

BULLETIN OF BROWN UNIVERSITY

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CATALOGUE OF THE COLLEGE
AND PEMBROKE COLLEGE



• 1962-1963 •

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 should be addressed to the Director of Placement, Alumnae Hall.

Inquiries from upperclassmen concerning scholarships and loans should be addressed to the Assistant Dean of Pembroke College, Pembroke Hall.

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

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THE BULLETIN OF
BROWN UNIVERSITY:
Catalogue of *The College*
and *Pembroke College* for
the year 1962-1963



PROVIDENCE
1962

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.

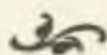
In the words of Dr. Henry Merritt Wriston, Brown's eleventh President, "The central business of the University is the increase of knowledge, the inculcation of wisdom, the refinement of emotional responses, and the development of spiritual awareness." The Corporation of the University, in fulfilling 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 42-48. 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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University Calendar

1962-1963

1962

JUNE 25- AUGUST 3	<i>Monday, June 25—Friday, August 3.</i> Graduate Summer School for Teachers.
SEPTEMBER 5	<i>Wednesday.</i> Annual Meeting of the Corporation (<i>first Wednesday in September</i>).
SEPTEMBER 7	<i>Friday.</i> Language examinations for candidates for advanced degrees.
SEPTEMBER 10	<i>Monday.</i> Freshman Week begins (<i>second Monday in September</i>).
SEPTEMBER 10-14	<i>Monday through Friday, 12 noon.</i> Registration of graduate students.
SEPTEMBER 12-15	<i>Wednesday through Saturday, 12 noon.</i> Registration of new entrants and readmission students, and check-in period for upperclassmen.
SEPTEMBER 15	<i>Saturday.</i> Last day for making the payment required for completion of first semester registration.
SEPTEMBER 17	<i>Monday.</i> Opening of the 1962-63 Academic Year (<i>third Monday in September</i>). Convocation.
SEPTEMBER 17	<i>Monday, 10 a.m.</i> Classes of the first semester begin.
SEPTEMBER 18	<i>Tuesday, 12 noon.</i> Opening Convocation at Pembroke College (Seventy-Second Year).
SEPTEMBER 27	<i>Thursday.</i> Examination for the President Francis Wayland Prizes in Greek.
OCTOBER 4	<i>Thursday.</i> Examination for the President Francis Wayland Prizes in Latin.
OCTOBER 4	<i>Thursday.</i> Clarkson Abel Collins, Jr., Prize (open to men only), proposed topic title due.
OCTOBER 9	<i>Tuesday.</i> Examination for the Albert Bushnell Johnson Prizes in French.
OCTOBER 11	<i>Thursday.</i> Examination for the Hartshorn and Hypatia Prizes in Mathematics.
OCTOBER 12	<i>Friday.</i> Columbus Day. No University exercises.
OCTOBER 18	<i>Thursday.</i> Examination for the Caesar Misch and Asa Clinton Crowell Prizes in German.
NOVEMBER 3	<i>Saturday.</i> Mid-semester (<i>first Saturday in November</i>).
NOVEMBER 6	<i>Tuesday, 12 noon.</i> Honors Convocation, Pembroke College.

CALENDAR

NOVEMBER 12	<i>Monday.</i> Veterans' Day holiday. No University exercises.
NOVEMBER 21-26	<i>Wednesday, 12 noon, to Monday, 8 a.m.</i> Thanksgiving recess.
NOVEMBER 30	<i>Friday.</i> The Gaston Prize in Oratory (open to men only), written orations due.
NOVEMBER 30	<i>Friday.</i> The Preston Gurney Literary Prizes, essays due.
NOVEMBER 30	<i>Friday.</i> Clarkson Abel Collins, Jr., Prize (open to men only), papers due.
DECEMBER 20, 1962- JANUARY 7, 1963	<i>Thursday, 12 noon, to Monday, 8 a.m.</i> Christmas recess.

1963

JANUARY 5	<i>Saturday.</i> Last day for payment of charges for the second semester for undergraduates.
JANUARY 7	<i>Monday, 8 a.m.</i> Classes resume.
JANUARY 9	<i>Wednesday.</i> The Gaston Prize in Oratory, public competition.
JANUARY 9, 10	<i>Wednesday and Thursday.</i> Language examinations for candidates for advanced degrees.
JANUARY 12	<i>Saturday, 12 noon.</i> Classes of the first semester end (<i>Saturday following second Thursday in January</i>).
JANUARY 14-18	<i>Monday through Friday.</i> Registration of graduate students for the second semester.
JANUARY 16-25	<i>Wednesday to Friday, inclusive, omitting Sunday.</i> Final examinations of the first semester (<i>including third and fourth Thursdays in January</i>).
JANUARY 25	<i>Friday.</i> Last day for registration of undergraduate men for the second semester.
JANUARY 28, 29	<i>Monday and Tuesday.</i> Final registration of undergraduate women for the second semester.
JANUARY 30	<i>Wednesday, 8 a.m.</i> Classes of the second semester begin (<i>Wednesday after last Sunday in January</i>).
FEBRUARY 14	<i>Thursday.</i> Hicks Prizes for Interclass Debates, preliminary debates for men and women separately.
FEBRUARY 15	<i>Friday.</i> Applications for fellowships, scholarships, and assistantships for 1963-64 in the Graduate School due.
MARCH 4	<i>Monday.</i> The Thomas Carpenter and Minnie Helen Hicks Prizes for Elocution, preliminary applications due.

CALENDAR

MARCH 7	<i>Thursday.</i> Annual Initiation Exercises, Sigma Xi (<i>Thursday following first Sunday in March</i>).
MARCH 14	<i>Thursday.</i> Examination for the Henry Parker Manning Mathematical Prizes.
MARCH 14	<i>Thursday.</i> Hicks Prizes for Interclass Debates (for men and women separately), public debates.
MARCH 16	<i>Saturday.</i> Mid-semester (<i>Saturday preceding third Sunday in March</i>).
MARCH 30- APRIL 8	<i>Saturday, 12 noon, to Monday, 8 a.m.</i> Spring recess (<i>including first Wednesday in April</i>).
APRIL 11	<i>Thursday.</i> Samuel C. Lamport Prizes in Economics, in Sociology, and in Political Science, papers due.
APRIL 11	<i>Thursday.</i> Isabel Harris Metcalf Prize (open to women only), essays due.
APRIL 11	<i>Thursday.</i> Gaspee Chapter, D.A.R. Prize (open to women only), papers due.
APRIL 11	<i>Thursday.</i> The Thomas Carpenter and Minnie Helen Hicks Prizes for Elocution, contests held (public invited).
APRIL 11	<i>Thursday.</i> Examination for the Lucius Lyon Prizes in Latin.
APRIL 11	<i>Thursday.</i> Susan Colver Rosenberger Prizes in Botany and in Geology, papers due.
APRIL 11	<i>Thursday.</i> The Philo Sherman Bennett Prize, papers due.
APRIL 11	<i>Thursday.</i> The James Aldrich Pirce Prize; the Minnie Helen Hicks Prize in Classical Appreciation; papers due.
APRIL 11	<i>Thursday.</i> Class of 1873 Prizes, papers due.
APRIL 11	<i>Thursday.</i> Bishop McVickar Prizes, papers due.
APRIL 18, 19	<i>Thursday and Friday.</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 18	<i>Thursday.</i> Examination for The Lafayette Sabine Foster Prize in Greek.
APRIL 22	<i>Monday.</i> Theses of candidates for the degree of Doctor of Philosophy in June due.
MAY 6	<i>Monday.</i> Theses of candidates for Masters degrees in June due.
MAY 11-14	<i>Saturday through Tuesday, omitting Sunday.</i> Senior Review Period. Seniors excused from all classes.

CALENDAR

MAY 13-17	<i>Monday to Friday, inclusive.</i> Senior examinations for Final Honors.
MAY 14	<i>Tuesday, 6 p.m.</i> Classes of the second semester end (<i>Tuesday following second Friday in May</i>).
MAY 15, 16	<i>Wednesday and Thursday.</i> Comprehensive examinations for seniors.
MAY 18-28	<i>Saturday to Tuesday, inclusive, omitting Sundays.</i> Final examinations of the second semester (<i>including fourth Friday in May</i>).
MAY 31	<i>Friday.</i> Meeting of the Board of Fellows.
JUNE 1	<i>Saturday.</i> Annual Meeting of the Phi Beta Kappa Society.
JUNE 1	<i>Saturday.</i> Commencement Meeting of the Corporation.
JUNE 2	<i>Sunday, 3 p.m.</i> Baccalaureate Sermon.
JUNE 3	<i>Monday.</i> Commencement and Graduate School Convocation (<i>first Monday in June</i>).

1963-1964

1963

SEPTEMBER 16	<i>Monday.</i> Opening of the 1963-64 Academic Year (<i>third Monday in September</i>). Preceded by Freshman Week.
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The Corporation

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¹ Deceased, June 18, 1962.

Officers of Administration

The following is a list up to September, 1962, of all Officers of Administration holding appointment under the Corporation of Brown University.

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ZENAS RANDALL BLISS, SC.M., *Provost of the University*

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HOWARD STONE CURTIS, A.B., A.M., *Secretary of the University*

JOHN VAN GAASBEEK ELMENDORF, PH.D., *Vice-President*

JOHN KENNEDY MCINTYRE, A.B., LL.B., *Assistant to the President*

MALCOLM SEAVEY STEVENS, SC.M., *Assistant to the Provost*

The College

ROBERT WARREN MORSE, PH.D., *Dean of The College*

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

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

ERIC BROWN, A.B., *Admission Officer*

LLOYD WATERMAN CORNELL, JR., A.B., *Director of Financial Aid*

GORDON ROHDE DEWART, PH.D., *Assistant Dean of The College: Head Counselor*

CHARLES HAY DOEBLER, IV, A.B., *Director of Admission*

JERROLD FRANKLIN, PH.D., *Assistant to the Dean of The College*

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DONALD BRUCE HUTCHINSON, A.B., *Assistant Director of Admission*

MILTON EVERETT NOBLE, A.B., *Recorder of The College*

ROBERT OSCAR SCHULZE, PH.D., *Assistant Dean of The College*

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DAVID JOHN ZUCCONI, A.B., *Admission Officer*

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ROSEMARY PIERREL, PH.D., *Dean of Pembroke College*

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MARGERY DALEY LAING, A.B., *Admission Officer, Pembroke College*
CHARLOTTE LOWNY, A.B., *Director of Placement, Pembroke College*
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RAMONA MARION PUGSLEY, A.B., Sc.B., *Administrative Assistant in the Admission Office, Pembroke College*
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GRETCHEN ESTABROOK TONKS, A.M., *Assistant Dean of Pembroke College*

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- ROBERT BRUCE LINDSAY, Ph.D., Ed.D., *Dean of the Graduate School*
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- ETTA SOIREF, Ph.D., *Registrar of the Graduate School*
MERTON PHILIP STOLTZ, Ph.D., *Associate Dean of the Graduate School*
ELINORE WOLVEN TYRELL, *Assistant to the Registrar, Graduate School*

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MABELLE HAILE CHAPPELL, A.B., *Curator of the Collection; Custodian of
Gardner House*

HAROLD EDWIN CLARK, A.M., B.L.S., *Head of Order Department*

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

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lections; Curator of the Annmary Brown Memorial*

¹JAMES LOUIS GIDDINGS, PH.D., *Director of the Haffenreffer Museum of the
American Indian*

CHRISTINE DROWNE HATHAWAY, *Administrative Assistant*

WINFIELD SCOTT KENNEDY, A.M., B.S. IN L.S., *In charge, Humanities
Reading Room*

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brary*

ROGER ELIOT STODDARD, A.B., *Assistant Curator of the Harris Collection*

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DANIEL WILLIAM EARLE, PH.B., *Director of Development*

¹ On leave of absence.

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WILLIAM JOSEPH PEARCE, Sc.M., *Radio and Television Assistant; Director, Educational Television Workshop*¹

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HARRY HUBBARD BANKS, A.B., *Research Accountant*

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FREDERICK ALFRED KOZAK, A.B., *Assistant Purchasing Agent*

ELIZABETH WELSH LAW, *Manager of Women's Dining Halls*

²ALAN PETER MAYNARD, A.B., S.T.B., *Loan Collection Officer*

¹ Summer, 1962.

² Began January 1, 1962.

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ROBERT HOWARD BENNETT, *Instructor; Assistant Coach of Track*
LOUISE BERRYMAN BROWNELL, B.S.S., *Administrative Assistant*
MICHAEL PETER CINGISER, A.B., *Assistant Coach of Basketball*
PHILIP EUGENE COEN, JR., B.S.S.S., *Assistant Coach of Freshman Football*
JAMES HERD FULLERTON, Sc.B., *Instructor; Coach of Hockey; Manager, Meehan Hockey Rink*
IVAN WILLIAM FUQUA, Sc.M. IN ED., *Instructor; Coach of Track*
RICHARD MERRILL GOWEN, A.B., *Instructor; Assistant Coach of Football*
FRANK WARREN HOWE, JR., *Assistant Coach of Track*
WILFRID HENRY LEFEBVRE, Sc.B. IN ED., *Coach of Varsity Baseball*
CHARLES DAVID MARKHAM, A.B., *Instructor; Coach of Freshman Football*
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JOHN JACKSON McLAUGHRY, A.B., *Head Coach of Football*
VICTOR HALVER MICHALSON, A.B., *Instructor; Coach of Crew*
RICHARD NORMAND MICHAUD, A.B., *Instructor; Assistant Manager, Meehan Hockey Rink; Assistant Coach of Hockey*
ALEXANDER FRANCIS NAHIGIAN, Ph.B., *Assistant Coach of Football*
ARTHUR PALMER, JR., A.M., *Coach of Tennis*
MILTON JOHN PIEPUL, B.S. IN P.E., *Instructor; Assistant Coach of Football*
CLIFFORD STEVENSON, Ed.M., *Instructor; Coach of Soccer*
LEROY STANLEY WARD, Sc.B., *Instructor; Coach of Basketball*
JOSEPH WATMOUGH, *Instructor; Coach of Swimming*
JOHN LYNUS ZILLY, A.B., *Instructor; Assistant Coach of Football*

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CHARLES JOSEPH HUTCHINSON, M.D., *Director of the Health Service*

GEORGE EDWARD CRANE, M.D., *Athletic Surgeon*

JOHN STANISLAUS DZIOB, M.D., *Out-Patient Surgeon*

FREDERIC WILLARD EASTON, III, M.D., *Physician*

GABRIEL A. NAJERA, M.D., *Consultant*

THOMAS PERRY, JR., M.D., *Surgeon*

RALPH DENNETT RICHARDSON, M.D., *Surgeon in Pembroke College*

CARL STEVENS SAWYER, M.D.C.M., *Physician*

ROBERT JAMES TEFFT, JR., M.D., *Physician in Pembroke College*

ELIHU SMITH WING, JR., M.D., *Physician in Pembroke College*

Institute for Health Sciences

GLIDDEN LANTRY BROOKS, M.D., *Director*

GEORGE WOODROW ANDERSON, M.D., *Member*

ALEXANDER KARL BARTOSHUK, PH.D., *Assistant Member*

ROBERT GALEN BURNIGHT, PH.D., *Member*

ERIC DENHOFF, M.D., *Member*

MALCOLM GODSEY FREEMAN, M.D., *Assistant Member*

RAYMOND HENRY HOLDEN, ED.D., *Clinical Psychologist*

¹LAWRENCE C. KINGSLAND, JR., M.D., *Associate Member*

MAURICE WALTER LAUFER, M.D., *Member*

EVELYN B. MAN, PH.D., *Associate Member*

JUDY FRANCIS ROSENBLITH, PH.D., *Assistant Member*

ISAAC IRVING SIMON, SC.M., *Assistant Member*

FOUAD EDWARD YAZBAK, B.CH., *Assistant Member*

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JOY ELLIOTT, B.A., *Senior Programmer, Computing Laboratory*

²ROBERT WILLIAM FINCH, *Supervisor of Duplicating and Addressing Services*

EDITH CHAMILLARD FOWLER, B.S.S., *Administrative Assistant in Psychology*

GEORGE GARCIA, *Manager of Supply Services, Department of Chemistry*

CELESTE FRANCIS GRIFFIN, A.B., *Administrative Research Associate in Educational Measurement*

ELIZABETH ALLEN HELD, A. B., *Programmer, Computing Laboratory*

GEORGE CARPENTER HENDERSON, A.B., *Director, Photographic Laboratory*

JEROME BENEDICT LYNCH, A.B., *Manager of the University Store*

¹ Began January 1, 1962.

² Began September 25, 1961.

OFFICERS OF INSTRUCTION

RUTH ELLEN SANDBORN, A.M., *Research Secretary, Office of the President*

¹DEBORAH DAVIDSON SLESINGER, A.B., *Programmer, Computing Laboratory*

WILLIAM AUGUST SURPRENANT, A.B., *Director of Faunce House*

HELEN LOWE URQUHART, A.M., *Assistant to the Director of Educational Measurement*

CLINTON NICKERSON WILLIAMS, A.B., B.B.A., *Administrative Assistant in Biology*

²ROBERT CLAUDE WING, Sc.M., *Administrative Assistant in Physics*

NANCY WOLENS, A.B., *Administrative Assistant in Art*

Officers of Instruction

The following is a list up to September, 1962, in alphabetical sequence, of all Officers of Instruction holding appointment as Instructor or above under the Corporation of Brown University. Assistants, Associates in Research, Research Assistants, and Teaching Associates are listed in Appendix B on page 372.

ROBERT DANIEL MIZE ACCOLA, Ph.D., *Assistant Professor of Mathematics*

³CARL ELMER ADAMS, Ph.D., *Visiting Professor of Physics*

⁴CLARENCE RAYMOND ADAMS, Ph.D., *Professor of Mathematics*

THOMAS RANDOLPH ADAMS, A.M., *Librarian, John Carter Brown Library; Lecturer in Bibliography*

MOHAMMED AFZAL, Ph.D., *Research Associate in Chemistry*

³FREDERICK JUSTIN ALMGREN, JR., Ph.D., *Research Associate in Mathematics*

JOSÉ AMOR Y VÁSQUEZ, Ph.D., *Associate Professor of Spanish*

GEORGE KUMLER ANDERSON, Ph.D., *Professor of English*

GEORGE PHILIP ANDERSON, A.B., *Research Associate in Applied Mathematics*

GORDON FRANCIS ANDERSON, Ph.D., *Assistant Professor of Engineering (Research)*

RALPH GARFIELD ANDERTON, Ph.B., *Instructor in Physical Education*

JEAN ANDRE, Ph.D., *Research Associate in Biology*

CARLOS MANUEL ANGULO, D.E.E., *Professor of Engineering*

EDWARD ARMOUR, A.M., *Instructor in Art*

²ALFONSO GIL AZPEITIA, Ph.D., *Visiting Associate Professor of Mathematics*

ENRICO BACIOCCHI, CHEM.DOCT., *Visiting Assistant Professor of Chemistry (Research)*

JAMES C. BAIRD, JR., Ph.D., *Assistant Professor of Chemistry*

¹ March 1-31, 1962.

² November 1, 1961-September 30, 1962.

³ Summer, 1962.

⁴ On leave of absence, Semester I.

OFFICERS OF INSTRUCTION

ARYA KUMAR BAL, PH.D., *Research Associate in Biology*

CHARLES ADAMS BALDWIN, B.D., *Chaplain of the University; Lecturer in Religious Studies*

WALTER BALTENSPERGER, PH.D., *Visiting Associate Professor of Physics*

MARIE NEMCOVA BANERJEE, PH.D., *Assistant Professor of Slavic Languages*

FREDERICK WALTER BARNES, JR., M.D., *Professor of Medical Science*

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

ALEXANDER KARL BARTOSHUK, PH.D., *Assistant Member, Institute for Health Sciences; Assistant Professor of Psychology*

ASOK KUMAR BARUA, D.PHIL. (CALCUTTA), *Research Associate in Chemistry*

CAMILLE BAUER, *Assistant Professor of French*

¹MARTIN JOSEPH BECKMANN, DR. RER. POL., *Professor of Economics*

¹WILLIAM RAMSDEN BENFORD, SC.M., *Professor of Civil Engineering*

DANIEL CLARK BENNETT, PH.D., *Assistant Professor of Philosophy*

ROBERT HOWARD BENNETT, *Instructor in Physical Education*

JOHN BERRYMAN, B.A., *Visiting Associate Professor of English*

ROBERT THOMAS BEYER, PH.D., *Professor of Physics; Chairman of the Honors Council*

FREDERIC EDWARD BISSHOPP, PH.D., *Assistant Professor of Applied Mathematics*

THOMAS NOEL BISSON, PH.D., *Assistant Professor of History*

ZENAS RANDALL BLISS, SC.M., *Provost of the University; Professor of Engineering*

ELMER MILTON BLISTEIN, PH.D., *Associate Professor of English*

EDWARD ALAN BLOOM, PH.D., *Professor of English; Nicholas Brown Professor of Oratory and Belles Lettres*

DONALD SOMMERS BLOUGH, PH.D., *Associate Professor of Psychology*

²SOL RUBIN BODNER, PH.D., *Associate Professor of Engineering*

ALAN LINDLEY BOEGEHOLD, PH.D., *Assistant Professor of Classics*

JOSEPH EDWARD BOGGIO, PH.D., *Research Associate in Physics*

KEES WILLEM BOLLE, PH.D., *Assistant Professor of Religious Studies*

³KENNETH EDWARD BORST, M.S. IN SCI.ED., *Instructor in Chemistry*

GEORGE HERBERT BORTS, PH.D., *Professor of Economics*

CHELICIE CLAYTON BOSLAND, PH.D., *Eastman Professor of Political Economy*

KENNISON TILDEN BOSQUET, SC.M., *Lecturer in Psychology*

LEICESTER BRADNER, PH.D., *Professor of English*

PHILIP JAMES BRAY, PH.D., *Professor of Physics*

MICHAEL JOSEPH BRENNAN, PH.D., *Associate Professor of Economics*

ROBERT MURRAY BRENNER, PH.D., *Assistant Professor of Biology*

¹CARL BRIDENBAUGH, PH.D., LITT.D., *Professor of History; University Professor*

¹ On leave of absence, Semester I.

² On leave of absence.

³ Summer, 1962.

OFFICERS OF INSTRUCTION

¹JORGE A. L. BRIEUX, DOC. EN QUIM. (BUENOS AIRES), *Visiting Associate Professor of Chemistry*

GLIDDEN LANTRY BROOKS, M.D., *Director of the Institute for Health Sciences; Lecturer in Health Sciences*

²WAYNE CECIL BROSHAR, SC.M., *Instructor in Physics*

ANDREW BROWDER, PH.D., *Assistant Professor of Mathematics*

³EDWARD 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*

⁴FRANÇOIS BUCHER, PH.D., *Associate Professor of Art*

JEAN-MARIE FRANÇOIS BUCHER, M.A., *Instructor in French*

FATIN BULOS, PH.D., *Research Associate in Physics*

JOSEPH FREDERICK BUNNETT, PH.D., *Professor of Chemistry*

ROBERT GALEN BURNIGHT, PH.D., *Professor of Sociology; Member, Institute for Health Sciences*

AHMET RASIM BÜYÜKTÜR, ING.D., *Research Associate in Engineering*

PHILLIP DAVID CAGAN, PH.D., *Professor of Economics*

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

FRANCO CANZIANI, DR.CHEM., *Research Associate in Chemistry*

RICHARD LEWIS CARLIN, PH.D., *Assistant Professor of Chemistry*

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

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

DEANE CHALMERS CARSON, PH.D., *Associate Professor of Economics*

RAFAEL VAN SEVEREN CHACON, PH.D., *Associate Professor of Applied Mathematics*

⁴WILLIAM MASSEE CHAPPLE, SC.M., *Instructor in Geology*

BRUCE AYLWIN CHARTRES, PH.D., *Assistant Professor of Applied Mathematics*

HERMAN BURLEIGH CHASE, PH.D., *Robert P. Brown Professor of Biology*

RAM GOBINDA CHATTERJEA, PH.D., *Research Associate in Psychology*

PETER HSIEN-T'ING CH'EN, A.M., *Instructor in Political Science*

BRUCE BRAGDON CHICK, SC.M., *Research Associate in Applied Mathematics; Assistant Director of the Metals Research Laboratory*

RODERICK MILTON CHISHOLM, PH.D., *Professor of Philosophy; Romeo Elton Professor of Natural Theology*

³BOA-TEH CHU, PH.D., *Associate Professor of Engineering*

GEORGE LYLE CHURCH, PH.D., *Stephen T. Olney Professor of Natural History; Curator of the Herbarium*

RUSSELL MILLER CHURCH, PH.D., *Associate Professor of Psychology*

¹ Semester II.

² Summer, 1962.

³ On leave of absence, Semester I.

⁴ On leave of absence.

