards '27	Peacedale, R.I.
<i>North Atlantic-Midland:</i> Francis S. Quillan '33	Glen Ridge, N.J.
<i>South Atlantic-Midland:</i> Paul L. Maddock '33	Palm Beach, Fla.
<i>North Central Region:</i> Richard A. Grout '42	Orchard Lake, Mich.
<i>South Central Region:</i> Kenneth J. Rich '51	Dallas, Tex.
<i>Western Region:</i> Emery R. Walker, Jr. '39	Claremont, Calif.
<i>Alumni Secretary:</i> William B. McCormick, '23	Providence, R. I.

Directors

Henry C. Barksdale '50	Richard M. Field '43
Charles S. Barton '24	Frank A. Gammino, 2nd '33
H. Bradford Benson '52	Richard F. Hopkins '35
Charles J. Brown '27	Herbert M. Iselin '42
James P. Brown '50	Otto Kerner, Jr. '30
Gordon E. Cadwgan '36	William R. Kinnaird '31
Alton C. Chick, Jr. '45	Bancroft Littlefield '34
Kenneth D. Clapp '40	John J. Mozzochi '31
Thomas G. Corcoran '22	H. Clinton Owen, Jr. '28
Thomas J. Costello '50	Edward R. Place '24
Robert Cummings '50	Donald V. Reed '35
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Brown Alumni Monthly

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The Alumnae Association of Brown University



THE ALUMNAE ASSOCIATION of Pembroke College in Brown University is chartered under the laws of the State of Rhode Island for the purpose of promoting the interests of Pembroke College in Brown University and fostering a spirit of fellowship among its members and a continuing loyalty to the college. Any woman who attends Pembroke College or the Graduate School is considered *ipso facto* a member of the Association. Governed by a board of directors, the Association meets regularly twice a year.

Annually, through the efforts of the board of trustees of the Pembroke College Fund, the scholarship committee of the Association grants nine scholarships—eight regional scholarships and the Mary E. Woolley Memorial Scholarship.

OFFICERS, 1958-59

<i>President:</i> MRS. WILLIAM NEWTON HUGHES	Providence
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MRS. WILSON H. ROADS	Marblehead, Mass.
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CHAIRMEN OF BOARDS AND COMMITTEES

MISS GRACE M. GLYNN	Pembroke College Fund
MRS. WILLIAM RICE	Editorial Board
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MRS. WILLIAM M. DOLAN	Alumnae Weekend
MRS. KENNETH V. BARDEN	Scholarships

Summary of Enrollment



UNDERGRADUATE ENROLLMENT

	THE COLLEGE		PEMBROKE COLLEGE	
	1957-58	1958-59	1957-58	1958-59
	Semester II	Semester I	Semester II	Semester I
Seniors.....	568	593	166	203
Juniors.....	537	557	199	201
Sophomores.....	575	593	229	236
Freshmen.....	599	617	250	246
Special Students.....	4	13	10	32
Sc.B. Students at R. I. Hospital.....	—	—	12	15
Total.....	2283	2373	866	933

GENERAL SUMMARY

	1957-58 Semester II	1958-59 Semester I
The College.....	2283	2373
Pembroke College.....	866	933
Graduate School.....	479	508
Total.....	3628	3814