OFFICERS OF INSTRUCTION

WILLIAM FARR CHURCH, PH.D., *Munro, Goodwin, Wilkinson Professor of History*

VURAL CINEMRE, ING.D., *Research Associate in Engineering*

LEALLYN BURR CLAPP, PH.D., PD.D., *Professor of Chemistry; Director, Chemical Bond Approach Summer Institute¹*

ALLAN HERSH CLARK, PH.D., *Instructor in Mathematics*

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

²FRANCES LOUISE CLAYTON, PH.D., *Associate Professor of Psychology*

ROBERT HUGH COLE, PH.D., *Jesse H. and Louisa D. Sharpe Metcalf Professor of Chemistry*

³ARLAN RALPH COOLIDGE, PH.B., *Professor of Music*

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

ELMER ECKERT CORNWELL, JR., PH.D., *Associate Professor of Political Science*

STEPHEN TROWBRIDGE CRARY, PH.D., *Professor of Religious Studies*

²ROBERT PAYSON CREED, PH.D., *Associate Professor of English*

WILLIAM CHARLES CROSSGROVE, PH.D., *Instructor in German*

JOSEPH COLCORD CURTIS, PH.D., *Research Associate in Biology*

⁴SAMUEL FOSTER DAMON, A.M., *Professor of English; Curator of the Harris Collection*

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

²NATALIE ZEMON DAVIS, PH.D., *Assistant Professor of History*

GORDON ROHDE DEWART, PH.D., *Assistant Professor of French; Assistant Dean of The College; Head Counselor*

ESTHER AMELIA DICK, A.M., *Research Associate in Botany*

WENDELL SANFORD DIETRICH, B.D., *Assistant Professor of Religious Studies*

³JOHN ANDREW DILLON, JR., PH.D., *Associate Professor of Physics*

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

RICHARD ANDREW DOBBINS, PH.D., *Assistant Professor of Engineering*

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

³GEORGE ELLIOT DOWNING, PH.D., *Professor of Art*

³SAMUEL NORMAN DRIVER, A.M., *Instructor in Slavic Languages*

DANIEL CHARLES DRUCKER, PH.D., *Professor of Engineering*

JACQUES WAYNE DUFFY, PH.D., *Associate Professor of Engineering*

FRANCES ELLIOT DUNN, ED.D., *Associate Professor of Educational Psychology; Director of Educational Measurement*

HAROLD SEARL DUNN, PH.D., *Research Associate in Engineering*

FRANK DURAND, PH.D., *Assistant Professor of Spanish*

HUBERT JEROME DYER, PH.D., *Associate Professor of Botany*

DURAND ECHEVERRIA, PH.D., *Professor of French; Secretary of the Faculty*

¹ Summer, 1962.

² On leave of absence.

³ On leave of absence, Semester II.

⁴ On leave of absence, Semester I.

OFFICERS OF INSTRUCTION

- FRANK DONALD ECKELMANN, PH.D., *Associate Professor of Geology*
MAC VINCENT EDDS, JR., PH.D., *Professor of Biology*
JOHN OELHAF EDWARDS, PH.D., *Professor of Chemistry*
CHARLES ELBAUM, PH.D., *Associate Professor of Applied Physics*
RICHARD AKERS ELLIS, PH.D., *Associate Professor of Biology*
TRYGG ENGEN, PH.D., *Associate Professor of Psychology*
¹KLAUS WERNER EPSTEIN, PH.D., *Associate Professor of History*
ESSIEN UDOSSEN ESSIEN-UDOM, PH.D., *Assistant Professor of Political Science*
DEEWITT CURRIE EVANS, III, A.B., *Assistant Professor of Naval Science*
²DONALD LEE FANGER, PH.D., *Assistant Professor of Russian*
HARRY EDWARD FARNSWORTH, PH.D., *Research Professor of Physics*
HERBERT FEDERER, PH.D., *Professor of Mathematics*
¹DAVID FELDMAN, PH.D., *Professor of Physics*
WALTER SIDNEY FELDMAN, M.F.A., *Professor of Art*
PAUL FREDERIC FENTON, PH.D., *Professor of Biology*
MADELEINE PAULE FIELDS, PH.D., *Assistant Professor of French*
WILLIAM NICHOLS FINDLEY, SC.M. IN ENGIN., A.M., *Professor of Engineering*
JOHN ADAM FINGER, JR., ED.D., *Associate Professor of Education*
MARTIN JOHN FISCHER, MUS.B., A.M., *Associate Professor of Music (Artist)*
GEORGE LAWRENCE FISHER, PH.D., *Research Associate in Psychology*
¹WENDELL HELMS FLEMING, PH.D., *Associate Professor of Mathematics*
RICHARD LEE FRANCIS, PH.D., *Instructor in English*
WINTHROP NELSON FRANCIS, PH.D., *Professor of Linguistics and English*
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JERROLD FRANKLIN, PH.D., *Assistant Professor of Physics; Assistant to the Dean of The College*
¹WALTER FREDERICK FREIBERGER, PH.D., *Associate Professor of Applied Mathematics*
¹ERNEST SUNLEY FRERICHs, PH.D., *Associate Professor of Religious Studies*
EUGENE ALVIN FRIEDMANN, PH.D., *Associate Professor of Sociology*
MELVIN STUART FULLER, PH.D., *Assistant Professor of Botany*
JAMES HERD FULLERTON, SC.B., *Instructor in Physical Education*
IVAN WILLIAM FUQUA, SC.M. IN ED., *Instructor in Physical Education*
¹DAVID GALE, PH.D., *Professor of Mathematics*
JOHN BERDAN GARDNER, PH.D., *Assistant Professor of English*
³EDWARD HAINES GAUTHIER, A.M., *Instructor in Education*
GERALDINE FLORENCE GAUTHIER, PH.D., *Instructor in Biology*

¹ On leave of absence.

² On leave of absence, Semester II.

³ Summer, 1962.

OFFICERS OF INSTRUCTION

- JUNE GEBELEIN, A.B., *Instructor in Physical Education*
JULIAN HOWARD GIBBS, PH.D., *Associate Professor of Chemistry*
¹JAMES LOUIS GIDDINGS, PH.D., *Professor of Anthropology; Director of the Haffenreffer Museum of the American Indian*
JOHN KEITH GILBERT, M.A., *Instructor in French*
BRUNO JOHN GILETTI, PH.D., *Associate Professor of Geology*
JOHN JOSEPH GILMAN, PH.D., *Professor of Engineering*
PAUL FRANCIS GLEESON, A.M., *Lecturer in Education*
SIDNEY GOLDSTEIN, PH.D., *Professor of Sociology*
¹ELLIOT RAYMOND GOODMAN, PH.D., *Associate Professor of Political Science*
LEWIS HALL GORDON, PH.D., *Professor of Italian and French*
ARLENE ELIZABETH GORTON, ED.M., *Assistant Professor of Physical Education*
RICHARD JOHNSON GOSS, PH.D., *Associate Professor of Biology*
NORMAN K. GOTTWALD, PH.D., *Lecturer in Religious Studies*
²ROBERT KENNETH GOULD, PH.D., *Visiting Assistant Professor of Physics*
RICHARD MERRILL GOWEN, A.B., *Instructor in Physical Education*
WILLIAM HENRY GREEN, SC.B., *Assistant Professor of Naval Science*
LEON GREENBERG, PH.D., *Assistant Professor of Mathematics*
LOUIS GREENBERG, A.M., *Instructor in History*
EDWARD FORBES GREENE, PH.D., *Associate Professor of Chemistry*
RALPH W. GREENLAW, PH.D., *Visiting Associate Professor of History*
ERNEST L. GRIFFIN, PH.D., *Research Associate in Mathematics*
PAUL RANDOLPH GROSS, PH.D., *Associate Professor of Biology*
WILLIAM JOSEPH GRUNDMANN, SC.B., *Professor of Air Science*
RALPH LEE GUNTHER, PH.D., *Research Associate in Biology*
MORTON LEON GUREWITCH, PH.D., *Assistant Professor of English*
JOSEPH GURLAND, SC.D., *Associate Professor of Engineering*
MORTON EDWARD GURTIN, PH.D., *Assistant Professor of Applied Mathematics*
EDMUND WILHELM GUTTES, PH.D., *Research Associate in Biology*
SOPHIE GUTTES, PH.D., *Research Associate in Biology*
CECIL ARTHUR HACKETT, DOCT. DE L'UNIV.(PARIS), *Visiting Professor of French Literature*
MAX LYNN HAGGETT, PH.D., *Research Associate in Chemistry*
GEORGE WASHINGTON HAGY, PH.D., *Associate Professor of Biology*
JOSEPH FRANCIS HALL, SC.B., *Assistant Professor of Naval Science*
THOMAS JOSEPH HANRATTY, PH.D., *Visiting Associate Professor of Applied Mathematics*
AZEEL UL HAQUE, PH.D., *Research Associate in Physics*

¹ On leave of absence.

¹ Summer, 1962.

OFFICERS OF INSTRUCTION

- ERWIN CHARLES HARGROVE, A.M., *Lecturer in Political Science*
BRUNO HARRIS, PH.D., *Associate Professor of Mathematics*
¹JOHN HAWKES, A.B., A.M., *Associate Professor of English*
BARRETT HAZELTINE, M.S.E., *Assistant Professor of Engineering; Assistant to the Dean of The College*
ALAN KENNETH HEAD, PH.D., *Visiting Professor of Engineering*
DWIGHT BRALEY HEATH, PH.D., *Assistant Professor of Anthropology*
²MADHAV HEBLE, PH.D., *Research Associate in Applied Mathematics*
JOHN MACLEAN HEFFERNAN, ED.M., *Instructor in Physical Education*
HERBERT HEIDELBERGER, A.M., *Instructor in Philosophy*
MAYO DYER HERSEY, A.M. IN PHYSICS, *Visiting Professor of Engineering (Research)*
AKIRA HIKATA, (KYUSHU UNIV., JAPAN), *Research Associate in Applied Mathematics*
KAARLO JAAKKO JUHANI HINTIKKA, D.PHIL. (HELSINKI), *Visiting Professor of Philosophy*
DAVID HARRY HIRSCH, PH.D., *Instructor in English*
³JACK HIRST, PH.D., *Visiting Associate Professor of Chemistry*
WERNER GEORG HOFFMEISTER, PH.D., *Instructor in German*
ALAN HOLSKE, PH.D., *Professor of German*
¹PARK HONAN, PH.D., *Assistant Professor of English*
¹EDWIN HONIG, A.M., *Professor of English*
HENRY OLCOTT HOOPER, PH.D., *Assistant Professor of Physics*
IWAO HOSOKAWA, PH.D., *Research Associate in Engineering*
DANIEL JOHN HUGHES, JR., PH.D., *Assistant Professor of English*
²RUDOLPH CHIA-CHAO HWA, PH.D., *Research Associate in Physics*
KHAIRAT MOHAMMED IBNE-RASA, PH.D., *Research Associate in Chemistry*
MUHAMMAD MUNIRUL ISLAM, PH.D., *Research Associate in Physics*
YUJI ITO, PH.D., *Instructor in Mathematics*
WAYNE ARLAN JEPSON, SC.B., *Assistant Professor of Air Science*
²ERNEST PARKER JOHNSON, PH.D., *Research Associate in Psychology*
DAVID ALONZO JONAH, SC.M., LL.D., *Librarian and Director of Libraries; John Hay Professor of Bibliography*
LESLIE ALLEN JONES, PH.B., *Assistant Professor of English; Technical Director of Dramatics*
DAVID JORAVSKY, PH.D., *Associate Professor of History*
WILLIAM HENRY JORDY, PH.D., *Professor of Art*
JOHN JACOB KAGAN, SC.B., *Assistant Professor of Naval Science*
TATSUJI KAMBAYASHI, SC.B., *Instructor in Mathematics*
ISRAEL JAMES KAPSTEIN, PH.D., *Professor of English*

¹ On leave of absence.

² Summer, 1962.

³ April 1-August 31, 1962.

OFFICERS OF INSTRUCTION

- STURE KARL FREDRIK KARLSSON, PH.D., *Assistant Professor of Engineering*
ZVI KARNI, D.Sc., *Research Associate in Applied Mathematics*
ROBERT LEO KAY, PH.D., *Assistant Professor of Chemistry*
BARNABY CONRAD KEENEY, PH.D., ED.D., D.S. IN B.A., JUR.D., L.H.D., LL.D., *President; Professor of History*
¹JACSUE KEHOE, PH.D., *Research Associate in Psychology*
HUNTER KELLENBERGER, PH.D., *Professor of French*
ROBERTA MEADE KELLOGG, PH.D., *Associate Professor of Education*
²ROBERT WEBB KENNY, PH.D., *Professor of English*
WALTER JAMES KENWORTHY, PH.D., *Associate Professor of Biology*
JOSEPH KESTIN, PH.D., D.I.C., *Professor of Engineering*
SHOON KYUNG KIM, PH.D., *Visiting Associate Professor of Chemistry (Research)*
WILLIAM TRAVERS KING, III, PH.D., *Assistant Professor of Chemistry*
CHESTER HUGO KIRBY, PH.D., *Professor of History*
HELMUT KIRNER, DR.RER.NAT., *Research Associate in Chemistry*
JULIUS WILLIAM KLING, PH.D., *Associate Professor of Psychology*
³RALPH DAVID KODIS, PH.D., *Associate Professor of Engineering*
HERBERT KOLSKY, PH.D., D.Sc., *Professor of Applied Physics*
EDWARD THEODORE KORNHAUSER, PH.D., *Associate Professor of Engineering*
ARON DAVID KOSSOFF, PH.D., *Associate Professor of Spanish*
¹KENNETH LAWRENCE KOWALSKI, Sc.B., *Research Associate in Physics*
³DAVID KRAUSE, PH.D., *Associate Professor of English*
HENRY KUCERA, PH.D., *Associate Professor of Slavic Languages and of Linguistics; Head Resident Fellow*
ERICH KUNZEL, JR., A.M., *Assistant Professor of Music*
JOHN LADD, PH.D., *Professor of Philosophy*
ROBERT EUGENE LANOU, JR., PH.D., *Assistant Professor of Physics*
WILLIAM FREDERICK LANTZ, B.S. IN B.A., A.M., *Professor of Naval Science*
LÉO FREDERIC LAPORTE, PH.D., *Assistant Professor of Geology*
DAVID LAURENT, A.M., *Associate Professor of Music*
KENNETH P. LAWLEY, D.PHIL. (OXON.), *Research Associate in Chemistry*
SEYMOUR LEDERBERG, PH.D., *Associate Professor of Biology*
ELIZABETH HORTENSE LEDUC, PH.D., *Associate Professor of Biology*
MYRNA PIKE LEE, Sc.M., *Instructor in Mathematics*
¹WALTER LEHN, PH.D., *Visiting Professor of Linguistics*
PHILIP EDWARD LEIS, PH.D., *Assistant Professor of Anthropology*
JOHN WILLIAM LENZ, PH.D., *Associate Professor of Philosophy*
SAMUEL LERNER, ENG.D., *Associate Professor of Engineering*

¹ Summer, 1962.

² On leave of absence, Semester I.

³ On leave of absence.

OFFICERS OF INSTRUCTION

- GERALD RICHARD LEVIN, PH.D., *Assistant Professor of Psychology*
BARBARA KIEFER LEWALSKI, PH.D., *Assistant Professor of English*
ROBERT BRUCE LINDSAY, PH.D., ED.D., *Dean of the Graduate School;*
Hazard Professor of Physics
LEWIS PAEFF LIPSITT, PH.D., *Associate Professor of Psychology*
F. J. LOCKETT, PH.D., *Research Associate in Applied Mathematics*
JOSEPH JOHN LOFERSKI, PH.D., *Associate Professor of Engineering*
A. J. LOHWATER, PH.D., *Research Associate in Mathematics*
JUAN LÓPEZ-MORILLAS, PH.D., *Professor of Spanish*
FREDERICK RUTAN LOVE, PH.D., *Assistant Professor of German*
PETER LOVE, PH.D., *Research Associate in Physics*
ALBERT EDGAR LOWNES, PH.B., A.M., *Lecturer in the History of Science*
ELIHU LUBKIN, PH.D., *Assistant Professor of Physics (Research)*
JANET LUTZ, M.S. IN ED., *Instructor in Physical Education*
CHARLES ARTHUR LYNCH, PH.D., *Professor of Classics*
ARTHUR GORDON LYNE, PH.D., *Research Associate in Biology*
CHARLES BERGER MACKAY, A.M., *Associate Director, Master of Arts in*
Teaching Program; Lecturer in Education
MANFRED FRASER MACKENZIE, B.A., B.LITT., *Instructor in English*
FRANCIS KING CAREY MADEIRA, A.M., *Visiting Associate Professor of Music*
PAUL FRITZ MAEDER, PH.D., *Professor of Engineering*
CLAUDE PETER MAGRATH, PH.D., *Assistant Professor of Political Science*
HENRY F. MAJEWSKI, PH.D., *Assistant Professor of French*
¹DONALD GENE MALM, PH.D., *Visiting Assistant Professor of Mathematics*
CHARLES DAVID MARKHAM, A.B., *Instructor in Physical Education*
BARRY ALAN MARKS, PH.D., *Assistant Professor of English*
JOHN MARTIN MARSTRAND, D.PHIL. (OXON.), *Visiting Associate Professor*
of Mathematics
JOHN BRAND MARTIN, PH.D., *Visiting Assistant Professor of Engineering*
¹GEORGE FRATUS MARTINS, SC.M., *Instructor in Chemistry*
CLIFFORD PLEASANT MASON, SC.B., A.M., *Associate Professor of Naval*
Science
DONALD ROBERT MAXSON, PH.D., *Assistant Professor of Physics*
KURT BERND MAYER, PH.D., *Professor of Sociology*
²FORREST McDONALD, PH.D., *Associate Professor of History*
DONALD HERBERT MCGLODY, PH.D., *Lecturer in Biology*
ROBERT JONES MCKISSICK, A.B., *Lecturer in Mathematics*
WILLIAM GERALD MCLOUGHLIN, JR., PH.D., *Associate Professor of History*
¹RUSSELL MEINHOLD, PH.D., *Instructor in Chemistry*
RICHARD ERNST MEYER, D.SC., *Professor of Applied Mathematics*
VICTOR HALVER MICHALSON, A.B., *Instructor in Physical Education*

¹ Summer, 1962.

² On leave of absence.

OFFICERS OF INSTRUCTION

- RICHARD NORMAND MICHAUD, Sc.B., *Instructor in Physical Education*
ROBERT LEE MILLER, Ph.D., *Visiting Associate Professor of Geology*
RICHARD BOLSTER MILLWARD, Ph.D., *Assistant Professor of Psychology*
SHOZO MIYAZAKI, D.S., *Research Associate in Chemistry*
HORST RUDOLF MOEHRING, Ph.D., *Assistant Professor of Religious Studies*
WILLIAM MONTAGNA, Ph.D., Sc.D., *Professor of Biology; L. Herbert Ballou University Professor*
GEORGE MONTEIRO, A.M., *Instructor in English*
¹ENRIQUE MONTENEGRO, B.F.A., *Visiting Associate Professor of Art*
JOHN DAVID MOORE, A.M., *Instructor in Classics*
KAY KIRLIN MOORE, A.B., B.S. in L.S., *Head Cataloger, John Hay Library; Instructor in Bibliography*
GEORGE WALTER MORGAN, Ph.D., *Professor*
²HAZIME MORI, Ph.D., *Research Associate in Chemistry*
ROBERT WARREN MORSE, Ph.D., *Dean of The College; Professor of Physics*
JOSEPH EDWARD MOTHERWAY, Sc.M., *Lecturer in Engineering*
THOMAS ANDREW MUTCH, Ph.D., *Assistant Professor of Geology*
CONSTANTINE MYLONAS, Ph.D., *Professor of Engineering*
HAROLD RUSS NACE, Ph.D., *Professor of Chemistry*
MAIMON NASATIR, Ph.D., *Assistant Professor of Botany*
RON NELSON, A.M.D., *Associate Professor of Music*
OTTO EDUARD NEUGEBAUER, Ph.D., LL.D., Sc.D., *Professor of the History of Mathematics; Florence Pirce Grant University Professor*
ROBERT STERLING NEUMAN, M.F.A., *Visiting Associate Professor of Art*
JOHN FRED NEUMER, Ph.D., *Assistant Professor of Chemistry*
GORDON FRANK NEWELL, Ph.D., *Associate Professor of Applied Mathematics*
KATSUMI NOMIZU, Sc.D., Ph.D., *Associate Professor of Mathematics*
¹SAMUEL GILBERT NORD, A.M., *Research Associate in Psychology*
BRUCE OAKLEY, Ph.D., *Assistant Professor of Psychology*
¹KATHERINE ELIZABETH O'BRIEN, Ph.D., *Visiting Lecturer in Mathematics*
PATRICIA O'CONNOR, Ph.D., *Associate Professor of Linguistics*
¹JOSEPH GEORGE O'KEEFE, Ph.D., *Instructor in Physics*
KASIF ONARAN, Ph.D., *Research Associate in Engineering*
EMIN TURAN ONAT, D.Sc., *Professor of Engineering*
HAROLD NATHAN ORGANIC, A.M., *Assistant Professor of Sociology*
HIDEKI OZEKI, Ph.D., *Instructor in Mathematics*
RICHARD ANTHONY PARKER, Ph.D., *Wilbour Professor of Egyptology*
JEAN-YVES PARLANGE, Ph.D., *Research Associate in Engineering*
RUSSELL ALLEN PECK, JR., Ph.D., *Professor of Physics*
WHITNEY TROW PERKINS, Ph.D., *Associate Professor of Political Science*

¹ Summer, 1962.

² May 15-September 14, 1962.

OFFICERS OF INSTRUCTION

- ¹BENJAMIN ALAN PETERSON, ED.M., *Instructor in Chemistry*
CARL PFAFFMANN, PH.D., *Professor of Psychology; Florence Pirce Grant University Professor*
HAROLD WINSTON PFAUTZ, PH.D., *Associate Professor of Sociology*
CHARLES HORACE PHILBRICK, II, PH.D., *Associate Professor of English*
SARAH GENE PHILLIPS, SC.B., *Instructor in Physical Education*
MILTON JOHN PIEPUL, B.S. IN P.E., *Instructor in Physical Education*
ROSEMARY PIERREL, PH.D., *Dean of Pembroke College; Associate Professor of Psychology*
ALLEN COMPERE PIPKIN, PH.D., *Assistant Professor of Applied Mathematics*
GREGORY THOMAS POLLETTA, A.M., *Assistant Professor of English*
ROBERT GRAY POTTER, JR., PH.D., *Research Associate in Sociology*
WILLIAM CASREL POTTER, M.S. IN B.A., A.M., *Associate Professor of Air Science*
PHYLLIS W. POWELL, A.M., *Lecturer in Slavic Languages*
WILLIAM PRAGER, ENG.D., *Professor of Applied Mechanics; L. Herbert Ballou University Professor*
²CHANDRIKA PRASAD, D.PHIL.(OXON.), *Visiting Associate Professor of Applied Mathematics*
TREVOR WILLIAM PREIST, PH.D., *Visiting Lecturer in Physics*
MICHAEL COURTNEY JENKINS PUTNAM, PH.D., *Assistant Professor of Classics*
WALTER COLE QUEVEDO, JR., PH.D., *Assistant Professor of Biology*
³ALONZO WALLACE QUINN, PH.D., *Professor of Geology*
LEONARD SALVATOR QUIRINO, A.M., *Instructor in English*
RACHEL RAKATANSKY, A.B., *Research Associate in Botany*
J. RAMAKANTH, PH.D., *Research Associate in Applied Mathematics*
WILLIAM HILL REID, PH.D., *Associate Professor of Applied Mathematics*
ALEX FRANK RICCIARDELLI, PH.D., *Visiting Assistant Professor of Anthropology*
PAUL LAMBERT RICHARDS, PH.D., M.S. IN L.S., *Circulation Chief; Assistant Professor of Bibliography*
PETER DAMIAN RICHARDSON, PH.D., *Assistant Professor of Engineering*
JEANNETTE NEWTON RIDER, A.M., *Instructor in English*
BEVERLY SELLMAN RIDGELY, PH.D., *Associate Professor of French*
ANNE LLOYD RIEGER, SC.M., *Research Associate in Chemistry*
PHILIP H. RIEGER, PH.D., *Instructor in Chemistry*
LORRIN ANDREWS RIGGS, PH.D., *Professor of Psychology; L. Herbert Ballou University Professor*
MARVIN CHARLES RINTALA, PH.D., *Assistant Professor of Political Science*

¹ Summer, 1962.

² Began February 1, 1962.

³ On leave of absence, Semester I.

OFFICERS OF INSTRUCTION

- RONALD SAMUEL RIVLIN, Sc.D., *Professor of Applied Mathematics*
CHARLES ALEXANDER ROBINSON, JR., A.M., *David Benedict Professor of Classics*
JULIO RODRIGUEZ-LUIS, A.M., *Instructor in Spanish*
DONALD GERARD ROHR, Ph.D., *Associate Professor of History*
TATIANA ROMAN, *Lecturer in Slavic Languages*
MICHAEL IRA ROSEN, Sc.M., *Instructor in Mathematics*
MURRAY ROSENBLATT, Ph.D., *Professor of Mathematical Probability and Statistics*
WILLIAM RUDOLPH ROSENGREN, S.Sc.D., *Assistant Professor of Sociology*
JOHN ROSS, Ph.D., *Professor of Chemistry*
VIRGINIA FRANKLIN ROSS, Ph.D., *Research Associate in Chemistry*
FRANK GEORGE ROTHMAN, Ph.D., *Assistant Professor of Biology*
LEONARD CARL ROWE, Ph.D., *Visiting Associate Professor of Political Science*
ANDREW JOSEPH SABOL, Ph.D., *Associate Professor of English*
ABRAHAM JOSEPH SACHS, Ph.D., *Professor of the History of Mathematics*
PERIHAN SADOGLU, Ph.D., *Research Associate in Biology*
JAMES MINORU SAKODA, Ph.D., *Professor of Sociology (Research)*
MINORU SAKURAI, M.D., D.M.S., *Research Associate in Biology*
¹WESLEY CHARLES SALMON, Ph.D., *Associate Professor of Philosophy*
ALBERT JACQUES SALVAN, Ph.D., *Professor of French*
JEFFREY LEONARD SAMMONS, A.B., *Instructor in German*
THOMAS GRIFFIN SANDERS, Ph.D., *Assistant Professor of Religious Studies*
MARCEL ANDRÉ SAVE, ING.CIV.DES CONSTR. (LIÈGE), *Visiting Associate Professor of Engineering*
ERICH SCHAFRANIK, DIPL. ING., *Research Associate in Engineering*
STEPHEN KARL SCHER, A.M., *Instructor in Art*
PATRICIA ANN SCHILTZ, B.S. IN ED., *Instructor in Physical Education*
HAROLD SCHLOSBERG, Ph.D., *Edgar J. Marston Professor of Psychology*
RICHARD GEORGE SCHMITT, Ph.D., *Assistant Professor of Philosophy*
WALTER JOHNSON SCHNERR, Ph.D., *Associate Professor of Romance Languages*
WILLIAM RICHARD SCHOEDEL, A.M., *Instructor in Religious Studies*
ALLAN MARTIN SCHRIER, Ph.D., *Associate Professor of Psychology*
ROBERT OSCAR SCHULZE, Ph.D., *Associate Professor of Sociology; Assistant Dean of The College*
DETLEV WALTHER SCHUMANN, Ph.D., *Professor of German*
MARK BARRY SCHUPACK, Ph.D., *Assistant Professor of Economics*
HERMANN E. SCHÜSSLER, Ph.D., *Visiting Lecturer in History*

¹ On leave of absence.