REGISTRATION IN EXTENSION COURSES

Semester II, 1957-58.....	716
Semester I, 1958-59.....	1075

Geographical Distribution

as of September, 1958

	THE COLLEGE	PEMBROKE COLLEGE
WITHIN CONTINENTAL UNITED STATES		
Alabama.....	1	3
Arizona.....	3	—
California.....	18	9
Colorado.....	12	3
Connecticut.....	236	101
Delaware.....	5	4
District of Columbia.....	15	18
Florida.....	14	5
Georgia.....	2	2
Illinois.....	71	32
Indiana.....	17	8
Iowa.....	9	—
Kansas.....	4	1
Kentucky.....	—	—
Louisiana.....	—	2
Maine.....	17	9
Maryland.....	29	31
Massachusetts.....	446	130
Michigan.....	38	9
Minnesota.....	12	7
Mississippi.....	1	1
Missouri.....	46	5
Montana.....	1	1
Nebraska.....	3	1
Nevada.....	1	1
New Hampshire.....	25	14
New Jersey.....	223	73
New Mexico.....	1	—
New York.....	460	142
North Carolina.....	4	—
Ohio.....	62	15
Oklahoma.....	4	1
Oregon.....	7	—
Pennsylvania.....	132	82
Rhode Island.....	358	190
South Carolina.....	1	1
Tennessee.....	4	—
Texas.....	13	3
Utah.....	—	2
Vermont.....	7	2
Virginia.....	16	11
Washington.....	1	1
West Virginia.....	5	—
Wisconsin.....	16	2
Wyoming.....	1	—
OUTSIDE CONTINENTAL UNITED STATES.....	32	11
	2373	933

APPENDIX A—PEMBROKE COLLEGE

Department of Physical Education

Professor RUDD (Chairman); Instructor, Miss LUTZ; Teaching Associates, Misses AVERY, MESSNER, and SCHILTZ.

REQUIREMENTS. Physical Education at Pembroke College is required of every student throughout her first three years: three times weekly during the freshman year, and twice weekly during the sophomore and junior years. The health rating, based on the medical examinations given by the Medical Staff, determines the type of activity for each student. Those who are given a low rating because of temporary or permanent disability take adapted exercise or prescribed periods of rest.

During the freshman year, as one of the weekly hours of physical education, each student must take a course in body mechanics, fundamental movement, basic skills, and health education. Also, unless restricted, every student during her college course shall have one semester (two terms) of rhythmic activity (dancing), one semester (two terms) of a team sport and one semester (two terms) of an individual sport. She must pass a swimming test or take a semester (two terms) of swimming, terminating with a modified test. All activity requirements should be completed by the end of the sophomore year to enable the student to develop special interests during her junior year.

LAYOUT OF COURSES. Each year is divided into four terms, each complete in its own courses: an autumn term, two winter terms, and a spring term. No academic credit is granted for any of these courses.

1. *Adapted Exercises*

Special exercises for students who are not able to take the required work and for students who need additional assistance. Miss AVERY.

2. *Archery*. Miss AVERY.

3. *Badminton*

Elective for students in the junior and senior years, who have completed all activity requirements, and for those freshmen and sophomores who are eligible for Class or Club teams. Miss LUTZ.

4. *Basketball*. Misses AVERY and SCHILTZ.

DEPARTMENT OF PHYSICAL EDUCATION

5. *Bowling*

Elective for students in the sophomore and junior years, and for those freshmen who are eligible for Class or Club teams. Miss RUDD.

6. *Camp Counselor Leadership Course*

Offered in the spring for the training of Camp Counselors. Miss LUTZ.

7. *Modern Dance*. Miss MESSNER.

8. *Dance Club and the Apprentice Dance Group*

Prerequisite: Course 7 or its equivalent. Elective for a limited number of qualified students. Miss MESSNER.

9. *Country, Folk, and Square or Tap Dancing*. Miss MESSNER.

10. *Fencing*. Miss LUTZ.

11. *Field Hockey*. Misses AVERY, LUTZ, and RUDD.

12. *Fistball*. Miss MESSNER.

13. *Freshman Course: Body Mechanics, Fundamental Movement, Basic Skills, and Health Education*

Required one hour a week of all freshmen. Misses AVERY and LUTZ.

14. *Fundamental Movement*

Basic movement to music.

15. *First Aid* (American Red Cross courses). Miss RUDD.

16. *Golf*. Miss SCHILTZ.