OFFICERS OF INSTRUCTION

HANS-RUDOLF SCHWARZ, D.Sc., *Visiting Associate Professor of Applied Mathematics*

GEORGE M. SEIDEL, PH.D., *Assistant Professor of Physics*

ANATOLE MORRIS SHAPIRO, PH.D., *Associate Professor of Physics*

¹STEPHEN DAVID SHATKIN, M.A.T., *Instructor in Education*

¹JOHN GILMOUR SHERMAN, PH.D., *Research Associate in Psychology*

RICHARD THORPE SHIELD, PH.D., *Professor of Applied Mathematics*

GORO SHIMAOKA, D.Sc., *Visiting Professor of Physics*

¹GEORGE KEEN SHORTESS, PH.D., *Research Associate in Psychology*

JOHN WILLIAM SHROEDER, PH.D., *Associate Professor of English*

ALENE FREUDENHEIM SILVER, PH.D., *Research Associate in Biology*

MAE WILLIAMSON SIMMONS, PH.D., *Research Associate in Psychology*

CHARLES HUGH SMILEY, PH.D., Sc.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 Master of Arts in Teaching Program*

HOWARD ARTHUR SNYDER, PH.D., *Assistant Professor of Physics*

ETTA SOIREF, PH.D., *Registrar of the Graduate School; Lecturer in English*

SELMA SOYSAL, PH.D., *Visiting Research Associate in Applied Mathematics*

BUEL ALEXANDER STAGGERS, A.B., *Research Associate in Biology*

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

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

CLIFFORD STEVENSON, A.M., *Instructor in Physical Education*

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

MERTON PHILIP STOLTZ, PH.D., *Professor of Economics; Associate Dean of the Graduate School*

¹WILLIAM STREIFER, PH.D., *Research Associate in Engineering*

NANCY ANN SULLIVAN, A.M., *Assistant Professor of English*

KOJI SUMINO, D.Sc., *Research Associate in Engineering*

SALVATORE PHILIP SUTERA, PH.D., *Assistant Professor of Engineering*

²TETSURO SUZUKI, PH.D., *Research Associate in Physics*

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

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

PAUL BEEKMAN TAYLOR, PH.D., *Assistant Professor of English*

³RICHARD CLYDE TAYLOR, PH.D., *William Herbert Perry Faunce Professor of Philosophy*

⁴JAMES PERINGER THOMAS, PH.D., *Lecturer in Psychology*

THOMAS CHI-TSAI TING, PH.D., *Research Associate in Engineering*

¹ Summer, 1962.

² Began March 1, 1962.

³ On leave of absence, Semester II.

⁴ Semester II, 1961-62.

OFFICERS OF INSTRUCTION

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

HUGH R. TOWNLEY, A.M., *Associate Professor of Art*

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

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

VALERIE AGNES TUMINS, PH.D., *Assistant Professor of Russian*

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

SYLVESTER JOSEPH UNA, B.Sc., *Research Associate in Chemistry*

DAVID FREDERICK UNUMB, A.M., *Instructor in English*

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

¹ALBERT DOUGLASS VAN NOSTRAND, PH.D., *Associate Professor of English*

²ROGER CYRIL VAN TASSEL, PH.D., *Visiting Associate Professor of Economics*

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

IVAN FRANCIC WALDBAUER, A.M., *Assistant Professor of Music*

GORDON L. WALKER, PH.D., *Research Associate in Mathematics*

HAROLD N. WARD, A.M., *Instructor in Mathematics*

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

THOMAS EVERETT WARNER, A.M., *Instructor in Music*

JOSEPH WATMOUGH, *Instructor in Physical Education*

³DANIEL P. WEEKS, PH.D., *Research Associate in Chemistry*

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

PAUL WEISBERG, PH.D., *Instructor in Psychology*

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

²DARTON V. WELLS, PH.D., *Research Associate in Chemistry*

⁴RAPHAEL JEHUDAH ZWI WERBLOWSKY, D.ES L.(GENEVA), *Mr. and Mrs. Leo Grossman Visiting Professor of Judaic Studies*

JOHN WERMER, PH.D., *Professor of Mathematics*

PETER JOCELYN WESTERVELT, PH.D., *Associate Professor of Physics*

LEWIS BERNARD WETZEL, PH.D., *Associate Professor of Engineering*

JAMES HUNTER WHITELAW, PH.D., *Research Associate in Engineering*

MARK STEWART WHITNEY, PH.D., *Assistant Professor of French*

²RICHARD M. WHITNEY, A.M., *Instructor in Chemistry*

MILDRED WIDGOFF, PH.D., *Assistant Professor of Physics (Research)*

ARTHUR OLNEY WILLIAMS, JR., PH.D., *Professor of Physics*

⁵LEA EVERARD WILLIAMS, PH.D., *Associate Professor of Political Science*

GORDON TOWER WILMOT, A.B., *Research Associate in Applied Mathematics*

JAMES WALTER WILSON, PH.D., ED.D., *Frank L. Day Professor of Biology*

¹ On leave of absence, Semester I.

² Summer, 1962.

³ Began February 1, 1962.

⁴ Semester II.

⁵ On leave of absence.

OFFICERS OF INSTRUCTION

- DON CLIFFORD WOLFE, Sc.B., *Assistant Professor of Naval Science*
¹JOHN ROWE WORKMAN, Ph.D., *Associate Professor of Classics*
CHARLES LOUIS WORONICK, Ph.D., *Assistant Professor of Chemistry*
JAMES J. WRENN, A.B., *Lecturer in Chinese*
MICHAEL WRESZIN, Ph.D., *Assistant Professor of History*
²CHARLES JOHN VERSCHOYLE WRONG, M.A., *Instructor in Education*
LAWRENCE COUNSELMAN WROTH, A.B., Litt.D., L.H.D., *Research Professor of American History*
RICHARD ALLEN YUND, Ph.D., *Assistant Professor of Geology*
MICHAEL RAYMOND ZATZICK, Ph.D., *Research Associate in Physics*
JOHN LYNUS ZILLY, A.B., *Instructor in Physical Education*
BASIL GEORGE ZIMMER, Ph.D., *Professor of Sociology*
STANLEY ZIMMERING, Ph.D., *Associate Professor of Biology*
³FRANCIS J. ZUCKER, A.M., *Visiting Professor of Engineering*

Interdisciplinary Fellows

- STANFORD PATRICK ROSENBAUM, Ph.D., *Interdisciplinary Fellow in English-Philosophy*
CHARLES PARKER WOLF, A.M., *Interdisciplinary Fellow in Sociology-Philosophy*

¹ On leave of absence, Semester II.
² Summer, 1962.
³ Semester II.

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 1962-63:

MILLICENT LANG BELL, *Assistant Professor of English*

George A. and Eliza Gardner Howard Foundation Fellowship

SOL RUBIN BODNER, *Associate Professor of Engineering*

John Simon Guggenheim Memorial Foundation Fellowship

CARL BRIDENBAUGH, *University Professor*

John Simon Guggenheim Memorial Foundation Fellowship

ROBERT P. CREED, *Associate Professor of English*

John Simon Guggenheim Memorial Foundation Fellowship

NATALIE ZEMON DAVIS, *Assistant Professor of History*

Social Science Research Council Fellowship

DONALD LEE FANGER, *Assistant Professor of Russian*

Inter-University Committee on Travel Grants

DAVID FELDMAN, *Professor of Physics*

National Science Foundation Senior Postdoctoral Fellowship

United States Government Fulbright Award

WALTER FREDERICK FREIBERGER, *Associate Professor of Applied Mathematics*

John Simon Guggenheim Memorial Foundation Fellowship

ERNEST SUNLEY FRERICHs, *Associate Professor of Religious Studies*

Lilly Postdoctoral Fellowship

DAVID GALE, *Professor of Mathematics*

John Simon Guggenheim Memorial Foundation Fellowship

JAMES LOUIS GIDDINGS, *Professor of Anthropology*

John Simon Guggenheim Memorial Foundation Fellowship

United States Government Fulbright Award

ELLIOT RAYMOND GOODMAN, *Associate Professor of Political Science*

John Simon Guggenheim Memorial Foundation Fellowship

North Atlantic Treaty Organization Research Fellowship

JOHN C. B. HAWKES, JR., *Associate Professor of English*

John Simon Guggenheim Memorial Foundation Fellowship

National Institute of Arts and Letters Grant

PARK HONAN, *Assistant Professor of English*

John Simon Guggenheim Memorial Foundation Fellowship

EDWIN HONIG, *Professor of English*

John Simon Guggenheim Memorial Foundation Fellowship

COMMITTEES

RALPH DAVID KODIS, *Associate Professor of Engineering*

John Simon Guggenheim Memorial Foundation Fellowship

C. PETER MAGRATH, *Assistant Professor of Political Science*

American Council of Learned Societies Grant

FORREST McDONALD, *Associate Professor of History*

John Simon Guggenheim Memorial Foundation Grant

Volker Fund Grant

LEA EVERARD WILLIAMS, *Associate Professor of Political Science*

American Council of Learned Societies Grant

Asia Foundation Grant

Committees

Standing Committees of the Corporation

Advisory and Executive Committee

The PRESIDENT, Chairman, *ex-officio*; Messrs. PERKINS, A. C. THOMAS, LOUTTIT, J. N. BROWN, BRANCH, TANNER, PARKER, MILLAR, and WATSON, Mrs. REED, Messrs. CADWGAN and RESS; Mr. COCHRAN, Secretary.

Athletic Advisory Council

The PROVOST, the VICE-PRESIDENT and BUSINESS MANAGER, the DEAN OF THE COLLEGE, the ASSISTANT DEAN OF THE COLLEGE: STUDENT AFFAIRS, all *ex-officio*; Messrs. DAVIS, Chairman, GRAHAM, and CLEMENCE; Professors DILLON (Semester I, 1962-63) and GARDNER (Semester II, 1962-63); ECHEVERRIA (to 1964), and GIBBS (to 1965); Messrs. A. R. WALLS, D. S. McNEIL, and D. J. MEEHAN.

Audit Committee

Messrs. GOFF, Chairman, CADWGAN, and MACDOWELL.

Comprehensive Planning and Development of University Property

THE PRESIDENT, *ex-officio*; Messrs. LOUTTIT, Chairman, J. N. BROWN, PARKER, GROSS, E. J. LOWNES, JR., and C. E. HUGHES.

Consultation between the Corporation and the Faculty

The SECRETARY, Chairman, *ex-officio*; Messrs. WILLIAMS, GOFF, and MACDOWELL; Professors SCHLOSBERG (to 1963), A. O. WILLIAMS (to 1964), and TAFT (to 1965).

COMMITTEES

Investment Committee

The PRESIDENT, the TREASURER, both *ex-officio*; Messrs. GERRY, Chairman, WILCOX, D. L. BROWN, MARSTON, and GOSNELL; Mr. COCHRAN, Secretary.

Lectureships Committee

The Provost, *ex-officio*; Mrs. BEARDSLEY and Mr. CHAFEE; Professors ROBINSON, Chairman, SMILEY, KAPSTEIN, RIVLIN, MAYER, and RIDGELY.

Library Committees:

Annmary Brown Memorial Committee of Management

The PRESIDENT, Chairman, *ex-officio*; Professors WROTH and JONAH; Messrs. F. R. GOFF and A. E. LOWNES.

John Carter Brown Library Committee of Management

The PRESIDENT, Chairman, *ex-officio*; Messrs. J. N. BROWN, LOUTTIT, W. S. LEWIS, and C. W. BARRETT.

University Library Committee

The PRESIDENT, Chairman, the LIBRARIAN, the DEAN OF THE GRADUATE SCHOOL, all *ex-officio*; Messrs. J. N. BROWN, CHAFEE, ALDRICH, J. M. CRAWFORD, JR., L. G. BLOOMINGDALE, and E. G. FREEHAFFER; Professors LIPSITT and WEIMAR (to 1963); DYER and KAPSTEIN (to 1964); GREENE and PECK (to 1965).

New Buildings

The PRESIDENT, Chairman, the CHAIRMAN OF THE COMMITTEE ON COMPREHENSIVE PLANNING AND DEVELOPMENT OF UNIVERSITY PROPERTY, both *ex-officio*; Messrs. J. N. BROWN, GROSS, and CADWGAN, Mrs. REED, Messrs. L. G. BLOOMINGDALE and E. E. FACHON.

Pembroke College Advisory Committee

The PRESIDENT, Chairman, the DEAN OF PEMBROKE COLLEGE, Secretary, the PRESIDENT OF THE ALUMNAE ASSOCIATION, all *ex-officio*; Mr. MACDOWELL and Mrs. HUGHES; Professors McDONALD and MARKS; Mrs. R. A. ARMSTRONG, Mrs. F. L. JACKSON, Mrs. D. R. TILLINGHAST, and Mrs. H. E. THUNBERG.

Standing Committee Vacancies

Messrs. A. C. THOMAS, Chairman, RESS, and EDDY.

Trustee Vacancies

The PRESIDENT, Secretary, the CHANCELLOR, Chairman, both *ex-officio*; Messrs. HUNT, DAVIS, and McLEOD.

COMMITTEES

Representatives on the Administrative Board of the Rhode Island Hospital School of Nursing

Dean PIERREL and Dr. BROOKS.

Representatives on the Board of Trustees of the Rhode Island School of Design

President KEENEY and Professor JORDY.

Standing Committees of the Faculty¹

On Admission and Financial Aid

THE PRESIDENT, Chairman, or, in his absence, the PROVOST; the DEAN OF PEMBROKE COLLEGE, or the ASSISTANT DEAN; the DEAN OF THE COLLEGE; the DEAN OF ADMISSION OF PEMBROKE COLLEGE; the DIRECTOR OF ADMISSION OF THE COLLEGE; the DIRECTOR OF FINANCIAL AID; the DIRECTOR OF EDUCATIONAL MEASUREMENT, all *ex-officio*; Messrs. ROSS and FRERICH² (to 1963); Messrs. ELLIS and KUCERA (to 1964); Messrs. HEATH and KORNHAUSER (to 1965).

On Academic Standing

THE PROVOST OF THE UNIVERSITY; the DEAN OF THE COLLEGE, Chairman; the DEAN OF PEMBROKE COLLEGE; the ASSISTANT DEAN OF THE COLLEGE: STUDENT AFFAIRS; the CHAIRMAN OF THE COMMITTEE ON ADMISSION AND FINANCIAL AID (or his representative); the RECORDER OF THE COLLEGE; the RECORDER OF PEMBROKE COLLEGE, all *ex-officio*; Mr. BENFORD³ representing the Division of Engineering; Mr. BORTS representing the Honors Council; Messrs. SCHNERR (to 1963), KLING (to 1964), and CORNWELL (to 1965).

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. G. B. CARPENTER, PARKER, and RIDGELY (to 1963); Messrs. GALE,⁴ ROHR, and TAYLOR (to 1964); Messrs. CHASE, LÓPEZ-MORILLAS, and SHIELDS (to 1965).

On Student Organizations

THE ASSISTANT DEAN OF THE COLLEGE: STUDENT AFFAIRS, Chairman; the DIRECTOR OF ATHLETICS; the ASSISTANT DEAN OF PEMBROKE COLLEGE; the ADVISOR ON STUDENT ACTIVITIES OF PEMBROKE COLLEGE, all

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

² On leave of absence, 1962-63. Miss Leduc will serve in his place.

³ On leave of absence, Semester I, 1962-63. Mr. Kestin will serve in his place.

⁴ On leave of absence, 1962-63. Mr. Drucker will serve in his place.

COMMITTEES

ex-officio; Messrs. BLISTEIN and ROHR (to 1963); Messrs. AMOR Y VASQUEZ and GOODMAN¹ (to 1964); Messrs. FULLER and SANDERS (to 1965).

On Student Organizations in Pembroke College

THE DEAN OF PEMBROKE COLLEGE, Chairman; the ADVISOR 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*; Mr. KENWORTHY (to 1963), Miss O'Connor (to 1964), and Mr. SABOL (to 1965).

On Prizes and Premiums

Mr. RICHARDS, Chairman; Messrs. L. WILLIAMS² (to 1963), SHAPIRO (to 1964), and BLOUGH (to 1965).

On the Faculty Travel Fund

Messrs. LEDERBERG (to 1963) Chairman; ECKELMANN (to 1964); and NASATIR (to 1965).

On Schedules

THE RECORDER OF THE COLLEGE, Chairman; the RECORDER OF PEMBROKE COLLEGE, both *ex-officio*; Messrs. LAPORTE (to 1963), KOSSOFF (to 1964), and KENWORTHY (to 1965).

On Commencement Speakers

Mr. BARNHILL, Chairman; the ASSISTANT DEAN OF THE COLLEGE; the DEAN OF PEMBROKE COLLEGE; the INSTRUCTORS IN PUBLIC SPEAKING, all *ex-officio*; Messrs. TRUEBLOOD (to 1963), GILETTI (to 1964), and LENZ (to 1965).

On Scholarly Publications

THE LIBRARIAN, Chairman; the DEAN OF THE GRADUATE SCHOOL, both *ex-officio*; Messrs. G. K. ANDERSON (to 1963), SALVAN (to 1964), and MORGAN (to 1965).

On Summer Stipends

Messrs. W. CHURCH and WAGGONER (to 1963); CHISHOLM, Chairman, and FRANCIS (to 1964); and BLOOM (to 1965).

Councils

Honors Council

THE DIRECTOR OF THE HONORS PROGRAM (Mr. BEYER); Messrs.

¹ On leave of absence, 1962-63. Mr. Barnhill will serve in his place.

² On leave of absence, 1962-63. Mr. Friedman will serve in his place.

COMMITTEES

MAEDER (to 1963), TRUEBLOOD (to 1964), HONIG¹ (to 1965), and BORTS (to 1966).

Graduate Council

THE PROVOST OF THE UNIVERSITY; the DEAN OF THE GRADUATE SCHOOL, Chairman; the ASSOCIATE DEAN OF THE GRADUATE SCHOOL, all *ex-officio*; Messrs. MEYER, QUINN,² LÓPEZ-MORILLAS, and ZIMMER (to 1963); WERMER, NACE, CHISHOLM, and BRENNAN (to 1964).

Languages and Literatures Council

MESSRS. KELLENBERGER, Chairman, BLOOM, E. J. BROWN, ECHEVERRIA, LÓPEZ-MORILLAS, SCHUMANN, and TWADDELL.

Physical Sciences Council

THE DEAN OF THE GRADUATE SCHOOL, the DEAN OF THE COLLEGE, both *ex-officio*; Messrs. BUNNETT, DRUCKER, Chairman, ECKELMANN, FARNSWORTH, MAEDER, ONAT RIVLIN, ROSS, TRUELL, and WILLIAMS.

Administrative Committees

Commencement Committee

THE PRESIDENT, the SECRETARY OF THE CORPORATION, the PRESIDENT OF THE ASSOCIATED ALUMNI, the PRESIDENT OF THE ALUMNAE ASSOCIATION, all *ex-officio*; Messrs. BRANCH and C. E. GROSS; Mr. CURTIS, Chairman; PROVOST BLISS; Deans MORSE, HILL, PIERREL, and LINDSAY; Mr. DAVIS; Professors WORKMAN and MONTAGNA; Messrs. WORTHINGTON and MACKESEY, and Mrs. STAPELTON.

Faunce House Advisory Board

THE DEAN OF THE COLLEGE, the PRESIDENT and the VICE-PRESIDENT ON THE STUDENT BOARD OF GOVERNORS, all *ex-officio*; Mr. CLEMENCE, Professor G. L. CHURCH, and Mr. E. E. LEONARD, JR., Chairman.

Nautical Advisory Board

THE DEAN OF THE COLLEGE, the DIRECTOR OF PLANT, both *ex-officio*; Mr. GOFF, Provost BLISS, Chairman, Messrs. R. H. SWEET, P. W. N. GUSTAFSON, A. R. WALLS, and R. W. BLISS.

Outing Reservation Advisory Board

THE DEAN OF THE COLLEGE, the DIRECTOR OF PLANT, both *ex-officio*; Messrs. GRAHAM, J. SMITH, and H. ISÉ; Professors NACE, Chairman, and JORDY.

¹On leave of absence, 1962-63. Mr. Philbrick will serve in his place.

²On leave of absence, Semester I, 1962-63. Mr. Mutch will serve in his place.

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.

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." The illumination of University Hall for President Washington is now recalled on Class Night, Christmas Eve, and Rhode Island Independence Day when candles are again placed in every window of the building.

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

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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 called Francis Wayland in 1827 to be its fourth President. He became one of the best known college presidents of his time, and, towards the end of his long administration, he attracted widespread attention in educational circles by introducing his New System at Brown. This was a new curriculum—radical for the era—that emphasized applied science and engineering and gave the students some choice in the election of courses.

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.

Important innovations were introduced during the next 25 years. Athletics were organized, and Brown was represented in intercollegiate sports, particularly baseball and rowing. Several new buildings were added to the campus, and the financial resources of the University were 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 coördinate 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 was felt for many years thereafter.

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. Theodore Francis Green (1887), after two terms as Rhode Island Governor, served 23 years in the United States Senate. 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, 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

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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 (1950-61); Rosemary Pierrel (1961-).

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 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.

Henry Merritt Wriston was inaugurated as Brown's eleventh President

in 1937. Dr. Wriston's impact on the University was enormous, and by the time he retired in 1955 Brown was a profoundly changed institution. In spite of its very considerable growth under President Faunce, Brown had remained primarily of regional importance, drawing a high proportion of its students from the southern New England area. Dr. Wriston built Brown to an eminence where it could be ranked among the outstanding universities of the country. He introduced important changes in the curriculum, brought in many outstanding new faculty members, and, for the first time in its modern history, gave Brown the character of a true residential college. This last change was accomplished through an ambitious building program, the chief feature of which is the men's quadrangle that bears Dr. Wriston's name. Andrews Hall at Pembroke was also built during his administration, and he made a start on the West Quadrangle for men.

Dr. Wriston was succeeded in August, 1955, by Barnaby Conrad Keeney, a member of the history faculty at Brown who had already served as Dean of the Graduate School and Dean of The College. Under Dr. Keeney the University has accelerated its progress towards national pre-eminence. Symbolizing this progress was the decision by the Ford Foundation—announced in June, 1961—to bring Brown into its Special Program in Education with a “challenge grant” of \$7,500,000. To qualify for the full amount of the grant, Brown, by mid-1964, must obtain \$15,000,000 in matching funds from sources other than the U. S. Government and the Ford Foundation itself. In announcing this largest grant in the University's history, Dr. Keeney expressed full confidence that the matching requirement would be met.

Current Development

The Ford grant gained added significance from the fact that it came near the end of a successful \$15,100,000 capital funds drive. The drive was carried on in connection with the Bicentennial Development Program that had been approved by the Corporation in 1956. Proceeds of the drive are being used primarily for new buildings. Already completed are the George V. Meehan Auditorium, the Brown University Computing Center, the Frank John Prince Engineering Laboratory, a five-story biology laboratory, and Champlin and Morriss Halls, the first two units of a new residential quadrangle at Pembroke. The two units that complete the quadrangle will be finished during the current academic year. Construction is underway on a million-volume library and plans are well advanced for a large Physics and Engineering Building and a Science Library.

The Meehan Auditorium, which houses one of the finest hockey rinks in the country, is the first new building on Brown's 39-acre Aldrich-Dexter Field, which was purchased from the City of Providence in 1956. Eventu-

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ally the University's entire athletic plant, except for the football stadium, will be centered at the new field, which is less than a quarter mile from the main-campus. Facilities planned for the future include a new gymnasium, field house, and swimming pool. Home games in baseball, soccer, lacrosse and tennis were first played at the new field in the spring of 1961.

A major innovation in curriculum was approved by the Corporation at its June, 1961, meeting, when it gave the University authority to proceed with plans for initiating a six-year program of medical education. The program, which is expected to begin in the 1963-64 academic year, will be designed to prepare students for careers either as physicians or as medical scientists and teachers. Those who wish to become physicians will be able to transfer to a four-year medical school for the final two "clinical years" leading to the M.D. degree. The object of the Brown program, according to President Keeney, will be to offer the pre-medical student a rationally-planned course of study from the beginning of the freshman year through what would normally be his second year of graduate study. In connection with the new undergraduate program, Brown will expand its existing work in postdoctoral medical education.