17. *Horseback Riding*

Offered at the Fox Lea Riding Club and elective for a limited number only. Written permission assuming all responsibility is required from the parent or guardian before the student may ride. Blanks for this permission may be obtained at the gymnasium office and must be filed there. There is an additional fee for this activity.

18. *Lacrosse*. Miss AVERY.

19. *Officiating*

Opportunity is given to students to learn to officiate basketball, field hockey, swimming, and tennis. National or local ratings may be taken at the completion of the course. Misses AVERY and RUDD.

DEPARTMENT OF PHYSICAL EDUCATION

20. *Recreational Games*

Training in recreational leadership for social work, Girl Scouts, camping, etc. Miss LUTZ.

21. *Restricted Activities* (for those debarred either temporarily or permanently from strenuous activity).

Archery, ping pong, shuffleboard, etc.

22. *Sailing*

Offered in conjunction with the Brown Yacht Club upon the payment of dues. A swimming test is required. In addition, a permission slip, signed by the parent or guardian, assuming all responsibility, must be on file with the Department of Physical Education. These blanks may be obtained at the gymnasium office.

23. *Skiing* (not offered as an activity, although a course in Dry Skiing and Conditioning Exercises may be offered).

Every student is required to file with the Department of Physical Education a written permission from her parent or guardian assuming all responsibility if she is to go on any ski trip. Blanks may be obtained at the gymnasium office.

24. *Soccer-Speedball*. Miss LUTZ.

25. *Softball*. Miss AVERY.

26. *Swimming*. Miss AVERY, assisted by members of the department.

27. *Synchronized Swimming*

28. *Life Saving and Water Safety*

Offered in coöperation with the Providence Chapter of the American Red Cross. Miss LUTZ.

29. *Tennis*. Miss SCHILTZ, assisted by members of the department.

30. *Volley Ball*. Miss MESSNER.

APPENDIX B—PEMBROKE COLLEGE

Nursing

Pembroke College in Brown University has joined with the Rhode Island Hospital School of Nursing to offer qualified young women a five-year program planned to meet the broad demands of present-day professional nursing by providing these students with the social and cultural understanding that a liberal arts program offers, as well as the scientific and technical studies required for the practice of professional nursing in the role of a cooperative team member, health teacher, leader, research helper, and promoter of public relations.

DEGREE

On the satisfactory completion of the program, the student will receive the degree of Bachelor of Science from Brown University and a diploma from the Rhode Island Hospital School of Nursing. The program has been approved by the Rhode Island State Board on Nurse Registration and Nursing Education.

PROGRAM

The first six semesters of the program are spent at Pembroke College and the last two years and four months are spent at the School of Nursing, where the biological, physical, and social sciences are utilized as a background on which to build professional knowledge, skills, and attitudes. Classroom and clinical instruction are related to supervised practice in the care of patients in the hospital and in the outpatient department. Experiences in obstetric nursing, psychiatric nursing, and family health service are provided through affiliations. Emphasis is placed on understanding the total patient and nursing-for-health. The descriptions of courses at the School of Nursing follow:

BIOLOGICAL, PHYSICAL, AND SOCIAL SCIENCES AND INTRODUCTION TO MEDICAL SCIENCE AND COMMUNITY HEALTH

Anatomy and Physiology

The purpose of this course is to help the student to understand the structure and functions of the healthy human body. It includes lectures, demonstrations, laboratory, and the use of manikins, skeletons, models, fresh and preserved specimens, charts, slides, and films. 115 hours. First semester, fourth year.

Immunology

A discussion of the factors influencing the establishment of disease and man's defensive mechanisms. The fundamental principles of immunity and a discussion of serological reactions which have a direct relationship to the diagnosis, treatment, and prognosis of disease are emphasized. 15 hours. First semester, fourth year.

Medical Science, Introduction to, and Community Health

This course is a general survey of the field of medical science to interpret changes occurring in organs and tissues during the transition from health to illness and to consider the scientific methods used in meeting the problems of disease. The importance of preventive medicine and the role of the nurse as a health teacher are emphasized. 30 hours. Second semester, fourth year.

PRINCIPLES AND PRACTICE OF NURSING

Principles of Nursing I

An introductory course designed to develop the student's understanding of the patient through an evaluation of hygienic practices in health and through an understanding of the essentials of these practices in illness. It is concerned with appropriate nursing measures based on scientific nursing principles to enable the student to make the necessary modifications in caring for the needs of the patient. In this course are units of health conservation, general hygienic care of the patient, administration of several therapeutic treatments, and planning for nursing care. Public health and social aspects of nursing are included. Methods of instruction include lectures, discussion, demonstrations, classroom and clinical practice. 275 hours plus 120 hours clinical practice. First semester, fourth year.

Principles of Nursing II

A senior course conducted through conference, seminar, and experience in the nursing care and treatment of patients in order to unify the student's previous experiences and to give practice in planning and leading members of a team including auxiliary workers. 15 hours. Fifth year.

CLINICAL NURSING

Although described as separate courses according to major areas of experience, the theory and experience of all courses are planned to include a general description of conditions, the medical and surgical nursing care including social, health, and psychological factors; and the application of these learnings to patient-nurse situations. Hours of clinical teaching are included in the clinical experience.

NURSING

Medical and Surgical Nursing

This course consists of further clinical and theoretical study of the Principles of Nursing, the nursing care of patients with medical and surgical conditions, including the Surgical Specialties and Operative Aseptic Technique. The public health, social, and psychiatric aspects of nursing are discussed. Methods of instruction include lectures, demonstrations, and planned clinical instruction. 115 hours—Medical and Surgical Nursing; 45 hours—Surgical Specialties; 15 hours—Operative Aseptic Technique. Total—175 hours. Second semester, fourth year; first semester, fifth year.

Communicable Disease Nursing

This course is a study of contagious diseases with emphasis on prevention, early recognition, and special nursing skills involved in the care of these patients. Audio-visual aids and demonstrations are used. 30 hours. Second semester, fourth year.

Tuberculosis Nursing

This course is planned to provide the student with fundamental knowledge of tuberculosis and related social and public health aspects. Some opportunity is given to apply the principles of general nursing to the special needs of tuberculosis patients. 20 hours. Second semester, fourth year.

Outpatient Nursing

This experience is planned to provide practice in the nursing care of the ambulatory patient with a minor or chronic disease who may never reach the hospital wards. The student gains further insight into the medical aspects of illness by observing the various stages from onset to convalescence and the role of the community resources in restoring the patient to health. 28 hours. Second semester, fourth year.

Nursing and Health Service in the Family

Students affiliate last with the Providence District Nursing Association. This course provides instruction in the principles underlying public health nursing. Practice is gained through carefully supervised home visits. 90 hours. Fifth year. Staff of Providence District Nursing Association.

Obstetric Nursing

Instruction in the modern medical management of the obstetric patient is correlated with experience at the Providence Lying-In Hospital. Emphasis is placed on the teaching of the patient and the planning for and care of the newborn baby. 90 hours. Fifth year. Staff of Providence Lying-In Hospital.

Nursing of Children

This course is concerned with the nursing care and guidance of the child; his total well-being; his growth, development, nutrition, and nursing care during childhood and infant disease. It includes also consideration of community relationships and parent education. It is presented through lectures, discussions, and laboratory. 60 hours. Fifth year.

Psychiatric Nursing

This course is given to broaden the personal and professional effectiveness of the student in nursing by providing an educational program that will enable her to acquire a basic understanding of the knowledge and skills of psychiatric nursing. 90 hours. Fourth and fifth years. Staff of Rhode Island State Hospital for Mental Diseases.

SOCIAL ASPECTS OF NURSING

Social Foundations of Nursing I

This introductory course is designed to help the student to adjust to a new environment; to give her an appreciation of her relationships with all personnel with whom she comes in contact in her professional capacity; and to acquaint her with the fundamental ethical principles and standards of the nursing profession. 15 hours. First semester, fourth year.