Thus, as the 200th anniversary of Brown's founding approached, the University was engaged in the most far-reaching development program of its history. In commenting on this program as it was affected by the Ford Foundation grant, President Keeney said:

"Obviously we have set ourselves a task that will demand continued devoted effort from everyone concerned in any way with Brown's development—faculty, students, administrative officers, alumni, and alumnae. The task will be difficult, but at the same time vastly stimulating. It will call for courage, enthusiasm, and imagination."

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 225 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. *College Entrance Examination Board Tests.* All applicants for admission to the freshman class are required to take the Scholastic Aptitude Test, three Achievement Tests, and the Writing Sample of the College Entrance Examination Board in accordance with the Table on page 53.

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 require-

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ments 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 or four, and electives, preferably in the fields of English, foreign language, mathematics, history, and science, to make a total of sixteen 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 German or Russian, French permitted), 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 Biology: 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 (preferably three) in one foreign language (French, German, Greek, Italian, Latin, Russian, or Spanish), two (preferably three) in science (biology, chemistry, and physics recommended), and electives in the fields of English, mathematics, foreign language, history, and science, to make a total of sixteen credits.

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, German, or Russian), 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 or advanced mathematics (preferably 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 mathe-

matics—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, German, or Russian), 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 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, German, or Russian), 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.

Bachelor of Arts and Bachelor of Science in Biology (combined five-year program): Subject requirements listed under Bachelor of Science in Biology, page 80.

Special Master's Degree Program: Subject requirements listed under appropriate degrees.

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 a College Entrance Examination Board Aptitude Test in their junior year—the Preliminary Scholastic Aptitude Test in October or the Scholastic Aptitude Test in March or May—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

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Board of Admission, Brown University, Providence 12, Rhode Island. When completed and returned to the Board of Admission, the application should be accompanied by an application fee of \$10 which covers a part of the processing expense and is not refundable. 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 filled before January 1.

Final Application—PEMBROKE COLLEGE

Final application for admission to Pembroke College should be made early in the senior year and no later than January 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 January 15 (see page 104).

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

The Admission Officers feel that a personal interview with an Admission Officer or a designated alumnus or alumna is mutually helpful to both the applicant and to the Board of Admission; however, an interview is not required. Interviews for applicants living within a day's round-trip of Providence are held on campus. 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.

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 the

summer and during college recesses, from 9 a.m. to 12 noon on Saturdays. Student guides are usually available 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

Each applicant for admission to the freshman class must take the Scholastic Aptitude Test and three Achievement Tests of the College Entrance Examination Board. The Writing Sample is required of all applicants for admission. The Board of Admission prefers that the Writing Sample be presented in addition to three Achievement Tests but is willing to accept it in place of one of the three, preferably as a substitute for the English Composition Test so that the tests presented will cover as wide a range of subject areas as possible.

The Scholastic Aptitude Test should be taken in December, but the January test will be acceptable. Applicants are encouraged, however, to take the Scholastic Aptitude Test in March or May of their junior year as well and to have the results sent to the Admission Office. These tests are useful for preliminary guidance; in many cases, they will strengthen the candidates' credentials.

Applicants are advised to take the three Achievement Tests in December or January of the senior year if a good distribution of tests is possible. The tests may be divided, however, between the junior and senior years if necessary. A test in a subject completed in the junior year should be taken preferably that same year in March or May. Tests in continuing subjects should be taken in December preferably or in January of the senior year. Applicants electing one-year subjects in the senior year are cautioned that normally they will not be ready for the Achievement Test in these subjects by the required testing dates.

Achievement tests are used for placement as well as admission purposes. Bachelor of Arts candidates may choose any three tests. The choice will, therefore, be largely determined by the applicants' academic interests. Applicants are urged, however, to take one test in a foreign language, and, if they feel they can do well in the chemistry or physics test, they should take it. By obtaining a high enough score on any of these specified tests, applicants may meet a college requirement, thereby making additional electives possible.

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Applicants for Bachelor of Science degrees, with the exception of Bachelor of Science in Biology, must take the Advanced Mathematics or Intermediate Mathematics test (see paragraph below) and either the Physics or Chemistry Achievement Test. Candidates for the degree of Bachelor of Science in Biology are required to take the English Composition test and a foreign language test in French, German, Greek, Italian, Latin, Russian, or Spanish. The candidate who finds it impossible to meet a specific science degree test requirement by January must request approval of an alternate testing date.

Candidates planning to take the Advanced or Intermediate Mathematics Achievement Test should base their choice of test on the amount of mathematics they have had. The Advanced Mathematics Test is appropriate only for those students who have completed, or have almost completed, the traditional four-year secondary school mathematics program including analytical trigonometry and the theory of logarithms. Students following an accelerated program and completing the regular four-year sequence by the end of the junior year are advised to take this test at the end of that year, or in December of their senior year. Applicants completing a three-year sequence in mathematics by the end of their junior year are advised to take the Intermediate Mathematics Test in May of that year. This test may also be taken in December or January of the following year.

Candidates may take additional Achievement Tests in March or May of their senior year in order to satisfy distribution requirements. These tests will be used for placement purposes only.

Listening comprehension tests in French, German, Italian, Russian, and Spanish are available. The candidate who is well prepared in one of these languages and who plans to continue study of the language in college is urged to take the appropriate listening comprehension test. Information about application procedures may be obtained from the candidate's school or from the College Entrance Examination Board.

The table, on the next page, of College Board Tests requirements according to degree candidacies will be helpful to applicants.

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.

TABLE—Tests (C.E.E.B.)¹

	Scholastic Aptitude Test	Achievement Tests	
		Required	Recommended
Bachelor of Arts candidates	The Scholastic Aptitude Test should be taken in December (preferably) or January. Applicants are advised to take the tests also during March or May of the junior year.	Any three	1 foreign language 1 chemistry or physics
Bachelor of Science in Applied Mathematics candidates		Three, including mathematics ² and either physics or chemistry	French, German, or Russian ³
Bachelor of Science in Biology candidates		Three, including English Composition and foreign language (French, German, Greek, ³ Italian, ³ Latin, Russian ³ or Spanish)	Science or mathematics
Bachelor of Science in Chemistry candidates		Three, including mathematics ² and either physics or chemistry	French, German, or Russian ³
Bachelor of Science in Engineering candidates		Three, including mathematics ² and either physics or chemistry	Any one
Bachelor of Science in Physics candidates		Three, including mathematics ² and either physics or chemistry	French, German, or Russian ³

The Writing Sample is required of all applicants for admission. The Board of Admission prefers that the Writing Sample be presented in addition to three Achievement Tests but is willing to accept it in place of one of the three, preferably as a substitute for the English Composition Test so that the tests presented will cover as wide a range of subject areas as possible.

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 of the testing date to avoid a fine of \$2.

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.

² See statement on page 54 concerning appropriate mathematics test to be taken.

³ The Italian and Greek tests are available only in February. The Russian test is available only in December.

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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 March 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 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. Course credit in the given subject is offered to the student who qualifies.

Subjects in which course credit may be granted include American History, Biology, Chemistry, English Composition, European History, French, German, Latin, Literature, Mathematics, Physics, and Spanish. Proficiency in English Composition, rather than 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 April 15.

If, on the other hand, any applicant is accepted by another college and is required to make a commitment before April 15, he should feel free to request his guidance counselor or headmaster to petition the Board of Admission for an immediate review of his application.

An accepted candidate must notify the Board of Admission by May 1, the Candidate's Reply Date, that he plans to enter. A commitment Deposit of \$50 is required and this amount is applied against his first semester bill in September. If he withdraws after the commitment is made and before August 15, \$10 of the deposit is returned to him.

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 late in April.

The candidate's acceptance of admission to Pembroke College is due at the Admission Office by May 3, accompanied by the room deposit of \$50 if the applicant has been admitted as a dormitory student. This deposit is refundable until May 25. 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 the Candidate's Reply Date, 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 she has received a decision from Pembroke College, 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 by mid-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 approves her making application under this plan. 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 1 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. In the October

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decision letter, they will be advised regarding the Writing Sample. The table on page 55 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 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 who are in Southern New England or the Greater New York-New Jersey area (within a day's round trip to Providence) must arrange to have an interview at Pembroke College before September 1. Candidates from more distant places are advised to arrange for an interview on the campus if possible. For information regarding the scheduling of personal interviews, see page 52.

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 following April. 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 concurrently with the admission decision.

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

Pembroke College admits, with sophomore and junior standing, a limited number of students transferring from other colleges. Presently it may not be possible to admit any into the dormitories, and students not residing with their families must live in college residence halls. Transfer students must have maintained excellent records elsewhere, and college credit will be allowed only for those courses which are comparable to courses at Brown University.

The following credentials are required for each transfer applicant: (1) a letter, stating her reasons for wishing to transfer and her field of interest and probable concentration; (2) an official record of her secondary school achievement; (3) a copy of her ratings on the College Entrance Examination Board Scholastic Aptitude Test; (4) an official transcript of her college record, including a statement of honorable dismissal; (5) 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.

General Information

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

All students must have their accounts in the Controller's Office in proper order at the opening of each semester to be eligible to attend their academic classes.

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 fee of \$10 will be charged for late payment or late registration (for full information regarding payments, see page 89).

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; (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. The free audit provision may not be used for auditing a course which is required (e.g., English 1-2).

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

It is in the interest of every student to attend all sessions of the classes in which registered including the physical education program and the appropriate College Convocations, and each student has an obligation to contribute to the academic performance of all by full participation in the work of each class. A list of specific attendance regulations is available.

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 transfer credit from another institution. A student who receives the mark *E* or *F* in an elective course may substitute some other course or may transfer an equivalent amount of credit from another institution.

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.

ATTENDANCE, GRADING, EXAMINATIONS

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 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 Languages. 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 languages are given on the first day of Freshman Week in the fall and during the final examination period of each semester.

ACADEMIC STATUS

All students, before taking college courses in a foreign language in which they have presented entrance credit, must take either a placement test at Brown University or, preferably, a College Board Language Achievement Test in secondary school. Students with outstanding performance on these tests, or on the Advanced Placement Tests of the College Entrance Examination Board, may be admitted to advanced courses without the usual course prerequisites.

Distribution Tests. Examinations for Bachelor of Arts candidates who wish to satisfy distribution requirements by test (see page 74) 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 may be excused from courses which would otherwise normally be taken to satisfy specific degree requirements.

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.

INDEPENDENT STUDY PLANS

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-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.

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 an Honors program in concentration and related fields, 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

INDEPENDENT STUDY PLANS

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 recommendation of their major department, the applications of students with somewhat lower averages 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 provided the specific requirements are met in each area. 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

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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 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

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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 Robert T. Beyer, Department of Physics). The Honors supervisors are:

Field of Concentration	Professor	Field of Concentration	Professor
<i>Anthropology</i>	D. B. HEATH	<i>History</i>	C. H. KIRBY
<i>American Civilization</i>	B. A. MARKS	<i>Human Biology</i>	G. W. HAGY
<i>Applied Mathematics</i>	W. H. REID	<i>International Relations</i>	W. T. PERKINS
<i>Art</i>	W. H. JORDY	<i>Italian</i>	L. H. GORDON
<i>Biology</i>	W. J. KENWORTHY	<i>Linguistics</i>	
<i>Botany</i>	G. L. CHURCH	(Semester I)	W. F. TWADDELL
<i>Chemistry</i>	E. F. GREENE	(Semester II)	W. N. FRANCIS
<i>Classics</i>	J. R. WORKMAN	<i>Mathematics</i>	F. M. STEWART
<i>Comparative Literature</i>	J. LÓPEZ-MORILLAS	<i>Music</i>	W. DINNEEN
<i>Economics</i>	C. C. BOSLAND	<i>Philosophy</i>	R. SCHMITT
<i>Engineering</i>	J. KESTIN	<i>Physics</i>	R. T. BEYER
<i>English:</i>		<i>Political Science</i>	C. P. MAGRATH
<i>American Literature</i>		<i>Psychology</i>	R. M. CHURCH
	C. PHILBRICK	<i>Religious Studies</i>	T. G. SANDERS
	W. R. KENNY	<i>Russian Language</i>	
<i>English Expression</i>		<i>and Literature</i>	E. J. BROWN
	D. J. HUGHES	<i>Russian Studies</i>	E. J. BROWN
<i>French</i>	B. S. RIDGELY	<i>Sociology</i>	S. GOLDSTEIN
<i>Geology</i>	F. D. ECKELMANN	<i>Sociology-Anthropology</i>	S. GOLDSTEIN
<i>German</i>	K. S. WEIMAR	<i>Spanish</i>	A. S. TRUEBLOOD

Independent Study Outside Honors

THE COLLEGE SCHOLAR'S PROGRAM

Students who have a 3.0 average for two consecutive semesters may petition the Honors Council to pursue, in the next semester, an Independent Study Program. Exceptionally, students who do not meet this requirement may be admitted to the program if the Dean and the Director of the Honors Program agree that the student is well qualified to benefit thereby. 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, in-

COURSES IN INTERDISCIPLINARY STUDIES

cluding 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 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 entered in September, 1958, and thereafter (see page 72). Thus all Bachelor of Arts candidates are required to take some course work of this nature.

University Courses in Interdisciplinary Studies

Several new courses are being developed in an experiment designed to improve the integration of the education of students who have studied the humanities, the sciences, and the social studies on the college level, but who have not systematically considered their relationship to one another. This experiment is being supported by a grant from the Carnegie Corporation of New York. Two of these courses were offered for the first time during the academic year 1958-59: University 1-2, *Modes of Experience: Science, History, Philosophy, and the Arts*; and University 101, 102, *The Role of Science in Civilization*. Five additional courses are currently being offered: University 3-4, *The American Accent*; University 7-8, *Voices of Romanticism*; University 105-106, *Of Human Bondage*; University 109-110, *Conceptions of Man; Diversity and Coherence*; and University 111-112, *Religious Dimensions of Culture*. For descriptions of all of these University Courses see page 284.

The courses are attached to no particular department of instruction.

SPECIAL MASTER'S DEGREE PROGRAM

Rather they are taught by mature scholars who have indicated a wish to teach such a course and who have themselves made or sought the synthesis of the several fields of learning. There is no standard method of instruction and no common subject matter for these courses, but each is intended to contribute to a solution of the same problem—that of providing students with the chance to integrate their understanding of the various intellectual disciplines and to establish meaningful relations among the diverse forms of human intellectual experience.

Special Master's Degree Program

Beginning in September, 1961, a special five-year program leading to both the Bachelor's and Master's degrees is being offered. This program has been made possible by a grant of \$262,000 from the Ford Foundation and is designed to lead students directly to graduate work. By means of integration of the undergraduate and graduate years, the successful student at the end of the five years should be qualified to proceed rapidly to the doctorate in a superior graduate school or to embark successfully on the teaching of his or her specialty in an undergraduate college or junior college. The Program is so arranged, however, that the student may discontinue work after the fourth year and receive a Bachelor's degree, continue through the fifth year to a Master's degree, or go straight on to a Doctor's degree.

The Program is under the direction of a committee of seven persons, including a Dean of the College, a Dean of Pembroke College, the Associate Dean of the Graduate School, the Director of the Honors Program, and three members of the Faculty, one from each of the three main areas of knowledge, who are serving as counselors to five-year candidates in their respective departments.

Within certain broad limits the Program is a flexible one. In general the student must meet the requirements for the Bachelor's degree as presently set forth in another section of this catalogue, but individual programs will be devised as necessary to best serve the interests of particular students. Special attention will be given to work involving independent study and seminars. Upon admittance to the Program each student will be assigned to a faculty counselor who will be his or her advisor for the entire five years and who will help in working out the details of the Program for the individual student.

Certain special courses to be taken during the first two years have been established for students in this Program, the intent being to provide each department with the opportunity to set up an intensive introductory course for those students expressing a possible interest in continuing work in that

REQUIREMENTS FOR DEGREES

field. Each Bachelor of Arts candidate will take at least one such special course in the freshman year, and at least one in the sophomore year. Descriptions of these special courses appear with the listing of course offerings by departments and may be identified by the letter M preceding the course number (e.g., Economics M 1-2). In addition, some departments, although not offering one of these courses specifically labeled M, will provide special work in the regular introductory course for students enrolled in this Program.

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)¹ 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 *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

¹This degree will not be available to students entering in 1960 or thereafter.

REQUIREMENTS FOR DEGREES

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 degree 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—all candidates must demonstrate the ability to write English proficiently. Certain students will have met the requirement in English by admission with Advanced Placement. Others will be invited to take an examination during Freshman Week. Those who satisfy the English Department that they can meet the standards of the University will have met the requirement. All others will register in English 1-2.

Those students who fail to meet the requirement at entrance will meet the requirement by receiving the grade of *A* or *B* in English 1 or the grade of *C* or better in English 2. A student who receives *D* in English 2 is required to audit English 1 or English 1-2 during the following year and may meet the requirement if the work warrants a grade of *C* or better in English 1 or 2. A student who receives *E* in English 2 is required to repeat English 1 or English 1-2 and may meet the requirement by achieving a grade of *C* or better in English 1 or 2.

No student will be allowed to register after the fourth semester without having met the requirement or, on recommendation of the Committee on Academic Standing, passing a special examination administered by the English Department.

Every student who has met the English requirement must continue to write adequately throughout college. Students whose written work is conspicuously and repeatedly unsatisfactory will be referred to a sub-committee of the Committee on Academic Standing.

REQUIREMENTS FOR DEGREES

- B. A competent control of one foreign language—Greek, Latin, French, German, Italian, Russian, Spanish—and an introductory knowledge of its culture and literature, to be demonstrated by passing in college a foreign language or literature course at the fourth-semester level or higher. Admission with advanced standing credit for a course beyond the fourth-semester level will be accepted in fulfillment of the requirement. An entering student will be placed in an appropriate course according to his or her previous achievement and must continue course work in a foreign language or literature until the requirement is met. Any student who has not met the requirement will be refused registration at the beginning of the next academic year after completing two semesters of course work at the fourth-semester level or higher, or at the beginning of the seventh semester, whichever comes first.

DISTRIBUTION REQUIREMENTS

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.

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.

REQUIREMENTS FOR DEGREES

Specific Requirements by Areas and Fields

1. Sciences and Mathematics: *Astronomy, Biology, Botany, Chemistry, Geology, Physics, Psychology, Mathematics*¹

- a. Each student shall earn two distribution credits in one department or in an approved interdepartmental sequence.²

- 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 and Anthropology*

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 1962-63:

Sciences and Mathematics

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

Social Studies

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

Humanities

Art (see Art 1, 2)
Literature
 Classics D5, D6
 English D15, D16; IC 1-2; IC 3-4;
 IC 7-8; IC 13-14; IC 15-16
 French D11-D12; IC 1-2; IC 3-4
 German D11, D12
 Spanish D11, D12
Music D1; IC 1-2
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 courses especially designed for the Special Masters Degree Program and labeled M (e.g. Economics M1-M2) are acceptable in the same

¹ With the permission of the Dean, a student may include Applied Mathematics or Engineering in this list.

² Chemistry D1 or D2 and Geology D1, and Biology D1 and Botany 4 are the only interdepartmental sequences which have been approved for meeting Specific Requirement 1a, in the area of Sciences and Mathematics.

REQUIREMENTS FOR DEGREES

manner as IC courses. The Committee on the Curriculum has also 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.

Sciences and Mathematics

Astronomy 1, 2

Biology 4

Botany 4

Chemistry 5

Geology 1 and 2, 11, 24, or 41

Physics 2, 3, 4

Psychology 6, 81, 113

Mathematics 9, 10

Humanities

Art 1, 2, 53, 55, 56, 58, 59

Literature

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

English—advanced course sequences as approved by Chairman of English Department

Modern Languages—French, any two of 10, 101, 102; German 131, 132; 143, 144; Russian 29, 30; 41, 42; Spanish 114, 118; 131 or 123 plus 125

Music 2, 3, 4, 6, 105, 107

Philosophy 55 or 169; 58 or 153; 101, 102; 151; 161

Religious Studies 21, 22, 41, 111, 112

Social Studies

Anthropology—101, 102

Economics—any course except 71, 161

History—any two semester sequence; Classics 117, 118; 121, 122

Political Science—any 100 course—no more than one

Sociology 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 FOR DEGREES

requirements may be met by high scores on appropriate College Entrance Examination Board achievement tests, or on other approved tests.

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.

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.

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

REQUIREMENTS FOR DEGREES

INTERDEPARTMENTAL CONCENTRATION PROGRAMS

Eleven programs of Interdepartmental Concentration are available: American Civilization, Ancient and Medieval Culture, Applied Mathematics, Human Biology, International Relations, Mathematics and Economics, Mathematics and Physics, two Modern Foreign Literatures, Modern Foreign Literature and English Literature, Philosophy and Religion, and Russian Studies. 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.

I. AMERICAN CIVILIZATION

Courses: (1) History 51, 52, *American History since 1763*, and History 151, *The Establishment of the American Colonies*; (2) English 41-42, *American Literature*, and one semester course from the following: English 141-142, *American Prose Fiction*; English 143-144, *American Poetry*; English 145, 146, *Studies in American Writers* (students who elect 141-142 or 143-144 must take both semesters of these courses; the second semester will satisfy the requirement stated in (6) below); (3) one course from the following: Art 59, *Modern Architecture*; Music 132, *American Music, 1865-1950*; Philosophy 125, *History of Philosophy in America*; (4) one course from the following: Economics 107, *Theories and Programs of Economic Reform*; Economics 131, *Labor Problems*; Political Science 103, *Problems of American Government*; Political Science 124, *American Political Theory*; Sociology 127, *Races and Minorities*; Sociology 139, *Social Classes*; Sociology 181, *A Sociological Analysis of American Life*; (5) American Civilization 191, *Problems in American Civilization*; (6) one additional semester course from the second, third, or fourth groups above, or from the following: American Civilization 193, *Seminar in Printed Sources*; Anthropology 150, *The American Indian*; English 171, *Twentieth Century Poetry*; English 172, *Twentieth Century Novel*; English 187, *Twentieth Century Drama*; History 152, *The American Revolution and the Forming of the United States, 1751-1783*; History 161, 162, *The History of American Economic Life*; History 163, *The Formation of the American Republic, 1783-1801*; History 164, *The Decline of Laissez-Faire Capitalism in the United States, 1897 to the Present*; History 167, *The Age of Jackson*; History 168, *Civil War and Reconstruction*; History 173, 174, *The Social and Intellectual History of the United States*; History 177, *History of Religion in America*; Political Science 107, *Political Parties and Pressure Groups*; Political Science 115, 116, *American Constitutional Law*; Political Science 122, *Foreign Relations of the United States*; Spanish 128, *The Literary Image of the Hispanic New World*; University Course 3-4, *The American Accent* (those who elect this course will be excused from the second part of the requirement stated in (2) above).

2. ANCIENT AND MEDIEVAL CULTURE

Qualification: A minimum average of 2.0 in those distribution courses of the par-

REQUIREMENTS FOR DEGREES

ticipating 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 336 A.D.*; Medieval Culture—History 101, 102, *Europe in the Middle Ages*; Art 53, *Medieval Art*; Philosophy 101, *Ancient and Mediaeval Philosophy*; and one of the following: Religious Studies 111, *History of Christianity to the Reformation*; Religious Studies 133, *Ancient Greek Religion*.

Recommended Electives: Classics D5, *Masterpieces of Roman Literature*; Classics D6, *Influence of the Classics*; Classics 62, *The Greek Drama in English*; Classics 117, *Prehistoric and Archaic Greek Art*; Classics 121, *Greek History to 146 B.C.*; Latin 201, *Medieval Latin*; English 105–106, *Chaucer*; French 239, *Old French Literature*; German 153, *Middle High German*; Italian 161, 162, *Dante's Divine Commedia*.

3. APPLIED MATHEMATICS

Prerequisites: Applied Mathematics 3–4, *Introduction to Applied Mathematics*; Mathematics 9, 10, *Analytic Geometry and Calculus*, or their equivalent.

Courses: Applied Mathematics 20, *Theory and Practice of Computation*; Applied Mathematics 25, 26, *Advanced Dynamics and Vibrations*; Mathematics 29, *Calculus and Differential Equations*; Mathematics 52, *Linear Algebra*; Mathematics 121–122, *Advanced Calculus*; and two courses chosen from Applied Mathematics 120, *Introduction to Mechanics of Continua*; Applied Mathematics 137–138, *Boundary Value Problems*; Engineering 38, *Electricity and Magnetism*; Engineering 52, *Fluid Mechanics*; Engineering 58, *Mechanics of Materials*; Engineering 71, *Thermodynamics*; Mathematics 108, *Infinite Series and Differential Equations*; Mathematics 126, *Elementary Complex Analysis*; Mathematics 161, *Introduction to Probability*; Physics 40, *Electricity and Magnetism*; Physics 115, *Thermodynamics and Statistical Mechanics*; or two other approved courses.

4. HUMAN BIOLOGY

Prerequisites: Grade of C or better in Biology D1, *Introduction to Experimental Biology*; Biology 4, *Comparative Zoology*; Mathematics D2, *Analytic Geometry and Calculus*; and an introductory semester or year course given by the Department of Psychology.

Courses: Biology 51, *Principles of Human Biology and Human Genetics*; 190, *Senior Seminar*; one of 5, *Comparative Anatomy*, or 10, *Introductory Physiology*. Psychology, one of 107, *Normal and Abnormal Psychology*, or 112, *Social Psychology*. Sociology-Anthropology 101, *Human Origins*; one of 125, *Population and Migration*, or 102, *Cultural Anthropology*. In addition, three courses are required from the three cooperating departments.

5. INTERNATIONAL RELATIONS

Prerequisites: Completion with a minimum average of 2.0 of distribution credits in history, economics, and political science. Students who have taken classics as history distribution may be admitted to the program if willing to take an approved qualifying semester of history. The political science requirement may be waived for students otherwise well-qualified.

REQUIREMENTS FOR DEGREES

Courses: Economics 105, *Economic Analysis and Contemporary Problems* (may be waived for students who have taken Economics D2 or IC2; in this case three courses should be elected from the group at the end of this paragraph); 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 at least two of the following: Anthropology 102, *Cultural Anthropology*; Economics 107, *Theories and Programs of Economic Reform*; Political Science 106, *Government of the U.S.S.R.*; Political Science 101, *World Communism*; Political Science 113, *Chinese Government and Politics*; Political Science 114, *Japanese and Southeast Asian Politics*; Political Science 118, *International Organization*; Political Science 119, *Contemporary Africa and its Background*; Political Science 122, *American Foreign Relations*; Sociology 125, *Population and Migration* (Sociology prerequisite waived).

Recommended Electives (in addition to courses listed above): Advanced courses in modern languages; 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, *Parliamentary Democracy in Britain and the Commonwealth*; Sociology 137, *Social Organization*; Sociology 139, *Social Classes*.

6. MATHEMATICS AND ECONOMICS

Prerequisites: Mathematics 9, 10, *Analytic Geometry and Calculus*, or Mathematics M11-M12, *A Modern Introduction to Analytic Geometry and Calculus*; Economics D1, D2, *Elements of Economics*, or Economics IC 1-2, *Political Economy*, or Economics M1-M2, *Introduction to Economic Analysis*.

A grade of C or better in all prerequisite courses is required for joint concentration in Mathematics and Economics.

Courses: Mathematics 21 and 111, *Calculus and Differential Equations*, or 29, *Calculus and Differential Equations*; Mathematics 52, *Linear Equations and Matrices*; Mathematics 161, *Introduction to Probability*; Mathematics 162, *Mathematical Statistics*; Economics 101, 102, *Advanced General Economics*; and Economics 192, *An Introduction to Mathematical Economics*.

Recommended Electives: Mathematics 121-122, *Advanced Calculus*; 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.

7. MATHEMATICS AND PHYSICS

Prerequisites: Mathematics 9, 10, *Analytic Geometry and Calculus*, Physics 3, *Fundamental Physics* (or 2, *General Physics*).

Courses: Mathematics 29, *Analytic Geometry and Calculus*; Mathematics 52, *Linear Equations and Matrices*; Mathematics 112, *Functions of One Variable and Differential Equations*, and either Mathematics 106, *Differential Geometry*, or Mathematics 161, *Introduction to Probability*.

REQUIREMENTS FOR DEGREES

The required physics sequence is: Physics 4, *Fundamental Physics* (or 37, *Basic Principles of Laboratory Physics*); Physics 40, *Electricity and Magnetism*; and three additional courses chosen from 37, 115, *Thermodynamics and Statistical Mechanics*; 120, *Wave and Quantum Physics B*; 131, 132, *Theoretical Physics*.

Concentrators are required to take at least one course in Mathematics and one in Physics in each of their last two semesters.

8. MODERN FOREIGN LITERATURES

Programs of study of two modern foreign literatures (French, German, Italian, Russian, Spanish) may be arranged to fit a student's particular needs and abilities. Prerequisites are the same as those for concentration in the two departments, or the equivalent. A normal program consists of an equal number of courses in the two departments, including one or two courses in composition and conversation in each foreign language as necessary to provide adequate competence. Students already possessing such competence may substitute a course in literature.

9. MODERN FOREIGN LITERATURE AND ENGLISH LITERATURE

Programs combining one of the modern foreign literatures and English literature can be arranged to fit a student's particular needs and abilities. Candidates must meet the prerequisites for concentration in each of the departments concerned. The program below combines French and English literature and can be used as a pattern for other combinations.

Courses: In French, French 101, *The Classic Age: Order and Freedom*; 102, *The Romantic Revolt*; and 51, *Writing and Speaking French II*. In English, two of English 29, *English Literature from the Beginnings to 1625*; 30, *English Literature, 1625-1784*; 31, *English Literature, 1784-1832*; 32, *English Literature, 1832-1900*. In addition, four to be divided equally between French and English and to be centered on a topic, period, genre, or some other common focus. Two of the eight courses must deal primarily with literature before 1800.

10. RUSSIAN STUDIES

Prerequisite: A reading knowledge of Russian to be demonstrated by passing Russian 4 with a grade of C or better, or by demonstrating equivalent training by examination.

Courses: Russian 19, *Writing and Speaking Russian I*; 41, 42, *Russian Literature: Introductory Course*; 131, *Nineteenth-Century Realism*; 132, *Soviet Literature*; History 131, 132, *Russian History*; plus one of the following: Economics 107, *Theories and Programs of Economic Reform*; Political Science 101, *World Communism*, or 106, *The Government of the U.S.S.R.*

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

REQUIREMENTS FOR DEGREES

reason of that fact be required to pay more than the normal tuition charges for a complete academic program in any semester. Beginning with freshmen entering in September 1958, however, the course requirement for the Bachelor of Arts degree with NROTC was reduced to thirty-three.

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 Department of German or Russian, or 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.
- 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.

BACHELOR OF SCIENCE IN BIOLOGY

SPECIFIC REQUIREMENTS

- A. Proficiency in English composition: All candidates are required to meet the requirement upon entrance by prior enrollment in an appropriate advanced level course, or by passing an examination administered by the English Department.
- B. Foreign Languages: A competent control of one foreign language—Greek, Latin, French, German, Italian, Russian, Spanish—and an introductory knowledge of its culture and literature, to be demonstrated by passing in college a foreign language or literature course at the fourth-semester level or higher. Admission with advanced-standing credit for a course beyond the fourth-semester level will be accepted in fulfillment of the requirement. An entering student will be placed in an appropriate course according to his or her previous achievement and must continue course work in a foreign language or literature until the requirement is met. In addition, reading knowledge in a second foreign language must be achieved by completing in college a 1R, 2R course with a grade of C or better. Any student who has not met the

¹ See description of English 1-2 on page 179.

REQUIREMENTS FOR DEGREES

first part of the requirement after completing two semesters of course work at the fourth-semester level or higher, or at the beginning of the seventh semester, whichever comes first, will be refused registration at the beginning of the next academic year.

- C. Twelve semester courses in Biology, or closely related subjects, as follows. Required: Biology D1, 4, 5, 6, 7, 10, 122. Elect five from: Biology 8, 15, 103, 104, 107, 108, 112, 121, 123, 124, 132, 152, 195, and any 200 level course judged appropriate for the program of a given student; Botany 112, 122; Psychology 102, 106.
- D. Four semester courses in Chemistry, namely: 11, 12, 13, 14.
- E. Two semester courses in Physics, namely: 3, 4.
- F. Three semester courses in Mathematics, namely: 11-12, 21; or 9, 10, 29.
- G. Six courses in Humanities and Social Studies, as follows: one 2-semester sequence in the Humanities and one in the Social Studies; at least two semester courses of work at an advanced level (or in a University Course).
- H. Free electives, unless earned by the passing of a distribution requirement by examination, must be taken in the Humanities or Social Studies.
- I. Honors: Optional; thesis in addition to above requirements; election of Biology 195 for a single semester is optional (see paragraph C).

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 1958 and thereafter no fee will be charged for one of any additional courses which must be taken beyond thirty-two to satisfy this requirement.

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.
- B. A reading knowledge of German and of French or Russian. The German requirement may be met by presenting two years of credit upon entrance or by passing a third-semester course in German. The French or Russian requirement may be met by presenting two years of credit upon entrance or by passing a second-semester course in either language.
- 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

¹See description of English 1-2 on page 179.

REQUIREMENTS FOR DEGREES

and Social Studies and a reasonable number of electives in the Sciences and Mathematics outside of the principal science studied. For students who entered in September 1958 and thereafter no fee will be charged for one of any additional courses which must be taken beyond thirty-two to satisfy this requirement.

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 (60, 120).
- 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 aerospace, 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 1958 and thereafter no fee will be charged for one 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: same as Bachelor of Arts requirement.
- B. Reading knowledge of one foreign language: same as Bachelor of Arts requirement, but limited to French, German, or Russian. Students planning to attend graduate school are strongly urged to take two semesters of work in a second of these three languages.

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

- C. The following nine semester courses in Physics: 37, 40, 115, 118, 131, 132, 141, 142, and 198. With written permission from the Department, certain substitutions can be made from 200-level courses.
- D. Four semester courses in Mathematics.

REQUIREMENTS FOR DEGREES

- 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 1958 and thereafter no fee will be charged for one 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 a Bachelor of Science degree in Applied Mathematics, Biology, 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 either 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 Studies. The purposes of distribution in the Sciences and Mathematics 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.

SUMMER SCHOOL CREDIT

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 Departments concerned or their authorized representatives. The latter will approve the courses as to their content which should be equivalent to that of courses already in the Brown curriculum or of courses acceptable for inclusion in it. The Recorder of The College and the Recorder of Pembroke College are authorized to determine equivalent quantity credit for summer courses.

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.

The total summer credit offered toward a degree shall not exceed three semester courses, or twelve semester hours, and no more than two of the semester courses may be taken in any one summer. The grades received for summer school courses will not be computed in determining the graduation average (see page 71). 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.

Approval to study abroad is based on a judgment as to whether or not a student is able to secure instruction or facilities for research and study which are not present on our campus and which represent a valuable addition to his or her academic program. All student programs of foreign study, whether for independent or organized study, must be approved by the Committee on Academic Standing. All students seeking approval for such a course of study are required to have a 3.0 cumulative average for the first three semesters (the fourth semester required average is left to the discretion of the Dean).

No student may pursue undergraduate study abroad unless the instruction offered is in the language of the country in which the educational institution is located. In all instances where the language of the country is not English, the student must show evidence of four semester courses of language study beyond the third-level course at Brown in those languages in which instruction is normally available and including a course in use of the language on the 51-level, or of equivalent achievement.

Permission for instruction abroad in all disciplines characterized by sequential study (e.g., the sciences) is granted only upon the strongest recommendation of the department concerned.

All students in independent programs are required to take written validating examinations with the departments concerned and attain quality grades. These examinations must be completed before mid-semester of the first semester in which the student returns to Brown. Statements indicat-

FOREIGN STUDY

ing previous approval of the departments in which course credit is sought and the willingness of the department concerned to provide written validating examinations should be a part of the student's initial petition to study abroad in the independent program. For students in organized programs the regulations pertaining to transfer credit will be applied and course credit given when quality grades have been attained.

No more than four concentration course credits will be given to a returning student who has otherwise satisfied the validating requirements, and who is not a candidate for Honors.

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; contributions from the alumni, alumnae, and other public-spirited men and women; and payments from government units, private foundations, and corporations 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

Annual Charges. Resident students pay \$1600 for tuition and depending upon the board plan \$900 or \$870 for room and board per academic year. Non-resident students pay an annual charge of \$1620 which is \$1600 for tuition and \$20 for the use of Plantations House and other facilities. Non-resident students may arrange for five lunches (or five dinners) Monday through Friday in Sharpe Refectory at a charge of \$160 for the academic year (or \$200 for dinners).

Tuition. The annual tuition fee for students electing less than four courses is \$200 for each course per semester. The tuition fee for extra courses above four is \$200 for each course (\$100 for a half course).

Room. No room rental refund will be allowed unless the student who withdraws provides a satisfactory substitute. All students not living at home are required to live in a University student residence.

Board. 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.

House Fee. The non-resident house fee is for the use of Plantations House by students living off campus. The fee is charged to all non-resident students who are not married.

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 re-

STUDENT CHARGES

funded 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 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 registration until the student recreation requirement has been fulfilled.

Student Charges—Pembroke College

Annual Charges. Resident students pay \$1600 for tuition, and \$900 for room and board, which as a total makes an annual charge of \$2500 per academic year for resident students; non-resident students pay an annual charge of \$1620, covering the tuition and fee of \$20 for the use of West House. The comprehensive charge applies to students who carry a program of four courses per semester. The student who is not registered for the normal program of four courses per semester adjusts the annual charge either by deducting \$200 per semester for each course short or by adding \$200 per semester for each extra course (\$100 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.

PAYMENT OF CHARGES

Registration Fees. A charge of \$10 will be made to each student who does not complete registration at the prescribed time including the payment required of her. 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. See "Annual Charges" on preceding page.

West House Fee. A fee of \$20 a year 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. 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.

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 payable in advance of final registration, or in two payments, one-half at registration and the balance on or before January 5 without special application for

FINANCIAL AID

finance arrangements. Payment of charges may be made in installments if an application for use of an installment payment plan is properly executed in advance of registration. Either a nine or twelve payment plan is available for which a service charge of \$10 is made. The twelve payment plan begins June 5 with the final payment due the following May 5; the nine payment plan begins September 5, or at registration, with the final payment due the following May 5. Payments under either plan are due by the fifth of each month. A late payment charge of \$5 is made if an installment is not paid on or before the date due. The specific arrangements for paying by installments are made at the Office of the Controller.

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.

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 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 as many well qualified students as possible should be helped to gain a university education through awards based on a careful assessment of financial need. This program is administered at The College through the Office of Financial Aid, and all inquiries concerning scholarships, loans, and student employment should be addressed to the Committee on Finan-

cial Aid, 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 loans and to the Placement Office for information concerning student employment.

Scholarships—The College

Each year the University grants at The College a considerable number of scholarships ranging from \$200 to \$2500 a year. The competition for these funds is, of course, keen but over 25% of each entering class receives scholarship 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 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 who have indicated an interest in scholarship aid on the admission application will be sent the necessary financial aid forms and information by return mail, but it is necessary to file the admission application first. Brown is a member of the College Scholarship Service, a cooperative activity of over four hundred 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 secondary school.

The completed form should be returned by the student directly to the College Scholarship Service—not to the college—at least two weeks 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 \$3 for the first copy and \$2 for each additional 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

FINANCIAL AID

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 to the Service by January 1 and will be given consideration very soon after the decisions regarding admission have been reached; applications filed after January 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.

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.

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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 THOMAS A. BARRY FUND established in 1960 by bequest of Dr. Charles A. McDonald, 1903, in memory of Thomas A. Barry, 1903.

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; 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.

FINANCIAL AID

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 BROWN UNIVERSITY CLUB OF CHICAGO SCHOLARSHIP ENDOWMENT FUND established in 1961.

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.

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 1932 SCHOLARSHIP established in 1957.

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 1936 SCHOLARSHIP established in 1961.

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 THOMAS CROSBY JR. SCHOLARSHIP established in 1960 by bequest of Thomas Crosby, Jr., 1894; A.M. 1895; faculty member English Department.

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.

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

FINANCIAL AID

- 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 J. RICHMOND FALES FUND established in 1952 by J. Richmond Fales, 1910; Trustee, 1953-60.
- 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 ARTHUR G. FOWLER MEMORIAL SCHOLARSHIP FUND IN CHEMISTRY established in 1958 by Julia M. Fowler in memory of her husband, Arthur G. Fowler, 1906.
- 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; A.M., 1927, in memory of his mother, Annie Freedman.
- THE JOEL FREEDMAN MEMORIAL FUND established in 1960 by Joseph Freedman, 1926; A.M., 1927, in memory of his father, Joel 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 IRA S. AND ANNA GALKIN SCHOLARSHIP established in 1956 by the Ira S. and Anna Galkin Charitable Trust.
- 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 ROBERT H. IVES GODDARD SCHOLARSHIP established in 1959 by over one hundred friends in memory of Robert H. Ives Goddard, LL.D. hon., 1959; Trustee, 1946-59.
- 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.

FINANCIAL AID

THE GROSSMAN FUND established in 1955 in honor of Henry Barrett Huntington, Professor 1902-45, by Jacob Grossman and John Grossman, 1935.

THE THOMAS C. GUNNING SCHOLARSHIP established in 1960 by bequest of Ida C. Gunning in memory of her son, Thomas C. Gunning, 1921.

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.

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 RATCLIFFE HICKS SCHOLARSHIP FUND established in 1959 by Elizabeth Hicks in memory of her father, Ratcliffe Hicks, 1864.

THE JAMES H. HIGGINS SCHOLARSHIP FUND established in 1959 by bequest of James H. Higgins, 1898.

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, 1943-57.

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

THE NEWTON P. HUTCHISON SCHOLARSHIP FUND established in 1961 by Marie L. Hutchison in memory of her husband, Newton P. Hutchison, 1905.

THE WILL C. AND KATHERINE W. INGALLS FUND established in 1959 by bequest of Katherine W. Ingalls.

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

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- 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.
- THE EDGAR J. LANPHER SCHOLARSHIP FUND established in 1961 by bequest of Edgar J. Lanpher, 1919.
- 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 ARTHUR B. LISLE SCHOLARSHIP FUND established in 1959 by Martha B. Lisle in memory of her husband, Arthur B. Lisle, Trustee 1938-49.
- THE GEORGE A. AND MABEL L. LITCHFIELD FUND established in 1960 by bequest of Mabel L. Litchfield.
- 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.

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THE EDWIN B. MAYER SCHOLARSHIP FUND established in 1949 by bequest of Edwin B. Mayer, 1909.

THE CHARLES A. McDONALD, M.D., FUND established in 1960 by bequest of Dr. Charles A. McDonald, 1903; Sc.D. hon., 1953; Assistant Professor of Biology and Neurologist, 1929-44; Professor of Health and Hygiene; Chairman, Department of Medical Science; Director of University Health Service, 1944-53.

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 CHESTER L. NOURSE SCHOLARSHIP FUND established in 1959 by bequest of Chester L. Nourse, 1909.

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 EDWARD F. AND MADELEINE V. PARKS SCHOLARSHIP FUND established in 1961 by bequest of Madeleine V. Parks.

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.

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 stu-

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- dents and faculty of the Quincy Mansion School in memory of Mrs. Ruth S. Willard and Horace Mann Willard, 1864; Sc.D. hon., 1893.
- THE JUDGE ELMER J. RATHBUN SCHOLARSHIP FUND** established in 1958 by bequest of Judge Elmer J. Rathbun, 1896.
- 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 WILLIAM ADAMS SLADE SCHOLARSHIP FUND** established in 1960 by bequest of Ruth E. Slade in memory of William Adams Slade, 1898; Litt.D. hon., 1937.
- 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, Reginald H. Smith, and Cecil H. Smith in memory of Kendall Kerfoot Smith; Professor, 1915-29.
- THE ORLAND F. SMITH SCHOLARSHIP FUND** established in 1959 by the Greenhalgh Charitable Foundation and by Orland F. Smith, 1927.
- 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 NELLIE G. STONE FUND** established in 1958 by bequest of Nellie G. Stone.

FINANCIAL AID

- 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 CHARLES CARPENTER TILLINGHAST SCHOLARSHIP FUND established in 1959 by Charles C. Tillinghast, 1932.
- THE TWIN CITIES SCHOLARSHIP FUND established in 1959 by John G. Peterson, 1917; A. M., 1944; Trustee, 1957—.
- 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.
- THE CHARLETTE B. WILBOUR FELLOWSHIP IN ORATORY established in 1947 by bequest of Miss Theodora Wilbour in memory of her mother, Charlette B. Wilbour.

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THE EDWARD S. WILKINSON SCHOLARSHIP FUND established in 1940 by bequest of Edward S. Wilkinson, 1900.

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 RICHARD B. WINSLOW SCHOLARSHIP FUND established in 1961 by bequest of Helen A. Winslow in memory of her son, Richard B. Winslow, 1933.

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 1962-63 have been given by:

The Alcoa Foundation

An Anonymous Alumnus (The Midwest Scholarships)

An Anonymous Educational Trust

The Brown Charities

Joseph Freedman, 1926

The General Motors Corporation

Isabelle R. Kelley (The George H. Kelley, '10 Fund)

The Procter and Gamble Fund

The Fanny Barrows Reed Trust (The Henry Francis Barrows Scholarship)

The Reiss Associates

The Alfred P. Sloan Foundation

The U. S. Rubber Company Foundation

The United Steelworkers of America, A.F.L.-C.I.O. (District Number One)

The Western Electric Company

BROWN CLUB PRIZE SCHOLARSHIPS

Each year 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 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.

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 FAIRFIELD COUNTY BROWN CLUB OF CONNECTICUT
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 BROWN CLUB OF RHODE ISLAND
THE BROWN CLUB OF WASHINGTON, D. C.
THE BROWN CLUB OF WESTCHESTER
THE WORCESTER COUNTY BROWN CLUB

Corporation Scholarships—The College and Pembroke College

In 1961-62 forty-four tuition scholarships were 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. In 1962-63 it is expected that the Corporation Scholarship Program will continue at this level.

Anonymous Donors

(three scholarships, one in memory of Samuel T. Arnold)
B. A. Ballou Company
B. I. F. Industries, Inc.
Lyman G. Bloomingdale
Bostitch, Inc.
Brier Manufacturing Company (for students at The College only)
Brown and Sharpe Foundation
(two scholarships)
Alfred G. Burnham Donor Fund
Continental Grain Co.
Thomas P. Corcoran Memorial
The Electrical Manufacturers' Representatives Club of New England
Federal Products Foundation
Gilbane Building Company
Leo M. and Phillip B. Goldberg
The Honorable Theodore Francis Green
R. F. Haffenreffer Family Foundation
Hassenfeld Brothers, Inc.
Industrial National Bank
International Business Machines Corporation
(eight scholarships)
Meyer Jaffe
Horace A. Kimball and S. Ella Kimball Foundation
Robert L. Knight

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Leesona Corporation
Albert A. List Foundation
Manufacturers Mutual Fire Insurance Company
Mather & Co.
Narragansett Improvement Company
Nicholson File Foundation
The Okonite Company, Kennecott Wire and Cable Division
Mr. and Mrs. Samuel A. Rapaporte, Jr.
Rhode Island Hospital Trust Company
The Sealol Corporation (for students at The College only)
The Speidel Corporation
United Wire and Supply Corporation

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 and the Parent's Confidential Statement of the College Scholarship Service of the College Entrance Examination Board to the Office of the Dean of Pembroke College by June first of the year for which scholarship aid is requested. Both the students' application form and the Parents' Confidential Statement form may be obtained from the Office of the Dean. Entering students must file this blank with the Admission Office at Pembroke College by January 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 first and the Parents' Confidential Statement in Support of Application for Financial Aid with the College Scholarship Service of the College Entrance Examination Board by July first.

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

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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 IRENE BEDELL SCHOLARSHIP established in 1961 by Irene Bedell of the Class of 1911, the income to be used for scholarship awards to worthy Pembroke College students, especially to those who might otherwise be unable to obtain a college education.

THE THOMAS A. BARRY FUND established in 1960 in memory of Thomas A. Barry of the Class of 1903, the income to be awarded to a citizen of Rhode Island upon the basis of good health, fine character, and scholarship.

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 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.

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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 FLORA JOHNSON CHAMPLIN SCHOLARSHIP established in 1958 by bequest of Flora Johnson Champlin to be awarded to a young woman for excellency in English.

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 CLASS OF 1932 SCHOLARSHIP FUND established in 1960. Preference will be given to any applicant who is a son, daughter, or other descendant of a member of the Class of 1932.

THE CLASS OF 1936 SCHOLARSHIP FUND established in 1961.

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

THE THOMAS CROSBY JR. SCHOLARSHIP established in 1960 by bequest of Thomas Crosby, Jr., 1894; A.M. 1895; faculty member English Department.

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

Now the Central High School.

FINANCIAL AID

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).

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

THE CHARLES H. FISKE SCHOLARSHIP established in 1959 by the bequest of Ida Fiske Thomson in memory of her father, Charles H. Fiske, to be awarded to a student at Pembroke College who is earning part of the cost of her college education while at Pembroke College.

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

THE ROSE G. GERBER MEMORIAL SCHOLARSHIP FUND established in 1961 by Mr. Sheldon L. Gerber, Mrs. Shirley G. Sadler, and Mrs. Phyllis G. Shapiro in memory of their mother, Mrs. Rose G. Gerber, the income to be awarded to a worthy student at Pembroke College who is a graduate of a Providence public high school or, failing that, a worthy graduate of a Rhode Island high school.

THE ROBERT H. IVES GODDARD FUND established in 1960.

THE PEMBROKE 1936 SYDNEY JANE GOURSE MEMORIAL SCHOLARSHIP established in 1961, the income to be used for a scholarship award to a deserving and needy Sophomore, Junior, or Senior in Pembroke College, to be used for tuition fees, residence fees, or general purposes.

(THE SYDNEY JANE GOURSE MEMORIAL SCHOLARSHIP FUND, established in 1957, has been merged with the gift of the Pembroke Class of 1936.)

THE THOMAS C. GUNNING SCHOLARSHIP established in 1961 from the trust under the will of Ida C. Gunning in memory of her late son, Thomas C. Gunning, "the income from the fund to be used for a scholarship for a worthy student, preference to be given to a student who is a resident of the City of Fall River."

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

THE ELLEN F. HIGGINS SCHOLARSHIP FUND established in 1959 by the bequest of Ellen F. Higgins, the income to be used "for the purpose of providing one or more scholarships, either as outright grants or as loans, as may be deemed advisable in each instance, all at the discretion of the Corporation, for undergraduate students at Pembroke College who are deserving of financial assistance."