Social Foundations of Nursing II

This course is designed to acquaint the student with current trends in the profession of nursing; the need and opportunities for advanced education; the importance and type of legislation being sought by nursing and other groups; the activities of professional nursing organizations; and the obligations of their members. 20 hours. Fifth year.

Social Foundations of Nursing III

In this course the development of nursing from ancient to modern times is surveyed. It aims to give the student an appreciation of the professional heritage of nursing and to help her to recognize the social responsibilities of the profession. 15 hours. Fifth year.

FOOD AND NUTRITION

Nutrition, Foods, and Cookery

This course is planned to give the student an understanding of normal nutritional needs, food values, and simple food preparation. This is accomplished through lectures, discussions, demonstrations, and laboratory prac-

NURSING

tice. Opportunity for the application of these principles in fulfilling the needs of the patient and in studying problems of nutrition as they are found in national, racial, and community groups is provided. 45 hours. First semester, fourth year.

Diet Therapy

This course is concerned with the normal diet and the modifications employed as a part of the total treatment of the patient. In the laboratory, diets are planned, prepared, and served. Emphasis is placed on the principles underlying modification of diets and on teaching the patient to understand his nutritional needs. 35 hours. Second semester, fourth year.

PHARMACOLOGY AND THERAPEUTICS

Pharmacology and Therapeutics I

The fundamental principles of the calculation of dosage of drugs are presented by means of lectures, discussions, demonstrations, and laboratory. This course includes instruction in the use of terms, symbols, and measurement tables which are used in the administration of medications and treatments. For this reason a knowledge of basic principles of arithmetic is essential. 30 hours. First semester, fourth year.

Pharmacology and Therapeutics II

This course includes the study of therapeutic measures and drugs, their source, nature, therapeutic action, dosage, and toxicology. It is correlated with the instruction given in the nursing care of patients. 30 hours. Second semester, fourth year.

PHYSICAL EDUCATION AND SOCIAL USAGE

Physical Education

This program aims through physical conditioning and games to develop qualities of good sportsmanship and mutual respect; to develop the ability to work for the welfare of the group; and to exercise self-control and good judgment in activities which are mentally stimulating and often emotionally intense. 25 hours. First semester, fourth year.

Social Usage

Through lectures, group discussions, and projects, this course is designed to help students gain a broader individual understanding of the basic principles involved in the amenities of group relationships in social and professional living. 15 hours. First semester, fourth year.

SUMMARY OF THE PROGRAM

PATTERN A

- 1. Biology 1, 2, 5, 10, 15, and 20
- 2. Chemistry D1 (with a grade of C or better) or D2 and Chemistry 5 and 41
- 3. Education 103
- 4. Psychology D1 or IC, 81, and 107
- 5. Sociology D1 or IC, and 105
- 6. Satisfactory completion of the *Hours of Organized Instruction* (listed below)

PATTERN B

- 1. Humanities—four semester courses (distribution courses)
- 2. Social Studies—four semester courses including a year of History and at least a semester of Sociology
- 3. Sciences—Biology 1, 2, 5, 10, and 20
Chemistry D1 and Chemistry 11 or Chemistry D2 and Chemistry 5
Psychology D1 or IC
- 4. Four additional semester courses in Sociology or four additional semester courses in Psychology
- 5. Satisfactory completion of the *Hours of Organized Instruction* (listed below)

	<i>Weeks of Practice</i>	<i>Hours of Organized Instruction</i>
Biological Science (Anatomy and Physiology).....		115
Social Foundations of Nursing.....		50
Medical Science.....		150
(includes pharmacology and therapeutics, introduction to medical science and immunology)		
Nursing and Allied Arts:		
Introduction to nursing arts, nutrition, foods, and cookery	16	320
Medical and surgical nursing of disease conditions of all body systems, diet therapy, operative aseptic technique, communicable diseases, and emergencies.....	46	260
Pediatrics.....	12	60
Obstetric nursing (at Providence Lying-in Hospital)....	12	90
Psychiatric nursing (at R. I. State Hospital for Mental Diseases).....	12	90
Nursing and Health Service in the Family (at Providence Visiting Nurse Association).....	8	90