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 Associa-

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tion 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 RALPH KINDER MEMORIAL SCHOLARSHIP FUND established in 1961 by Mrs. Ralph Kinder of the Class of 1895 in memory of her husband, Ralph Kinder. This Scholarship is to be awarded annually to a Pembroke College student majoring in music.

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 GEORGE A. AND MABEL L. LITCHFIELD FUND established in 1961 by a bequest under the will of Mabel L. Litchfield.

THE CHARLES A. McDONALD, M.D., FUND established in 1960, the income to be awarded to a citizen of Rhode Island upon the basis of good health, fine character, and scholarship.

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 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 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.

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 SUSIE BRIGHAM MORSE PEARSE SCHOLARSHIP established in 1960 by a bequest

¹Now the Central High School.

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under the will of Susie Brigham Morse Pearse, to be awarded to undergraduate students on the basis of character and merit.

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 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 WILLIAM ADAMS SLADE SCHOLARSHIP FUND established in 1960 by the bequest of Ruth E. Slade in memory of William Adams Slade, 1898; Litt.D.hon., 1937.

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 ORLAND F. SMITH SCHOLARSHIP FUND established in 1959 by the Greenhalgh Charitable Foundation and by Orland F. Smith, 1927.

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

THE NETTIE G. STONE SCHOLARSHIP FUND established in 1959, the income to be awarded to needy undergraduate students in good scholastic standing.

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 CHARLES CARPENTER TILLINGHAST SCHOLARSHIP FUND established in 1959 by Charles C. Tillinghast, 1932.

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.

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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 of Pembroke College under the direction of and in the manner determined from time to time by the Dean of Pembroke College."

THE SARAH A. WATSON SCHOLARSHIP FUND established in 1959 by bequest of Sarah A. Watson, the income to be used toward the payment of tuition, board, room, or purchase of books of deserving students of Pembroke College. The selection of the students to be benefited hereby at Pembroke College should be made by the Trustees of Brown University.

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 GERTRUDE S. ALBERT SCHOLARSHIP awarded annually to a deserving young woman who is a resident of Rhode Island.

THE PEMBROKE COLLEGE CLUB OF WESTCHESTER COUNTY SCHOLARSHIP: "To be awarded to a Pembroke student from Westchester County, New York, chosen by the Pembroke College Club of Westchester County from a list of students received from the Chairman of the Scholarship Committee of Pembroke College."

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 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 \$200 for the freshman year only 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.

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. Any student in good standing who has financial need may apply to the University for long-term loans to help pay normal college expenses. Applications are considered by the Committee on Financial Aid and, as funds permit, loans are granted on the basis of character, academic achievement, need, industry, and evidence of the ability and desire to meet obligations.

Long-term loan funds have two sources: a) gifts from alumni, friends, and corporations; and b) University appropriations. These funds vary slightly as to maximum amounts loaned, interest rates, and terms of repayment. For example, in the case of some funds a student may borrow in any year an amount equal to tuition or a maximum of \$4,000.00 during his four years of college. As long as a student remains enrolled in the University no interest is charged and no repayment of principal is required. Loans become due when the student graduates or leaves college. At this time a final repayment schedule is arranged which is mutually satisfactory to the borrower and the University.

It is normally expected that following graduation or withdrawal the borrower will repay his University loan as quickly as possible. Individual repayment schedules on a monthly basis which are equitable may be arranged. Monthly payments of principal together with accrued interest must begin not later than the first day of the fifth month after graduation or withdrawal. On all loans borrowers are permitted to accelerate pay-

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ments, thereby reducing interest charges. In the event that financial hardship makes it impossible to meet payments, a new repayment schedule may be arranged at the discretion of the Committee.

In most cases the interest rate is 4 per cent per year computed on the unpaid principal balance from the date of graduation or withdrawal. This must be paid concurrently with principal repayments. If a borrower is registered as a full-time graduate student at Brown or other accredited graduate schools, he may annually request a deferral of payments until the completion of studies. If the request is approved, no interest will accrue as long as his status remains unchanged. A borrower who is in the Armed Forces is also eligible for certain benefits. He may annually request exemption from interest so long as during his service period he pays towards the reduction of principal an amount equal to or greater than interest.

Loan remissions are available in all funds for persons in certain vocations. Following an annual request from the borrower, remissions are available to teachers in recognized public or private elementary or secondary schools; duly ordained, commissioned or licensed ministers of a church; and members of a religious order. Once the request has been approved and the annual interest has been paid, the borrower may receive a remission of up to 50 per cent of the principal amount of his loan which was unpaid on the first day of such status at the rate of 10 per cent per year.

Applications for loans should be made to the Committee on Financial Aid, Brown University, Providence 12, Rhode Island, before June 15 in the case of entering students and before July 15 in the case of upperclassmen. Loan Funds for men are listed below:

THE ALUMNI LOAN FUND established by the Alumni Association in 1900.

THE ANONYMOUS LOAN FUND established in 1952.

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.

THE CLASS OF 1928 FUND established in 1958 by the Class of 1928.

THE HERBERT FRANKLIN DAVISON LOAN FUND FOR STUDENTS IN CHEMISTRY established in 1927 in honor of Herbert Franklin Davison, 1905; Professor, 1918-26.

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 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.

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THE BENJAMIN W. GRIM LOAN FUND established in 1960 by Benjamin W. Grim 1899.

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 GEORGE H. HENDERSON MEMORIAL FUND established in 1960 by the Rhode Island Highway Association in the memory of George H. Henderson, 1909.

THE INLAND STEEL-RYERSON FOUNDATION LOAN FUND established in 1959.

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 MORRIS MORGENSTERN STUDENT LOAN FUND established in 1958 by the Morris Morgenstern Foundation.

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 GORDON L. PARKER LOAN FUND established in 1959 by Gordon L. Parker, 1918.

THE PLANTATIONS LOAN FUND established in 1960 by the Jessie Smith Noyes Foundation, Inc.

THE PROVIDENCE ENGINEERING SOCIETY EDUCATION FUND established in 1957 by the Providence Engineering Society.

THE JUDAH C. SEMONOFF LOAN FUND established in 1961 by friends in memory of Judah C. Semonoff, 1911.

THE ALFRED P. SLOAN FOUNDATION LOAN FUND established in 1960.

THE STUART FUND established in 1950 by Mr. and Mrs. Milton M. Stuart.

THE TEAVY AND MOLLIE UDIS LOAN FUND established in 1959 by Dr. Sanford W. Udis, 1941.

THE THOMAS J. WATSON STUDENT LOAN FUND established in 1937 by Thomas J. Watson.

Pembroke College. The original loan fund for Pembroke students was established by the Rhode Island Society for the Collegiate Education of Women. Substantial loans have now also become available, under conditions described for loans at The College, through the Pembroke College Loan Fund, the Charles of the Ritz Loan Fund, and the Grim Fund. Further information may be obtained from the Dean's 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

FINANCIAL AID

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 fifteen 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. Freshmen who do plan to work should file a preliminary application with the Financial Aid Office 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 Alumnae 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.

This same service is available to undergraduates who are interested in a career training program during the summer immediately preceding their final year at Brown. A limited number of companies visit the campus each year to interview these candidates.

Seniors and MAT candidates who are interested in a teaching career may use the services of the Placement Office, both for on-campus interviews and direct referrals. Credentials supplied by the candidate are mailed on request.

The Placement Office also extends help on a direct referral basis to graduates returning from service and to alumni wishing to relocate.

Pembroke College. The Placement Office in Alumnae 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 where her credentials may be kept permanently on file to be furnished to employers as needed. Interviews with employers take place frequently on the campus and vacancies in both business and teaching are brought to the attention of alumnae as well as seniors.

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 1, 2) 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.

Concentration in 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 unusual facilities for this type of study.

Undergraduates who elect this concentration will take the following courses: (1) History 51, 52, *American History since 1763*, and History 151, *The Establishment of the American Colonies*; (2) English 41-42, *Ameri-*

AMERICAN CIVILIZATION

can Literature, and one semester course from the following: English 141-142, *American Prose Fiction*; English 143-144, *American Poetry*; English 145, 146, *Studies in American Writers* (students who elect 141-142 or 143-144 must take both semesters of these courses; the second semester will satisfy the requirement stated in (6) below); (3) one course from the following: Art 59, *Modern Architecture*; Music 132, *American Music, 1865-1950*; Philosophy 125, *History of Philosophy in America*; (4) one course from the following: Economics 107, *Theories and Programs of Economic Reform*; Economics 131, *Labor Problems*; Political Science 103, *Problems of American Government*; Political Science 124, *American Political Theory*; Sociology 127, *Races and Minorities*; Sociology 139, *Social Classes*; Sociology 181, *A Sociological Analysis of American Life*; (5) American Civilization 191, *Problems in American Civilization*; (6) one additional semester course from the second, third, or fourth groups above, or from the following: American Civilization 193, *Seminar in Printed Sources*; Anthropology 150, *The American Indian*; English 171, *Twentieth Century Poetry*; English 172, *Twentieth Century Novel*; English 187, *Twentieth Century Drama*; History 152, *The American Revolution and the Forming of the United States, 1751-1783*; History 161, 162, *The History of American Economic Life*; History 163, *The Formation of the American Republic, 1783-1801*; History 164, *The Decline of Laissez-Faire Capitalism in the United States, 1897 to the Present*; History 167, *The Age of Jackson*; History 168, *Civil War and Reconstruction*; History 173, 174, *The Social and Intellectual History of the United States*; History 177, *History of Religion in America*; Political Science 107, *Political Parties and Pressure Groups*; Political Science 115, 116, *American Constitutional Law*; Political Science 122, *Foreign Relations of the United States*; Spanish 128, *The Literary Image of the Hispanic New World*; University Course 3-4, *The American Accent* (those who elect this course will be excused from the second part of the requirement stated in (2) above).

Students in the Honors Program, in addition to fulfilling the requirements stated above, will attend a non-credit conference course and will take American Civilization 192, in which they will prepare an Honors thesis. Honors students will take American Civilization 191 in the first semester of their senior year. Students not in the Honors Program may take American Civilization 191 in either semester of their senior year.

The program in American Civilization is under the direction of a committee composed of Hyatt H. Waggoner, Professor of American Literature (Chairman); William H. Jordy, Professor of Art; Vincent A. Tomas, Professor of Philosophy; Guy H. Dodge, Professor of Political Science; Forrest McDonald, Associate Professor of History; William G. McLoughlin, Associate Professor of History; Alan S. Trueblood, Associate Professor of Spanish; Barry A. Marks, Assistant Professor of English; Thomas R. Adams, Instructor in Bibliography and Librarian, John Carter Brown Library.

AMERICAN CIVILIZATION

The Advisor for undergraduate concentrators in the field is Mr. Marks. For information on graduate study, see the catalogue of the Graduate School.

191. *Problems in American Civilization*

The undergraduate senior seminar. The purpose of this course is to contribute unity to a concentration that has embraced several traditional fields of knowledge and methods of study. The method is to examine a selected topic or problem in depth from the points of view of the several disciplines that comprise the study of American Civilization. The topic for 1962-63 will be Jeffersonianism in American life and culture. Messrs. MARKS, JORDY, and McLoughlin.

192. *Honors Thesis*

Preparation of a thesis on a topic in American Civilization, under the direction, normally, of a member of the committee. With the consent of the Chairman of the committee, the course may be repeated. Mr. MARKS and others.

193. *Seminar in Printed Sources on the Early History of the Americas*

Investigation of source material in the John Carter Brown Library, culminating in the writing of a long paper. Students will be assigned special research problems relating to material in the Library. As they work on the problems they will be expected to gain understanding of American history and culture as these are illuminated by the Library and a grasp of the methods through which printed source materials can be used in new ways to explore areas in which research needs to be done. The basic technique employed will be bibliography, in the broadest sense of the term. Mr. ADAMS.

201. *Seminar*

An introduction to graduate study in the field. Required of all students in their first semester of graduate work in American Civilization at Brown. The method of the course is to pursue a single, narrowly defined, topic in depth from several approaches. Topic for 1962-63: *The Scarlet Letter*, as a literary work of art, as a portrayal and interpretation of the Puritans, and as a product and reflection of its own age. Topic for 1963-64: *The Blithedale Romance*, as a work of art and as a document in social and intellectual history. Messrs. WAGGONER, JORDY, and McLoughlin.

Anthropology

See Sociology and Anthropology

Applied Mathematics

Professors KOLSKY, MEYER, PRAGER, RIVLIN (Chairman), ROSENBLATT, SHIELD, STERNBERG, TRUELL; Associate Professors CHACON, FREIBERGER, NEWELL, REID; Visiting Associate Professors HANRATTY, PRASAD, SCHWARZ; Assistant Professors BISSHOPP, CHARTRES, GURTIN, PIPKIN; Research Associates, Messrs. ANDERSON, CHICK, HIKATA, KARNI, LOCKETT, and RAMAKANTH; Research Assistants, Messrs. BREUER, BASU,¹ CAMPBELL, CARLSON, CARROLL, DEUTSCH, EDELSTEIN, FITZGERALD, FRIEDMAN, GARDNER, GORDON, GRAHAM, HAMILTON, HUGHES, KLINGBEIL, MCFARLANE, NADKARNI, NIILER, PITULA, RANBY, SCHWENSFEIR, SEWELL, SHEN, SHIRELY, SINGH, SUN, VALENTIN, VAN NESS, WALKER, WEI, WINEMAN, and WITTERHOLT.

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS. 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 coöperation 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. The specific requirements for the degree are given on page 80.

The Bachelor of Science program is sufficiently flexible to permit six or more semester courses to be taken in economics, engineering, or physics, and hence can provide study to an appreciable depth in one of these areas for the student who wishes to pursue the application of mathematics particularly in one of these fields. Such a program would be satisfactory for continuing graduate work in that field.

HONORS. Candidates for Honors normally enroll in the Honors program at the end of the junior year. The Honors program consists of the regular Bachelor of Science program in Applied Mathematics together with at least two and not more than four additional courses at an advanced level. The program is flexible and the additional courses may be in applied mathematics, mathematics, physics, engineering, or economics.

On leave of absence 1962-63.

APPLIED MATHEMATICS

The Honors thesis may be a thesis based on assigned reading or an integrated set of problems studied in connection with additional course work. The senior Honors examination will consist of the regular examinations on the additional course work which may be supplemented by an oral examination.

CONCENTRATION. This is a joint concentration program for candidates for the Bachelor of Arts degree offered by the departments of Applied Mathematics, Engineering, Mathematics, and Physics. Details of the program are given on page 77. Candidates should consult the Division of Applied Mathematics for advice in arranging their programs.

COMBINED PROGRAM FOR THE DEGREES OF BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN APPLIED MATHEMATICS. Students may take part in a five-year program leading to the degrees of Bachelor of Arts and Bachelor of Science in Applied Mathematics. All requirements for both degrees must be met in this program (see page 83).

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. RIVLIN.

20. *Theory and Practice of Computation*

Numerical methods: interpolation, numerical integration, and treatment of ordinary differential equations. Application of computing machines. Prerequisite: Mathematics 29 or 105. Mr. PRAGER.

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 finite number of degrees of freedom. Prerequisite: Applied Mathematics 3-4 and Mathematics 29. Semester I, Mr. TRUELL; Semester II, Mr. STERNBERG.

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.

APPLIED MATHEMATICS

101. *Programmed Digital Computation*

A course designed to familiarize the student with the speed and versatility of electronic digital computers in handling and transforming numerical or verbal information. Problem analysis, structure diagram, flow chart. Machine language and symbolic languages. Compiling, assembling, and testing of programs. Lectures and laboratory. Written consent of instructor in lieu of formal prerequisites. Mr. SCHWARZ.

120. *Introduction to Mechanics of Continua*

Geometrical foundations (vectors, tensors, fields). State of stress (stress tensor, equilibrium conditions, principal stresses and principal shearing stresses, Mohr's stress circles, stress quadrics, hydrostatics). Instantaneous motion (rates of rotation and deformation, plane motion, conditions of integrability, material rates of change). Fundamental laws (conservation of mass, momentum, and energy; simple constitutive equations). Specific continua (perfect and viscous fluids, elastic solids). Prerequisite: Mathematics 29. Mr. PRAGER.

137. *Boundary Value Problems I*

Vector field theory. Solutions of Laplace's equations. Hydrodynamics of perfect fluid and electrostatics. Prerequisite: Applied Mathematics 25 and Mathematics 126. Mr. REID.

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. REID.

PRIMARILY FOR GRADUATE STUDENTS¹

203, 204. *Differential and Integral Equations of Mathematical Physics* (see Mathematics 237, 238).

205, 206. *Probability and Statistics*. Mr. NEWELL.

207, 208. *Special Topics in Mathematics: Applications of functional analysis*. Mr. CHACON.

210. *Introduction to Numerical Analysis*. Mr. CHARTRES.

211, 212. *Mathematical Methods of Applied Science*. Mr. GURTIN.

213, 214. *Advanced Mathematical Methods of Applied Science*. Mr. PIPKIN.

221, 222. *Topics in Advanced Numerical Analysis*. Semester I, Mr. SCHWARZ; Semester II, Mr. CHARTRES.

¹ For course descriptions see the catalogue of the Graduate School.

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225. *Analytical Mechanics*. Mr. STERNBERG.
- 227, 228. *Advanced Topics in Probability and Statistics*. Mr. ROSENBLATT.
- 233, 234. *Elasticity*. Mr. SHIELD.
- 235, 236. *Advanced Elasticity*
- 237, 238. *Plasticity*. Mr. ONAT.
- 241, 242. *Fluid Dynamics*. Mr. BISSHOPP.
243. *Dynamics of Viscous Fluids*. Mr. MEYER.
244. *Advanced Dynamics of Viscous Fluids*
245. *Dynamics of Compressible Fluids*. Mr. MEYER.
246. *Linearized Theory of Aerodynamics*
- 251, 252. *Electromagnetic Theory* (see Engineering 215, 216)
277. *Magneto-hydrodynamics* (see Engineering 277)
278. *Plasma Dynamics* (see Engineering 278)
- 281, 282. *Seminars in Applied Mathematics*. The STAFF.
- 291, 292. *Research in Applied Mathematics*. The STAFF.

Art

Professors DOWNING (Chairman), FELDMAN, JORDY; Associate Professors BUCHER, TOWNLEY; Visiting Associate Professors MONTENEGRO, NEUMAN; Assistant Professor CARPENTER; Instructors, Messrs. ARMOUR and SCHER; Teaching Associate, Mrs. GLASS; Administrative Assistant, Miss WOLENS.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. Students concentrating in art will normally take Art 1 and 2; they must take Art 21-22 or 31, 32; *two* of the following: Art 53, 55, 56, 58, 59; *one additional* of the following: Art 53, 55, 56, 58, 59, 153, 155, 158, 159; Art 197; and at least 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. Messrs. DOWNING and JORDY and STAFF.

2. *Introduction to the Visual Arts*

The visual arts in European culture from the early Middle Ages to the French Revolution. Emphasis will be placed on such major works as the Cathedral of Chartres and the Palace at Versailles, and upon such major artists as Leonardo da Vinci, Michelangelo, Rembrandt. Groups of lectures will alternate with groups of section meetings on a regular 3-hour per week schedule. No studio work. Messrs. SCHER and CARPENTER and STAFF.

21-22. *Introductory Design, Drawing, and Painting*

Elementary studio work in the use of the language of the visual arts. Messrs. FELDMAN, TOWNLEY, and ARMOUR.

53. *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. SCHER.

55. *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. Mr. CARPENTER.

56. *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

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aspects of the intellectual, religious, and social life of the 17th and 18th centuries. Mr. CARPENTER.

58. *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.

59. *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 145.

118. Same as Classics 118. See page 145.

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, TOWNLEY and NEUMAN.

123. *Painting*

Offered in the Graduate Summer School for Teachers, 1962, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. MONTENEGRO.

153. *Topics in Art History (Medieval)*

Prerequisite: written permission of the instructor.

155. *Topics in Art History (Renaissance and Baroque)*

Prerequisite: written permission of the instructor. Mr. CARPENTER.

158. *Topics in Art History (Modern Painting and Sculpture)*

Prerequisite: Art 58 and written permission of the instructor. Mr. DOWNING.

159. *Topics in Art History (Modern Architecture)*

Prerequisite: written permission of the instructor. Mr. JORDY.

191. *Individual Study Project*

Reading and reports on approved topics in art history, or work on ap-

proved projects in studio, supervised by individual members of the Staff. Prerequisite: written permission of the Department. The STAFF.

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 to senior concentrators in art and to students in the Master of Arts in Teaching program. 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.

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 involve one or more of several fields, including Architecture, Landscape Architecture, Sculpture, Painting, Advertising and Industrial Arts, Costume Illustration, Ceramics, and Textile Design.

Astronomy

Professor SMILEY (Chairman).

DISTRIBUTION REQUIREMENT. See pages 72-75.

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 29, 112, 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. 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 the use of optical and radio instruments in the determination of physical properties of celestial bodies. Prerequisite: Astronomy D1 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 problems of two and n bodies, artificial satellites and planets, the numerical integration of differential equations of motion,

and perturbation theory. Elective by written consent of the instructor. Mr. SMILEY.

198. *Introduction to Astronomical Research*

Independent study under individual guidance, including the preparation and presentation of oral and written reports. One two-hour period a week. For seniors concentrating in Astronomy and graduate students, including candidates for the Master of Arts in Teaching degree, with the permission of the instructor. Mr. SMILEY.

Bibliography

Professor JONAH (Chairman); Associate Professor BROWN; Assistant Professor RICHARDS; Instructor, Mr. MOORE; Lecturer, Mr. ADAMS.

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, CHASE, MONTAGNA, FENTON, EDDS (Chairman), WEISZ; Associate Professors LEDUC, GOSS (Executive Officer), KENWORTHY, GROSS, ELLIS, HAGY, LEDERBERG, ZIMMERING; Assistant Professors BRENNER, QUEVEDO, ROTHMAN; Instructor, Miss GAUTHIER; Lecturers, Messrs. LOWNES and McGLORY; Research Associates, Messrs. ANDRE, BAL, CURTIS, GUNTHER, GUTTES, LYNE, SAKUARI, STAGGERS, and SWEENY, and Miss SADOGLU, and Mesdames GUTTES and SILVER; Associates in Research, Mr. PETTENGILL, Miss ARSENAULT, and Mesdames BIENIEKI, BROTHERS, and YUN; Teaching Assistants, Messrs. FARMER, IM, and ROSEN, and Misses BAKER, HAMAMOTO, KAUTTU, MA, McKEE, MONG, PAGE, RYCKOFF, and SHAEFFER, and Mrs. MELVIN; Research Assistants, Mesdames ANDRE, CHOW, DUNN, McTAGUE, MEIGHAN, and PIERCE; Trainees, Messrs. COUSINEAU, DELANEY, D'ONOFRIO, GOERTEMILLER, GIACOMETTI, GOUGH, HANSON, HUBBARD, MENTON, NAKANE, SCHULTZ, SHOSTAK, SMITH, TO, UNAKAR, and WILLIAMS, and Misses CARR, FRIEND, GOLDSMITH, HACKLER, HALE, HEANEY, LAWSON, LUCKENBILL, RANDELIA, ROBBIN, SMITH, and WARD, and Mesdames SANFORD and HARTLINE.

BIOLOGY

PREREQUISITES. Biology D1 and 4 are prerequisite for advanced courses in biology. These courses also satisfy the admission requirement of medical and dental schools for a one-year course in general biology.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. In addition to the elementary courses, Biology D1 and 4, 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.

Requirements for the degree of Bachelor of Science in Biology are given in the section "Requirements for Degrees", page 80.

HUMAN BIOLOGY. The Department of Biology together with the Departments of Psychology and Sociology-Anthropology 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 77.

HONORS. All senior candidates for Honors in biology must elect Biology 195. Participation in the Honors program in biology may commence at any time prior to the senior year.

D1. *Introduction to Experimental Biology*

The more important generalizations of biology and the phenomena upon which they are based with particular emphasis upon: the universal phenomena characteristic of all living things; the fundamentals of plant and animal structure, nutrition, reproduction, and the integration of the organism as a whole. Lectures, conferences, and laboratory. Individual library and laboratory projects by the student are encouraged throughout, sources being provided by both textbooks and original writings in the biological literature. Six hours of attendance. Mr. WEISZ and STAFF.

4. *Comparative Zoölogy*

An extension of Biology D1 with emphasis placed upon the animal world. The comparative method is used to study the structures and functions 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 and laboratory. Individual library and laboratory projects by the student are encouraged throughout, sources

being provided by both textbooks and original writings in the biological literature. Six hours of attendance. Mr. KENWORTHY.

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 D1, 4. Messrs. MONTAGNA and QUEVEDO.

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. Messrs. CHASE and ZIMMERING.

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 with special emphasis on the experimental and comparative approaches to histogenesis and histophysiology. Six hours of attendance. Prerequisite: Biology 5. Mr. Goss.

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 D1; Biology D1, 4 or Botany 1, 2. Mr. GROSS.

15. *Bacteriology*

The physiology and genetics of micro-organisms, especially bacteria. Emphasis is on the laboratory use of microbial populations in studies of cellular biology. Topics include the cultivation, morphology, structure, composition and nutrition of microbes, the kinetics of bacterial growth and inactivation, mutation and genetic exchange in bacteria, and mechanisms regulating the synthesis of nucleic acids and proteins and the formation or

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utilization of metabolites. Six hours of attendance. Prerequisite: Biology 10 or permission of the instructor. Mr. LEDERBERG.

51. *Principles of Human Biology and Human Genetics*

Concepts of human biology, basic genetic principles, effects of environment and heredity upon the individual and populations; physical, social, and psychological factors affecting human development and evolution. Prerequisite: Biology D1. Mr. HAGY.

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. Misses LEDUC and GAUTHIER.

107, 108. *Experimental Morphogenesis*

Experimental embryology and regeneration. Six hours of attendance. Prerequisite: Biology 7, 8. Messrs. Goss and EDDS.

111. *Modern Trends in Biological Theories and Research Methods*

Offered in the Graduate Summer School for Teachers, 1962, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. BRENNER.

112. *Endocrinology*

General and comparative endocrinology with emphasis on neuroendocrine control mechanisms. Prerequisite: Permission of the instructor. Mr. BRENNER.

113. *Experimental Biology*

Offered in the Graduate Summer School for Teachers, 1962, for students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. SWEENY.

121. *General Physiology*

Excitation, contraction, reflexes, circulation, physiology of the heart, respiration, internal secretion. Prerequisite: Biology 5, 10. Mr. GROSS.

122. *Physiological Chemistry*

Metabolism of carbohydrates, fats, and proteins; enzymes; gastrointestinal tract; nutrition; endocrines. Prerequisite: Chemistry 11 or 41. Mr. FENTON.

123. *Biochemistry*

The biological, chemical, and physical properties of tissue constituents; enzymes and enzyme kinetics; oxidative processes and electron transport. Prerequisite: Chemistry 11, 12 or 41, 42 and 13, 14. Mr. ROTHMAN.

124. *Biochemical Genetics*

The structure and synthesis of nucleic acids and proteins in relation to genetic phenomena. Prerequisite: Biology 15 and 123; or permission of the instructor. Mr. ROTHMAN.

132. *Evolution and Development*

Topics include: evolution on molecular, intracellular, cellular, and organismic levels; origins of cellular components and processes, and of multicellularity; origins of animals and of main animal groups; comparative embryology, and related physiology and ecology; theories of ontogeny and phylogeny. Prerequisite: Biology 4, 7, or permission of the instructor. Mr. WEISZ.

152. *Advanced Bacteriology*

A study of bacterial viruses and their hosts, emphasizing their contributions to developments in cellular and molecular biology. Topics include the cultivation, purification, antibody neutralization, host-adsorption, mutation and genetic recombination of bacterial viruses, lysogeny, isolation and purification and analysis of viral and host nucleic acids, and genetic transformations by viruses and viral nucleic acids. Six hours of attendance. Prerequisite: Biology 15 or written permission of the instructor. Mr. LEDERBERG.

190. *Human Biology Senior Seminar*

A reconsideration and correlation of the information previously acquired in the Human Biology Program. Open only to and required of Human Biology concentrators during Semester VIII. Mr. HAGY.

195. *Honors Thesis*

At least one semester required of senior candidates for Honors in biology.

203, 204. *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. Mr. CHASE.

207, 208. *Seminar in Genetics*

Half-course. Elective for approved graduate students. Messrs. CHASE, HAGY, and ZIMMERING.

BIOLOGY

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.

213. *Quantitative Biology*

Concepts and derived statistical methods particularly pertinent to biological problems; standard descriptive and testing techniques including the various *t* tests, chi-square, correlation, curve fitting, analysis of variance, scale transformations, probit analysis, and the Poisson distribution. Prerequisite: Mathematics D2 and permission of the instructor. Mr. CHASE.

216. *Ultrastructure*

The chemical and structural organization of biological systems. Prerequisite: Biology 103-104 and permission of the instructor. Mr. ELLIS.

217. *Vertebrate Paleontology: History and Biology of the Vertebrate Groups*

An introduction to the evolutionary history of the vertebrate classes and orders as this history has been arrived at from studies of the fossil record. A limited study of the biology of the major groups of living vertebrates is also included. Students will lead most of the discussions. Messrs. KENWORTHY and LAPORTE.

218. *Vertebrate Paleontology: Evolutionary Principles and Problems*

A study of major evolutionary principles based upon vertebrate paleontology. Emphasis will be given to integration and synthesis of the various evolutionary phenomena appearing in vertebrate fossil history. Students will lead most of the discussions. Messrs. LAPORTE and KENWORTHY.

221, 222. *Radiobiology*

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. GROSS.

233, 234. *Seminar in Physiology*. Mr. GROSS.

Half-course. Elective for approved graduate students.

251, 252. *Immunology*

253, 254. *Research in Bacteriology and Immunology*. Mr. LEDERBERG.

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

Professor CHURCH (Chairman); Associate Professor DYER; Assistant Professors FULLER, NASATIR; Research Associates, Miss DICK and Mrs. RAKATANSKY; Teaching Assistants, Miss KERLEY, and Messrs. LEE and PILLAI.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. In addition to Biology DI and Botany 4, the following eight courses—106, 111, 112, 113, 122, and Biology 6 or 15—and two of the four following—Botany 162, 163, 164, 166. In preparation for Botany 112, at least one year of college chemistry is recommended.

4. *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.

106. *Morphogenesis in Plants*

An introduction to concepts of the origin of form and function. The laboratory will cover the morphological, anatomical, and physiological development of both spore-bearing and seed plants. The lectures will serve as an introduction to theories of the regulation of differentiation. Six hours of attendance. Mr. NASATIR.

111. *Plant Growth and Behavior*

The factors essential to growth; growth rates; growth accelerators and inhibitors and their modes of action; correlation mechanisms; influence of environmental factors on survival and success of the individual; differentia-

BOTANY

tion; developmental patterns and their modification. Completion of an in-laboratory research project required of each student. Six hours of attendance. Mr. DYER.

112. *Plant Metabolism*

Photosynthesis, respiration, and fermentation; enzyme action; translocation; roles of essential elements. Eight hours of attendance. Prerequisite: Botany 111. At least one year of college chemistry is recommended. Mr. DYER.

113. *Speciation in the Seed Plants*

A systematic study of the flora of North America in terms of the climatic and physiographic regions and the significant cytogenetic factors in species evolution. Eight hours of attendance, including field work. Mr. CHURCH.

122. *Mycology*

Biology of the fungi and slime molds. Lectures on taxonomy, morphology, cytology, physiology, genetics, and biological significance of the fungi; laboratory includes morphological, pure culture, and experimental work with the fungi. Eight hours of attendance. Mr. FULLER.

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.

163. *Developmental Plant Biochemistry*

An introduction to the problems of cell replication will cover such topics as: estimation of the amount of information needed for self-reproducing systems; a mathematical analysis of root growth; the plastichron index and other overall descriptions. In addition, the problem of the molecular basis of replication and differentiation will be introduced. The laboratory will be concerned with the isolation and characterization of plant DNA from various tissues and growth stages, and the changes both quantitative and qualitative, in respiration concomitant with cell division and differentiation in plants. Prerequisite: Botany 112 or its equivalent. Eight hours of attendance. Mr. NASATIR.

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*

Intensive study of various areas within mycology. Emphasis will be on recent experimental studies of the fungi. Laboratory work will be devoted to individual research projects. Six hours of attendance. Prerequisite: Botany 122 and Botany 112 or consent of the instructor. Mr. FULLER.

231, 232. *Seminar in Botany*

No course credit. The STAFF.

291, 292. *Reading and Research.* The STAFF.

Chemistry

Professors BUNNETT (Chairman), CLAPP, COLE, EDWARDS, NACE, ROSS, RUSSELL; Associate Professors CARPENTER (Executive Officer), GIBBS, GREENE; Visiting Associate Professor BRIEUX; Assistant Professors BAIRD, CARLIN, KAY, KING, NEUMER, WORONICK; Instructor, Mr. RIEGER; du Pont Teaching Assistant, Mr. ORCUTT; Teaching Assistants, Messrs. ALLENDOERFER, BALL, BOUCHARD, DICKEY, ERIKSON, HEIMLICH, LIM, McISAAC, MULLER, PARK, RETALLICK, TEREZAKIS, and WALKER, and Misses KIM, PALMER, and WALKER.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. The requirements for concentration in chemistry for the Bachelor of Arts degree are five required courses, which may be either the set Chemistry 12, 13-14, 15, 136, or the set Chemistry 28, 41, 42, 63-64, and three advanced elective courses in chemistry. Students intending to take the former sequence with Chemistry 13 in the sophomore year must take the prerequisites of physics plus differential and integral calculus in the freshman year.

A grade of C or better in prerequisite courses is required, or permission of the instructor.

Requirements for the degree of Bachelor of Science in Chemistry are given in the section "Requirements for Degrees," page 81.

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 fol-

CHEMISTRY

lowed 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 and Mathematics. Students intending to take a continuing course in chemistry should register for Chemistry D2 and not for Chemistry D1. Mr. KING.

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. KAY.

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 analytical separation and detection of the principal cations and anions by semi-micro methods. Prerequisite: Chemistry D2 or equivalent, Mathematics D2 (may be taken concurrently). Mr. CARLIN.

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: Chemistry D1 or D2, or equivalent. Mr. BUNNETT.

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 five hours of laboratory attendance. Prerequisite: Chemistry 12, Physics 2 or 4, and Mathematics 10 or 21. Mr. GREENE.

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. GIBBS; II, Mr. COLE.

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. CARPENTER.

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. Prerequisite: Chemistry 5. I, Mr. WORONICK; II, Mr. BRIEUX.

63-64. *Physical Chemistry*

Lectures plus five hours of laboratory attendance. Prerequisite: Physics 2, Mathematics 10 or 21, Chemistry 28. Corequisite: Chemistry 41. Mr. GREENE.

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.

CHEMISTRY

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. CARLIN.

117. *Properties of the Chemical Bond*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. CLAPP.

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. 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, or permission of the instructor. Mr. RIEGER.

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: Chemistry 14 or 28 and 42. Mr. NEUMER.

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: Chemistry 14 or 42 and 64, or permission of the instructor. Mr. NEUMER.

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. KAY.

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: Chemistry 14 or 64.

201. *Thermodynamics*. Mr. COLE.

202, 203. *Statistical Thermodynamics*. Messrs. GIBBS and ROSS.

212. *Theory of Dielectrics and Electrolytes*. Mr. COLE.

221. *Applications of X-Ray Diffraction in Chemistry*. Mr. CARPENTER.

232. *Inorganic Chemistry*. Mr. CARLIN.

234. *Chemical Kinetics*. Mr. EDWARDS.

241. *Principles of Organic Chemistry*. Mr. NACE.

242. *Synthetic Organic Chemistry*. Mr. BUNNETT.

243. *Organic Reaction Mechanisms*. Mr. BUNNETT.

277, 278. *Quantum Mechanics*. Messrs. BAIRD and KING.

281, 282. *Departmental Seminars*

287, 288. *Departmental Colloquia*

291. *Special Topics in Chemistry*

292. *Special Topics in Chemistry*

Polymers. Mr. GIBBS. Biochemical Reaction Mechanisms. Mr. WORONICK.

297, 298. *Research*

Classics

Professors ROBINSON, LYNCH; Associate Professor WORKMAN¹ (Chairman); Assistant Professors BOEGEHOLD, PUTNAM; Instructor, Mr. MOORE; Teaching Assistants, Messrs. FISCHER and HELD, and Miss BROOKE.

¹ On leave of absence, Semester II, 1962-63.

CLASSICS

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 or 6; those presenting three or four years may elect Latin 11, 12 or Latin 103, 104 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 72-75.

LANGUAGE REQUIREMENT. The foreign language requirement may be satisfied by passing Greek 6 or Latin 6, or a more advanced course.

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. Credit for Greek 1 without Greek 2 may be granted only by special permission of the instructor. Mr. LYNCH.

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.

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. PUTNAM.

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. PUTNAM.

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. MOORE.

CLASSICS: LATIN

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. BOEGEHOLD.

191. See *Classics 191* on page 146.

199. See *Classics 199* on page 146.

201. *Seminar in Greek: Studies in Thucydides*. Mr. BOEGEHOLD.

202. *Seminar in Greek: Studies in the Greek Lyric Poets*. Mr. LYNCH.

215. *Greek Prose Composition*. Mr. LYNCH.

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. Mr. MOORE.

6. *Latin Prose and Poetry*

Readings in Latin Literature selected to illustrate the Roman achievement in literary form and the expression of national ideals. Special emphasis will be placed on the attainment of rapid reading facility in Latin. Messrs. FISCHER and HELD.

11. *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. Messrs. BOEGEHOLD and PUTNAM.

12. *Cicero and Pliny*

The *De Amicitia* 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. BOEGEHOLD.

M51, M52. *Seminar: The Nature of Classical Scholarship*

This course seeks to develop a broad familiarity with several areas of classical scholarship, philological, aesthetic, and historical. In addition to an extensive study of a Ciceronian oration, the course will introduce the student to Latin philology through prose composition and extensive reading in

CLASSICS

Roman authors from Ennius through St. Augustine. Messrs. MOORE, PUTNAM, and WORKMAN.

103. *The Poetics of Vergil's Aeneid*

The nature and composition of Vergil's epic; evidence of the Vergilian creative process in the minor poems and the *Appendix*.

104. *Roman Satire*

A study of Horace and Juvenal and their predecessors in formalized Roman satire.

105. *Plautus and Roman Comedy*

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. LYNCH.

111. *Selections from Latin Authors*. The STAFF.

114. *History of the Latin Language*

191. See *Classics 191* on page 146.

199. See *Classics 199* on page 146.

211. *Seminar in Latin: Medieval Latin*. Mr. LYNCH.

212. *Seminar in Latin: Studies in Vergil's Eclogues and Georgics*. Mr. PUTNAM.

215. *Latin Prose Composition*. Mr. WORKMAN.

231. *Seminar in Latin: Latin Linguistics*. Mr. LYNCH.

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.

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

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. *Humanism and Human Conduct*

Significant and continuing ideas related to the social, ethical, and political responsibility of man in antiquity and in the modern world. Readings in Homer, Herodotus, Aristotle, and others. This course fulfills the specific requirement in the Social Studies for two distribution credits in History. Messrs. BOEGEHOLD and MOORE, and Miss BROOKE.

D5. *Masterpieces of Roman Literature*

An intensive study of several Roman classics in English translation. With Classics D6 this course satisfies the distribution requirement in Literature under the Humanities. Mr. FISCHER.

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 Roman authors will be considered and their impact upon subsequent English writers studied. With Classics D5 this course satisfies the distribution requirement in Literature under the Humanities. Mr. WORKMAN.

M51, M52. *Seminar: The Nature of Classical Scholarship*

See Latin M51, M52.

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. MOORE.

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. Mrs. PECK.

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*

See Comparative Literature 134.

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. Mr. SACHS.

143, 144. *History of the Ancient Orient: Egypt*

A cultural approach. The sequence of political and military events will be

COMPARATIVE LITERATURE

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. Not open to undergraduates.

204. *Seminar: Problems in Archaic Greek Sculpture*

Designed as an introduction to the methods of critical research. Not open to undergraduates. Mr. ROBINSON.

291, 292. *Reading and Research*

Work with individual students in connection with special reading; problems of research; preparation of the dissertation. The STAFF.

Comparative Literature

Members of related departments compose the Staff. The program in Comparative Literature is under the direction of a committee composed of Juan López-Morillas, Professor of Spanish (Chairman); Leicester Bradner, Professor of English; Edward J. Brown, Professor of Russian; Alan Holske, Professor of German; Edwin Honig, Professor of English; Albert J. Salvan, Professor of French; and John R. Workman, Associate Professor of Classics.

HONORS. Candidates for Honors in Comparative Literature are offered an opportunity to do individual work in fields of particular interest under the supervision of one or more members of the Departments of Classics, English, French, German, Slavic Languages, and Spanish and Italian.

Prerequisites: (1) To have completed the requirements for concentration in one literature; (2) To have completed a one-semester course on the D or IC level (or French 10, Russian 41 or 42, Italian 107 or 108) in the other literature or literatures included in the program.

The candidate will write an Honors thesis in the senior year.

COMPARATIVE LITERATURE

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. Mr. WORKMAN.

152. *Studies in the Literature of the Renaissance*

Topic for 1963-64: Drama in the Renaissance. Mr. BRADNER.

153. *Studies in the Literature of the Seventeenth and Eighteenth Centuries*

Topic for 1962-63: Neoclassicism and the Enlightenment. Mr. ECHEVERRIA.

154. *Studies in the Literature of the Nineteenth and Twentieth Centuries*

Topic for 1963-64: Romantic Realism: Balzac, Dickens, Dostoevski. Mr. FANGER.

161. *Literary Modes and Myths*

Topic for 1962-63: Literary Criticism. Mr. BLOOM.

198. *Honors Conference*

Special work or preparation of Honors thesis under the direction of a member of the Staff. The STAFF.

202. *Problems in Comparative Literature*

Topic for 1962-63: Theory of Romanticism. Mr. LÓPEZ-MORILLAS.

215. *The Development of Literary Genres and Modes*

Topic for 1962-63: The Evolution of Pastoral Literature. Mr. TRUEBLOOD.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

Economics

Professors BOSLAND, TAFT, STOLTZ (Chairman), BORTS, BECKMANN,¹ CAGAN, STEIN; Associate Professors SMITH, CARSON, BRENNAN; Assistant Professor SCHUPACK; Teaching Associates, Messrs. DRISCOLL, FLETCHER, and HAY; Assistants, Messrs. GRISSA, MILLIE, NEHER, and PEIRCE; Research Assistants, Messrs. DONOGHUE, LEVY, and PABST.

GENERAL PREREQUISITE. Economics D1, D2, IC 1-2, or M1-M2, are prerequisite for Economics 101, 102, and 111. Economics D1 is prerequisite for other advanced courses in economics, except by written consent of the respective instructors.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION: A grade of C or better in Economics D1, D2, IC 1-2, or M1-M2 is required of students who concentrate in economics.

In addition to the elementary course (Economics D1, D2, IC 1-2 or M1-M2), 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 pages 77-78.

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. Economic institutions, theory, and policy will be surveyed on an elementary level. Consideration will be given to the organization of economic activity, the monetary system, the analysis of demand and supply, the determination of national income, and the effects of public policies. The STAFF.

¹ On leave of absence, Semester I, 1962-63.

D2. *Elements of Economics*

A continuation and expansion of D1. More attention is given to economic theory as a preparation for advanced work. Topics discussed will include the theory of the firm, the determination of wages, interest, profits, and economic rent, and the analysis of national income and income distribution. Prerequisite: D1. Required of all concentrators in economics who have not taken IC 1-2.

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* 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.

M1-M2. *Introduction to Economic Analysis*

This course traces the development of various aspects of price theory from the classical economists through modern theory. The object is three-fold: (1) to gain an appreciation of the intellectual difficulties experienced in developing theoretical concepts; (2) to demonstrate the achievements of the modern theorists in developing a complete and logical theory to describe complex phenomena; (3) to provide a set of analytical tools together with the proper methodology for using them. Individual research projects will be carried out. The emphasis in these papers will be on modern policy problems. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Mr. SCHUPACK.

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.

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

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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. CARSON.

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 and Policy*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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. Mr. TAFT.

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*

Foundations of international trade and comparative cost theory; balance of payments, exchange rates and international prices; nature and effects of international trade restrictions. Mr. STEIN.

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, 52, 105, Economics 101, 102, and either Mathematics 161 or Economics 161. Mr. BECKMANN.

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

204. *The Development of Economic Analysis*

A systematic examination of the development of neo-classical, Austrian, and general equilibrium economics since 1870. Mr. SMITH.

205, 206. *The Theory of Price.* Mr. BRENNAN.

207, 208. *Aggregative Economic Theory*

Income and employment theory; the theory of growth; topics in dynamic analysis. Mr. STEIN.

211. *Monetary Theory*

The theory of money with emphasis on both its historical development and recent research; controversies over the effectiveness and proper use of monetary control measures; monetary aspects of business cycles. Mr. CAGAN.

212. *Monetary Institutions and Policy*

An examination of domestic and international monetary institutions and policy. Emphasis is placed upon the institutions and functions of the money market, monetary management by the central bank, and balance of payments adjustments. Mr. CARSON.

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.

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232. *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. *The Corporation and its Regulation*

Social and legal problems of the modern corporation, particularly those arising from financial operations; government regulation of corporate activities. Mr. BOSLAND.

257. *Theory of International Trade*

International specialization under free trade; welfare aspects; factor movements; trade restrictions; growth differentials. Mr. Stein.

261, 262. *Statistical Methods in Economics*

Topics in the theory of statistics and applications to econometrics. Mr. STOLTZ.

263, 264. *Econometrics*

An examination of the mathematical and statistical procedures required for the measurement of economic data and the testing of economic hypotheses. Mr. BRENNAN.

266. *Business Cycle*

Some theories of long-run and short-run fluctuations in prices and aggregate economic activity. The prediction and possible control of business cycles. Mr. CAGAN.

275. *Location of Economic Activity*. Mr. BECKMANN.

276. *Regional Income and Wealth Accounting*

The construction and application of regional income, product and wealth accounts for purposes of analysis and public policy making. Mr. SMITH.

281. *Mathematical Economics I*

The theory of production. Linear programming and its applications. Mr. SCHUPACK.

282. *Mathematical Economics II*

Demand Theory. Analysis of economic equilibriums. Input-output analysis. Models of economic growth. Mr. BECKMANN.

283. *Mathematical Economics III*

Decision making under uncertainty. Game theory. Dynamic programming. Mr. BECKMANN.

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. STEIN and STOLTZ.

295, 296. *Research Methods in Quantitative Economics*. Messrs. BECKMANN and STOLTZ.

Seminar

Required without credit of graduate students in economics. Offered every semester. The STAFF.

Education

Professor SMITH (Chairman); Associate Professors KELLOGG, DUNN, FINGER; Lecturers, Messrs. MACKAY and GLEESON.

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) Psychology 113, Education 104 in the senior year
- (3) Education 111, 112 in the junior year for those interested in elementary education

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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 and 104, Psychology 113, 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 and for students in the Master of Arts in Teaching program. Mr. GLEESON.

104. *Methods of Teaching*¹

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, for students in the Master of Arts in Teaching program. Normally preceded by Psychology 113. 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

¹ Offered also in the Graduate Summer School for Teachers for students in the Master of Arts in Teaching program.

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 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, including those in the Master of Arts in Teaching program. 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

¹ Offered in the Graduate Summer School for Teachers; primarily for undergraduates in the elementary teacher education program.

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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. *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 coordinated with the practice teaching in the schools. Observations, reports, and conferences. Required of graduate students who have been approved for practice teaching and open to students in the Master of Arts in Teaching program. The course, which is offered each semester, 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.

216. *Problems in Education, Thesis Course¹*

Required of candidates for the degree of Master of Arts in Teaching and candidates for the degree of Master of Arts in Education. No course credit for the latter. The STAFF.

217, 218. *Case Studies in Education*

For students prepared for the investigation of major problems in education; critical evaluation of current contributions in this field. Mr. FINGER.

221, 222. *Lecture Series for Teachers*

Ten weekly lectures each semester in subject matter of current interest to

¹ Offered also in the Graduate Summer School for Teachers, for students in the Master of Arts in Teaching program.

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; Teaching Associate, Mrs. PECK; Assistant, Mr. PIERCE.

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. Offered in 1962-63 and in alternate years. 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. Offered in 1963-64 and in alternate years. 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. CAMINOS.

221. *Introduction to Coptic*. Mr. PARKER.

241. *Introduction to Late Egyptian*

Reading of texts in both hieratic and transcription. Mr. CAMINOS.

261. *Introduction to Demotic*. Mr. PARKER.

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281. *Introduction to Old Egyptian*

Reading of texts in both hieroglyphic and hieratic. Mr. CAMINOS.

291, 292. *Reading and Research*

Engineering

Professors ANGULO, BENFORD,^{1,4} (Executive Officer), BLISS, DRUCKER, FINDLEY, GILMAN,⁴ KESTIN, KOLSKY, MAEDER (Chairman),⁴ MYLONAS, ONAT, PRAGER, SYMONDS; Visiting Professors HEAD,² HERSEY, IWASAKI,² ZUCKER; Associate Professors BODNER,³ CHU,³ CLARKE,⁴ DUFFY,⁴ GURLAND, KODIS,³ KORNHAUSER,⁴ LERNER, LOFERSKI, WETZEL; Visiting Associate Professor SAVE; Assistant Professors DOBBINS, HAZELTINE, KARLSSON, RICHARDSON, SUTERA; Assistant Professor (Research) ANDERSON; Visiting Assistant Professor MARTIN; Research Associates, Messrs. BÜYÜKTÜR, CINEMRE, DUNN, HOSOKAWA, KUMAZAWA, ONARAN, SCHAFRANIK, SUMINO, TING, and WHITELOW; Research Assistants, Messrs. AKCOGLU, ANREP, BASE, BLASS, CAPAR, CARLSSON, CARON, C. C. CHEN, H. S. CHEN, CHOW, COHEN, CRONSON, DEMIR, DUDDERAR, GANGOPADYAY, GILLIS, JAFFRIN, KOSLOWSKI, LEE, LIFSCHITZ, C. H. LIU, C. T. LIU, MOK, NONAKA, PAN, PRAGER, SANTOPIETRO, SELAMOGLU, SHEN, TAKAHASHI, TANG, TEMKIN, THEODORAKOPOULOS, TONG, TSANG, UPDIKE, J. WALLACE, JR., J. P. WALLACE, WASSERSTROM, WINOGRAD, WU, T. T. J. YEH, and ZIEN; Assistants, Messrs. FARBER, GOLDMAN, JONES, PALMER, PLOURDE, RADER, ROBINSON, SHU, WANG, and H. C. YEH.