NURSING

FEES (at the hospital)¹

First Year—payable upon entrance to the hospital

Tuition.....	\$100.00
Books, mimeographed material, and special examinations.....	46.00
Student Activities Fee.....	5.00
Keys deposit.....	1.50
	\$152.50

Second Year—payable at beginning of second year

Tuition.....	\$ 50.00
Books.....	10.00
Student Activities Fee.....	5.00
	\$ 65.00

Uniforms—payable to uniform company

Before entrance.....	\$110.20
At the end of first year.....	11.40
Rental of uniforms, PDNA affiliation.....	6.50
	\$128.10

Total expenses first year.....	\$262.70
Total expenses second year.....	82.90
	\$345.60

NOTE: The School reserves the right to change its fees as necessary.

REFUNDS:

Should a student resign from the School no refund is made of any part of her tuition or Student Activities Fee. The deposit made for keys and any part of the money allocated for books that have not been used are refunded.

It is agreed that if a student resigns or is dismissed the percentage which is allowed by the uniform company will be refunded providing the apparel being returned for credit has not been worn.

¹ For fees charged at Pembroke College, see pages 85-87

APPENDIX C

Distribution Patterns

(for students who entered prior to September, 1958)

Beginning in 1953-54, two alternate patterns were offered for meeting the distribution requirements: Pattern A, D courses, and Pattern B, IC courses.

Pattern A: D courses

Every student must complete a total of twelve semester courses in distribution: four in the Sciences, four in the Humanities, and four in the Social Studies.

Each of the three major divisions is subdivided as indicated below by italics. The figures in parentheses indicate the number of semester courses which are to be taken if the student elects to satisfy part of the distribution requirements from that particular subdivision. For example, (2) beside *Literature* means that a two-semester sequence from that subdivision must be completed; the remaining two distribution requirements in the Humanities would have to be elected from the other subdivisions.

1. *Sciences—Physical* (2): Physics D1, Chemistry D2; Physics D1, Astronomy D1; Chemistry D1, Geology D1. *Biological* (2): Biology 1, 2; Biology 1, Psychology D1. *Mathematics* (1): Mathematics D1. *One of the following* (1): Physics D1; Chemistry D1; Biology 1; Psychology D1; Geology 1; Astronomy D1, 1, or 2; Botany 1 or 2; any continuing science course.
2. *Humanities—Literature* (2): Classics D5, D6; English D15, D16; French D11-D12; German D11, D12; Italian D107, D108; Spanish D11, D12, or D13-D14; *Philosophy* (2): Philosophy D1, D2. *Art and Music* (1): Art D1; Music D1. *Religion* (1): Religious Studies D1.
3. *Social Studies—History* (2): Classics D1, D2; History D1, D2. *Economics—Government—Sociology* (2 out of 3): Economics D1; Political Science D1; Sociology D1.

Pattern B: IC courses

Students meeting distribution requirements in this pattern must complete the equivalent of twelve semester courses, IC or D, of which there shall be at least one (two-semester) IC course in each of the three fields: Sciences, Humanities, and Social Studies. No student may take more than the equivalent of six, nor less than three, semester courses, IC or D, in any of these fields. Each student must take at least one semester course in Mathematics, Physics, or Chemistry.

All students in the IC program must take at least two (two-semester) IC courses in their freshman year, and at least two in their sophomore year. They may fulfill the remaining requirement of the equivalent of four semester courses by completing either IC or D courses. No IC course may be taken after Semester IV. No D course

DISTRIBUTION PATTERNS

may be taken by a student in the IC program after Semester V without permission of the Dean. Without the permission of the Dean, no student in the IC program may take more than twelve semester IC and D courses combined. D courses may not be taken in a department in which IC courses have been elected in the same area, but continuing courses in the sciences may be taken. A student may not take IC or D courses in more than one *Literature*, unless the material is read in different languages.

In 1958-59, twenty-eight IC courses are offered as follows:

1. Sciences—Biology 1, 2; Mathematics IC 1-2; Psychology IC 1-2 and IC 3-4.
2. Humanities—Art 1, 2; Philosophy IC 1-2; Religious Studies IC 1, 2; *Literature*: Classics IC 3, 4; English IC 1-2, IC 3-4, IC 7-8, IC 9-10, IC 11-12, IC 13-14, IC 15-16, IC 17-18, and IC 19-20; European Literature IC 1-2 and IC 5-6; French IC 1-2.
3. Social Studies—Classics IC 1, 2; Economics IC 1-2; History IC 1, 2; IC 3, 4, and IC 5, 6; Political Science IC 1, 2 and IC 3, 4; Sociology IC 1, 2.

A student may satisfy certain distribution requirements by the successful passing of examinations. IC courses may not be anticipated by examinations. Examinations given for the purpose of satisfying distribution requirements may be taken during Freshman Week and during a special period early in the second semester. The passing of an examination in meeting a distribution requirement does not give the student course credit but permits electing a course in lieu of the distribution course, thereby increasing the number of free electives. This course elected may be an advanced course for which the distribution course is a prerequisite, or it may be an additional course permitted in the field of concentration.

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ALDRICH-DEXTER FIELD
(PROPOSED SITE)

Hope street

PEMBROKE
PLAYING
FIELD

PEMBROKE
FIELD HOUSE

AMERICAN
MATHEMATICAL
SOCIETY

TENNIS

B r o o k

WHITEHALL

ART DEPT.

ANCE
HALL

Thayer

Bowen Street

TENNIS

PARKING
AREA

DOYLE
HOUSE

MILLER
HALL

ALUMNAE
HALL

SAYLES GYMNASIUM

PEMBROKE
HALL

MARY WOOLLEY
HOUSE

WEST
HOUSE

Street

WHITTIER
HOUSE

BATES
HOUSE

STANTON
HOUSE

Street

SHARPE
HOUSE

Street

HUNTER
PSYCHOLOGY
LABORATORY

AAUW

BIOLOGY
ANNEX

EDUCATION
DEPARTMENT

Street

METCALF CHEMICAL

ARNOLD LAB

GREENHOUSES

ROSE HALL

FAUNCE
HOUSE

HOPE COLLEGE

MANN
HALL

CARRIE
TOWER

Waterman

PARTRIDGE
HALL

PHOTOGRAPHIC
LABORATORY

THE
CABINET

ROBINSON
HALL

Fones

B r o w n

Meeting

Olive

Angell

prospect

Street

KING HOUSE
ALLINSON HOUSE
ANGELL HOUSE

87
PROSPECT
STREET

Cushing Street

SNOW
HOUSE

BROWN UNIVERSITY
PROVIDENCE, RHODE ISLAND

PROSPECT
HOUSE

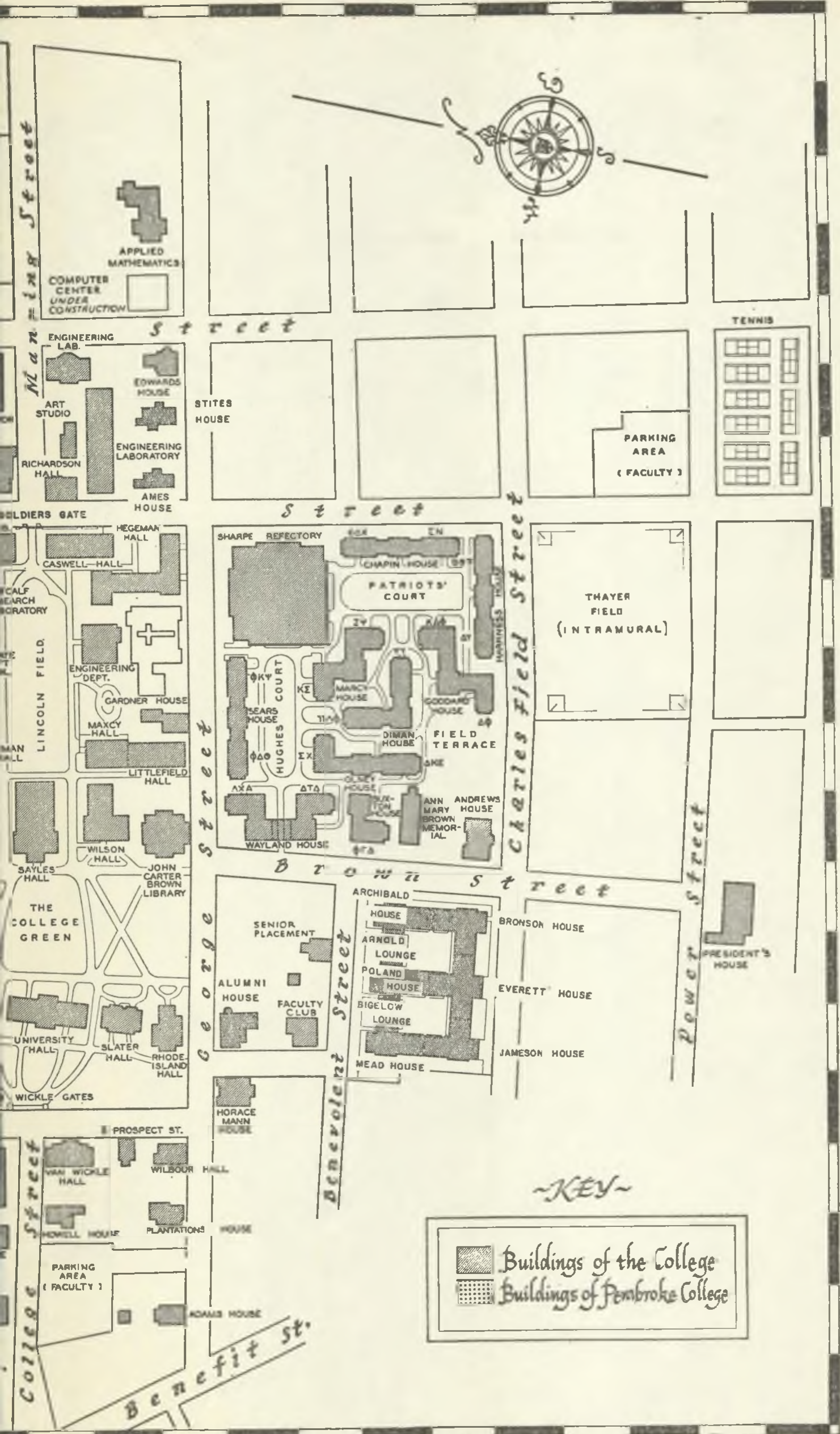
WATERMAN
HOUSE

PARKING
AREA
(FACULTY)

JOHN
HAY
LIBRARY

JUDSON HO

MUSIC
DEPARTMENT



SCHEDULE OF RECITATION GROUPS

Arranged According to Hours

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:00	A	B	A	B	A	B
9:00	C	D	C	D	C	D
10:00	E	F	E	F	E	F
11:00	G	H	G	H	G	H
12:00						
1:10	I	N	I	N	I	
2:10	J	N	J	O	J	
3:10	K	O	K	P	K	
4:10	L	O	L	P	L	
5:10	M	P	M		M	

Prof. Andrew J. Sabol
English Dept.

Brown University

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