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 cur-

¹ On leave of absence, Semester I, 1962-63.

² Semester I only, 1962-63.

³ On leave of absence, 1962-63.

⁴ Engineering Executive Committee

riculum 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 aerospace, 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 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 sciences, 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) Aerospace, electrical, and mechanical engineering majors are not required to take Engineering 23. Engineering 95 must be elected unless a course in Economics is chosen.

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In addition, each student must complete at least four courses in one of the senior options. Approval of the Division is required to substitute an engineering elective for any one of the four required courses which follow: Aerospace Engineering—119, 187, 190, and 192; Civil Engineering—119, 130, 133, 137; Electrical Engineering—155, 157, 164, 167; Mechanical Engineering—171, 175, 176, 187.

See also Requirements for Degrees in section on General Regulations.

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.

INTEGRATED PROGRAM FOR THE DEGREES OF BACHELOR OF SCIENCE IN ENGINEERING AND MASTER OF SCIENCE. Undergraduates in Engineering with high academic standing may enter an integrated program leading to a Master of Science degree at the end of the academic year following receipt of the Bachelor of Science degree. In the integrated program, the students devote part of their senior year to independent study and research which may culminate in a thesis for the Master of Science degree. They will also normally include in their senior year, courses designated as "Primarily for Graduates," in addition to or in place of certain regular senior

year courses. Such substitutions will be approved subject to restrictions set by the Division.

The basic purposes of the option group curricula will be maintained. The student in the integrated program should achieve an unusually strong academic program for the Master of Science degree in one additional year. Work toward the doctorate, for those so inclined and qualified, would also be facilitated for those in the program.

3-4. *Introduction to Engineering* (including Projective and Descriptive Geometry and Engineering Drawing)

Vector algebra and geometry and elements of vector calculus. Frames of reference, coordinate systems. Vector kinematics of a particle; motion relative to moving coordinate systems. Newton's laws of motion. Three-dimensional vector dynamics of a particle, including motion in uniform gravitational, electrostatic, and magnetostatic fields; principles of work-energy and impulse-momentum; motion in a central force field. Elementary kinematics and dynamics of plane motion of rigid bodies. General vector statics of systems of particles and rigid bodies; equipollence, reduction, and equilibrium of general force systems; the general theorem of virtual work for a system. Problems of two and three-dimensional statics include: simple trusses and frames, force and moment reactions in beams and curved bars, flexible cables. Elements of laboratory technique; errors, precision, accuracy; treatment of data. Projective and descriptive geometry, elements of engineering drawing. Introduction to engineering design. Lectures, recitation, laboratory, and drafting-room work. Messrs. SUTERA, MARTIN, and SYMONDS.

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 motion. Lectures and recitations. Prerequisite: Engineering 3-4; Mathematics 9, 10. Messrs. MAEDER and DUFFY.

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.

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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, recitations, and laboratory. Prerequisite: Mathematics 29; Engineering 7, except with special permission of the Division of Engineering. Mr. ZUCKER.

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. Multiple resonance, circuits involving mutual inductance, the transformer, polyphase circuits, and the elements of synchronous machines and induction motors. Lectures, recitations, and laboratory. Prerequisite: Engineering 7; 38. Mr. WETZEL.

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 treatment of vacuum tube and transistor amplifiers and oscillators. Lectures, recitations, and laboratory. Prerequisite: Engineering 39 or by permission of the instructor. Mr. LOFERSKI.

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. Vector methods and thermodynamic principles are used freely. Kinetic interpretations. Conservation

of mass, momentum, and energy. 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: Engineering 72, Mathematics 29. Mr. KARLSSON.

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. Both time independent and time dependent materials are described and considered in some detail. The time independent group includes linear and non-linear elastic, work hardening, and perfectly plastic solids. The time dependent group includes linear viscous, linear visco-elastic (Maxwell and Voigt) material, and one exhibiting non-linear creep. 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. DRUCKER and DUFFY.

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, buckling of columns, structural vibration, and the basic methods of limit analysis are introduced. Lectures and recitations. Prerequisite: Engineering 7 and 58. Mr. DRUCKER.

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 of a compressible fluid is also studied. Throughout the course, the differ-

ENGINEERING: CIVIL

ence between the microscopic and macroscopic approaches is emphasized, and the statistical presentation is used throughout in an illustrative way. Lectures, recitations, and laboratory. Prerequisite: Engineering 7 or equivalent and a course in Chemistry. Messrs. RICHARDSON and WHITELOW.

82. *Structure and Properties of Solids*

Emphasis on the structure and constitution of solids and their relation to properties. Introduction to the physics of mechanical, magnetic, thermal, and electrical properties. Equilibrium and kinetic phenomena in metals, ceramics, and polymers. Discussion of commercial fabrication and heat-treating processes. Lectures and laboratory. Prerequisite: Engineering 38, 58, 72. Mr. GURLAND.

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. SAVE.

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

ENGINEERING: ELECTRICAL

of elastic and plastic behavior. Prerequisite: Engineering 119 or equivalent. Mr. SAVE.

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. *Water Supply and Waste Water Disposal I*

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. Prerequisite: Engineering 52; 59. Mr. BENFORD.

134. *Water Supply and Waste Water Disposal II*

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 ENGINEERING

155. *Electrical Transmission and Microwave Networks*

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

ENGINEERING: ELECTRICAL

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. Prerequisite: Engineering 39; 157 (may be taken concurrently). Mr. ANGULO.

157. *Electrical Network Theory*

Fourier series, Fourier integral, and Laplace transform and their use in analysis and synthesis of networks, matrices in network theory. Synthesis of reactive two-terminal networks. Four-terminal network theory, equalizers, filter theory, and design. Lectures and laboratory. Prerequisite: Engineering 39. Mr. KORNHAUSER.

160. *Microwave Electronics* (including Physical Electronics)

Electron motions in electric and magnetic fields; relativistic variation of mass; magnetic focussing. Electrons in metals and gases; Fermi-Dirac and Maxwell-Boltzmann distributions. Surface phenomena and emission. Magnetron and klystron operation. Electron accelerators. Electron spin resonance; theory of ferrites. Microwave applications of ferrites. Prerequisite: Engineering 42 and 155. Mr. KORNHAUSER.

164. *Communication Electronics*

Analysis and design of pulse and digital circuits. Application of electronics to the transmission of information. Feedback and wide-band amplifiers. Systems of modulation and demodulation, and their application to practical communication systems. Theory of noise. Prerequisite: Engineering 157 or permission of the instructor. Mr. HAZELTINE.

166. *Servomechanisms and Control Systems*

Introduction to feedback. Laplace-transform; transfer functions and frequency response. Block diagram algebra, multiple inputs. Root-locus analysis. Frequency response methods. Servomechanism equalization. Components. Suppressed carrier modulation; non-linear analysis; statistical analysis. Discussion of wider aspects of automation, data processing, and control. Lectures and laboratory. Prerequisite: Engineering 42 or equivalent. Mr. HAZELTINE.

167. *Dynamics of Rotating Electric Machinery*

Generalized theory of rotating electric machinery derived by methods of classical dynamics. Dynamic theory involves the derivation and tensor formulation of Lagrange's equation of motion in suitable reference frames. Using these equations the equations of all machines are derived from one reference machine by transformation methods. Laboratory work involves

ENGINEERING: MECHANICAL

the verification of predicted performance characteristics using a generalized machine in addition to standard types. Prerequisite: Engineering 39. Mr. HAZELTINE.

168. *Modern Methods of Energy Conversion*

Physical principles underlying direct conversion of heat into electricity via the thermoelectric and thermionic effects. Analysis of the photovoltaic effect and direct conversion of solar energy. Problems associated with the choice of suitable materials and design of devices based on these effects. Advantages, limitations, and potential applications of direct conversion. Prerequisite: Engineering 42 and 82 or equivalent courses in Physics. Mr. LOFERSKI.

MECHANICAL ENGINEERING

170. *Power Plants*

Modern power plants including nuclear power generation. Thermodynamic, economic, and operating problems involved in the design of prime movers and auxiliary equipment. Prerequisite: Engineering 171. Mr. ANDERSON.

171. *Thermodynamics III*

One dimensional flow of a compressible fluid including heat addition, friction, normal and oblique shock waves, and Prandtl-Meyer expansion. Properties of a reacting mixture of gases including the law of mass action with applications to the construction of Mollier diagrams, the calculation of adiabatic flame temperature and the determination of specific impulse of rocket propellants. Heat transfer theory: steady and unsteady conduction, convection in laminar and turbulent boundary layers, physical principles of black body radiation, and radiant heat exchange between solids. Prerequisite: Engineering 52, 71-72, Mathematics 29. Mr. DOBBINS.

175. *Advanced Mechanics of Materials* (including Design of Machine Elements)

Analysis of stress (dynamics of continuous media) and of strain (geometry of deformations). Constitutive relations for various types of substances. Criteria of yield and fracture for general stress states. Exact and approximate solutions for elastic, plastic, and time-dependent materials to be chosen from thick-walled shells, rotating discs, curved beams, torsion of non-circular shafts, contact stresses, bending of plates and shells of revolution. The elements of experimental stress analysis including photoelasticity. Selected topics in kinematics and dynamics of machines, gears, lubrication, brakes, clutches. Design-laboratory. Prerequisite: Engineering 59, 82. Mr. FINDLEY.

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176. *Machine Design* (including Vibrations and Automatic Control)

Design projects (such as a high pressure pump). Principles of design and manufacture of machines. Gear systems, cams, hydraulic, pneumatic, and electric actuators. Vibrations of damped and undamped two-degree-of-freedom systems. Critical speeds of multi-mass shafting, and engines, balancing, vibration dampers, longitudinal vibration of bars, stress, waves, impact. Laplace transforms. Automatic control by open loop systems and feed-back servomechanisms having mechanical, hydraulic, pneumatic, or electrical elements. Absolute and relative stability of automatic machines. Prerequisite: Engineering 175. Mr. FINDLEY.

182. *Design of Engines and Turbines*

The principles of thermodynamics and mechanics applied to internal combustion engines and turbo machinery. The work is selected from studies of cycles, fuels and combustion, injection, carburetion, turbines, fans and compressors, combustion chambers, regenerators, lubrication, and the performance of integrated power plants. Mr. ANDERSON.

187. *Advanced Fluid Mechanics*

Basic theoretical concepts including flow from the kinetic viewpoint, kinematics, dynamics, and energy relations for an inviscid compressible fluid field. Incompressible flow covering thin airfoil theory and finite wing theory. Linearized compressible subsonic flows. One-dimensional unsteady wave motion. Shallow water theory. Steady supersonic flow: wave phenomena, two-dimensional airfoils, and slender body theory. Transonic and hypersonic flows. Elements of the dynamics of viscous flow, and incompressible laminar and turbulent boundary layer theory. Transition and separation. Euler's turbine equation. The one-dimensional theory of flow through turbines and compressors. Forces on blades, torque, reactive forces, thrust. Efficiencies. Flow through cascades and its application to turbines and compressors. Channel flow in presence of magnetic fields. Prerequisite: Engineering 52. Mr. KARLSSON.

AEROSPACE 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

ENGINEERING: AEROSPACE

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. SAVE.

187. *Advanced Fluid Mechanics*

Basic theoretical concepts including flow from the kinetic viewpoint, kinematics, dynamics, and energy relations for an inviscid compressible fluid field. Incompressible flow covering thin airfoil theory and finite wing theory. Linearized compressible subsonic flows. One-dimensional unsteady wave motion. Shallow water theory. Steady supersonic flow: wave phenomena, two-dimensional airfoils and slender body theory. Transonic and hypersonic flows. Elements of the dynamics of viscous flow, and incompressible laminar and turbulent boundary layer theory. Transition and separation. Euler's turbine equation. The one-dimensional theory of flow through turbines and compressors. Forces on blades, torque, reactive forces, thrust. Efficiencies. Flow through cascades and its application to turbines and compressors. Channel flow in presence of magnetic fields. Prerequisite: Engineering 52. Mr. KARLSSON.

190. *Vehicle Propulsion Systems*

The theory and methods of analysis of modern aircraft and space vehicle propulsion systems. Air breathing engines: the turbojet and ramjet with chemical and nuclear energy sources. Rocket engines using chemical fuels: solid and liquid propellant systems. Other reaction devices using thermal energy sources: the nuclear rocket and plasma rocket. Magnetohydrodynamic reaction devices: the electromagnetic plasma engine, the electrostatic or ion engine. Prerequisite: Engineering 72, 187. Mr. DOBBINS.

192. *Aerospace Vehicle Performance and Design*

Performance, design, and construction of aerospace vehicles. Developed by the class is a complete preliminary design of a small vehicle, e.g. an air-launched or rocket-boosted hypersonic target drone. The following topics are studied: estimation of aerodynamic forces, dynamic performance for flat and spherical earth, stability and control, thermal effects, materials of construction, and methods of construction. Lectures, laboratory, and design project. Prerequisite: Engineering 119 and 187. Concurrent: 190. Mr. DOBBINS.

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.

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.

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 resistance filter groups and lattices, ladder developments, partial fraction expansions, and the approximation problem.

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. Mr. HAZELTINE.

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. Mr. ANGULO.

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. ANGULO.

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.

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. Mr. ZUCKER.

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. Mr. HAZELTINE.

221. *Semiconductor and Insulator Materials and Devices*

Survey of the experimental and theoretical bases of the present-day model of semiconductors and insulators with emphasis on those aspects which have been exploited in modern electronic devices made from the materials. The course will include a review of band theory as applied to those materials; a discussion of their electrical and optical properties; intrinsic and extrinsic photoconductivity; the quasi-fermi level, traps and recombination centers; majority and minority carrier lifetimes; space-charge limited currents in insulators, and surface effects. The physical bases for rectification, photovoltaic energy conversion, transistor action, tunneling, parametric amplification, and electroluminescence will be treated. Mr. LOFERSKI.

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.

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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. KOLSKY.

251, 252. *Engineering Mechanics of Solids*

A unified approach for elastic, plastic, and time-dependent materials with emphasis on the physical aspects of the subject. Equilibrium, compatibility, boundary conditions, uniqueness, stability, extremum and minimum principles including energy methods. Application to torsion, bending, plane strain, plane stress and plates. Introduction to more general three-dimensional problems and to dynamic problems. Mr. MYLONAS.

253, 254. *Plasticity*

Mathematical theory of the inelastic behavior of materials. Particular emphasis is given to the analysis of materials without time effect, but topics such as visco-elasticity, creep, and soil consolidation are also considered. Experimental bases of the theories. Applications to problems of metal forming and static and dynamic stress analysis in metals, plastics, and soils. See Applied Mathematics 237, 238. Mr. ONAT.

257. *Thermodynamics of Solids*

Statistical interpretation of entropy together with the first, second, and third laws as a basis for understanding equilibria and structural changes in solids. Phase equilibria, homogeneous and heterogeneous kinetics, solid solutions, defects in crystals, and interfaces will be considered from both the classical and atomic viewpoints. Mr. GURLAND.

258. *Kinetic Processes in Solids*

Thermal vibrations at high and low temperatures. Fick's Laws of atomic diffusion and the atomistic interpretation of diffusivity. Reaction kinetics and nucleation theory. Phase transformations. Electrical and thermal conductivities. Changes of magnetization and electric polarization. Mr. GILMAN.

259. *Internal Structure of Solids*

Symmetry groups. Crystal lattices using reciprocal vectors and lattices. X-ray diffraction theory for structure determination. Fourier analysis of diffuse scattering and its relation to imperfect structure. Principles of crystal chemistry. Imperfections. Interphase equilibrium as it determines microstructure.

261. *Strength of Solids*

Mechanical behavior in solids as interpreted through atomic mechanisms. Cohesive energy and cohesive stress. Anisotropic elasticity. Anelastic relaxation. Crystal plasticity. Dislocation configurations, energies, forces, mobilities. Multiplication and climb of dislocations. Crack nucleation and propagation processes that lead to fracture. Mr. GILMAN.

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.

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.

271, 272. *Essentials of Fluid Mechanics*

Formulation of the basic concepts and equations governing a Newtonian viscous, conducting, compressible fluid. Review of thermodynamics and its extension to the fluid rate process: relaxation and lag concepts. Concepts of kinetic theory. Kinematics of vorticity, and its production, transport, and diffusion; artifices; theorems. Incompressible potential flow theory in three-dimensions: singular solutions, Green's theorem, flow over lifting surfaces and other obstacles. Acoustic waves. Nonlinear wave phenomena,

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including standing waves: supersonic flow. Theory of discontinuities. Method of characteristics. The small disturbance theories of subsonic and supersonic flow, hypersonic flow, and transonic flow. Similitude. Viscous flow and the flow in boundary layers, jets, and wakes. Magnetohydrodynamics: electromagnetic theory, equations of the conducting fluid in a magnetic field, concepts and principal physical effects. Alfvén waves, pumps, generators. Flows undergoing chemical reaction: combustion phenomena. Emphasis is placed on the unity and the physical content of the subject. This course is self-contained; it also serves to introduce more detailed treatments in the subsequent group of courses. Mr. CLARKE.

273. *Dynamics of Compressible Fluids*

Elementary exact solutions. Shock waves. Simple waves and wave interactions in unsteady, one-dimensional gas motions. Gas dynamic discontinuities. Characteristics and wave phenomena in two-dimensional supersonic flow; entropy gradients. Axially symmetric flow. Cone flow and other flows which are self-similar: blast phenomena. The hodograph method. See Applied Mathematics 245.

274. *Linearized Theory of Compressible Flow*

Fundamental concepts and equations. Methods of solution. Thin wings in subsonic and supersonic flow. Flow past slender bodies. Arrangements of wings and bodies. Aerodynamic forces and reverse-flow theorems. Aspects of drag minimization; optimum configurations. See Applied Mathematics 246.

276. *Experimental Methods in Fluid Mechanics*

Selected problems in modern fluid mechanics and their solution by advanced analytical and experimental methods. The close interrelation between theory and experiment is emphasized. Particular attention is paid to unsteady flow problems. Laboratory work may be included in connection with research projects in progress. Among the facilities presently available are: a hypersonic shock tunnel, a transonic-supersonic wind tunnel, subsonic wind tunnel, and an internal flow tunnel. The accompanying instrumentation includes a hot wire anemometer and an analog computer.

277. *Magnetohydrodynamics*

Basic concepts and equations. Structure and general properties of magnetohydrodynamic field. Magnetohydrodynamic waves: propagation of disturbances in perfectly conducting gas; effects of finite conductivity and viscosity; shock waves; pinch and instability phenomena. The subject matter is dealt with entirely from the viewpoint of continuum physics.

Emphasis is placed on illustrating the various effects resulting from the hydromagnetic interaction. See Applied Mathematics 277.

278. *Plasma Dynamics*

Basic mechanism of ionization and recombination. Motion of a charged particle in a magnetic field. The Boltzmann equation. Lorentzian gas. Diffusion, mobility, Hall coefficient and anisotropy. Boltzmann transport equations. Fokker-Plank Equation. Applications of theory to macroscopic motion include: topics in hydromagnetic wave propagation in a plasma, plasma confinement and stability, interaction of electromagnetic waves with plasma. Emphasis is placed on the exposition and understanding of the basic physical processes involved. See Applied Mathematics 278. Mr. WETZEL.

283, 284. *Advanced Thermodynamics*

Carathéodory's axiomatic approach to the fundamental principles of thermodynamics. Application of the First and Second Laws to fluid, solid, and electromagnetic systems. Characteristic functions. Entropy production. Thermodynamic stability. Gibbs relation and chemical thermodynamics. Chemical equilibria. The Third Law. Thermodynamics of irreversible processes. Onsager principle and constitutive equations. Application to multi-component gaseous mixtures. Introduction to statistical thermodynamics. Energy levels. The distribution laws. Application to dilute gases. Gibbs' method.

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. I, Mr. KESTIN; II, Mr. MAEDER.

291, 292. *Special Topics in Engineering*

Devoted to special topics of exceptional current interest which usually are not treated in detail in the general courses.

293, 294. *Special Topics in Engineering II*

297, 298. *Reading and Research*

Work with individual students in connection with reading, problems of research, or preparation for work on theses. The STAFF.

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Special Topics in Engineering

Devoted to special topics of exceptional current interest which usually are not treated in detail in the general courses.

It is expected that graduate courses in Advanced Electromagnetic Theory, Combustion, Hypersonic Flow, Physical Phenomena in Space, Soil Mechanics, Plates and Shells, and Thermo-mechanical Behavior of Solids will be offered in two or three year cycles. Attention is directed to courses in Chemistry, Mathematics, Physics, and Applied Mathematics.

English

Professors DAMON, BRADNER, ANDERSON, KAPSTEIN, KENNY, WAGGONER, BLOOM (Chairman), HONIG, FRANCIS; Associate Professors BROWN, VAN NOSTRAND, PHILBRICK, BLISTEIN, SABOL, SHROEDER, KRAUSE, BARNHILL, CREED, HAWKES; Visiting Associate Professor BERRYMAN; Assistant Professors JONES, GUREWITCH, MARKS, LEWALSKI, HUGHES, SULLIVAN, GARDNER, POLLETTA, TAYLOR, HONAN; Lecturer, Mrs. ONAT; Interdisciplinary Fellow, Mr. ROSENBAUM; Instructors, Messrs. UNUMB, MONTEIRO, QUIRINO, HIRSCH, MACKENZIE, and R. FRANCIS, and Miss RIDER; Teaching Associates, Messrs. BAILEY, R. SWEENEY, CHAPMAN, FREEMAN, KARTIGANER, GARNER, and PETTY; Teaching Assistants, Messrs. SHAWCROSS, LEVINE, SECOR, FRENCH, ALLEN, P. ANDERSON, GRANT, HAMRICK, MORAN, ROSENFELD, McDONNELL, and VON ALLMEN, and Mrs. L. SWEENEY, and Misses JOHNSON, GLADSTONE, JENNETTE, and TAYLOR.

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 begin a concentration in English Expression after the opening of the junior year.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION.

- I. English Literature: Prerequisite—English D15, D16 or an IC course in English; 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, 130, 133, 134, 171, 172, 181, 182, 186, 187 or (with the written consent of the instructor) an appropriate 200-course.

II. American Literature: Prerequisite—English D15, D16 or an IC course in English; A) English 31 and 32 (in that order); B) English 41-42; and C) four semester courses from the following: English 141-142 or 143-144 or 145, 146, or (with the written consent of the instructor) an appropriate 200-course.

III. English Expression: see "Honors in English Expression" on page 178. No. student may be enrolled in this concentration without written permission from Mr. Honig.

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 |

English 191, the thesis course, may be elected with the approval of the Honors Advisor in place of one of the above subjects.

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 or 145, 146; (5) English 191 may be elected for one semester course credit, with the approval of the Honors Advisor.

In addition it is recommended, although not required, that candidates

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should include at least one of the three following courses in English and American literature: English 171, 172, or 187.

HONORS IN ENGLISH EXPRESSION. The program is limited to candidates for Honors in English Expression. Patterns of concentration may be worked out in *either* Composition *or* Speech-Dramatics. No student may be enrolled without written permission from Mr. Honig.

I. Composition: Ten semester courses are required, classified as follows: (1) English 29, 30, 31, and 32 (in that order) *or* any two of these plus two courses specifically concerning prose fiction, poetry, or the drama; (2) English 3, 4; (3) any four of the following courses: English 7, 9, 10, 11, 12, 101-102.

Honors Thesis: a sustained work of imaginative or expository writing, which will be prepared during the seventh and eighth semesters, and which will constitute the work in any one of the following courses: English 9, 10, 11, 12, 101-102. With the consent of the Honors Supervisor for English Expression any one of these courses may be repeated once.

II. Speech-Dramatics: Ten semester courses are required, classified as follows: (1) English 29, 30, 31 and 32 (in that order); English 21; a combination of five semesters based on the four following courses: English 11, 22, 23-24.

Honors Thesis: a sustained work of dramatic writing, prepared during the seventh and eighth semesters, which will constitute the work in English 11 or 23-24. With the consent of the Honors Supervisor for English Expression either of these courses may be repeated once.

ENGLISH AND A MODERN FOREIGN LITERATURE. Programs may be arranged combining the study of English with French, German, Italian, Russian, or Spanish literature. Prerequisite: the same as prerequisites for concentration patterns in the various foreign literatures. Normal program: two semesters of English 29, 30, 31, 32; two basic period courses in the foreign literature; four courses evenly divided between English and the foreign literature; one or two courses in composition and conversation in the foreign language as necessary to provide adequate competence (students already possessing such competence may substitute a course in either literature).

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; 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*

The art of composition. Training in the logic and rhetoric of exposition. Analysis of prose style.

All candidates for the Bachelor's degree must demonstrate the ability to write English proficiently. Certain students will have met the requirement in English by admission with Advanced Placement. Others will be invited to take an examination during Freshman Week. Those who satisfy the English Department that they can meet the standards of the University will have met the requirement. All others will register in English 1-2.

Those students who fail to meet the requirement at entrance will meet the requirement by receiving the grade of *A* or *B* in English 1 or the grade of *C* or better in English 2. A student who receives *D* in English 2 is required to audit English 1 or English 1-2 during the following year and will meet the requirement if the work warrants a grade of *C* or better in English 1 or 2. A student who receives *E* in English 2 is required to repeat English 1 or English 2 and will meet the requirement by achieving a grade of *C* or better in English 1 or 2.

No student will be allowed to register after the fourth semester without having met the requirement or, on recommendation of the Committee on Academic Standing, without having passed a special examination administered by the English Department.

Every student who has met the English requirement must continue to write adequately throughout college. Students whose written work is conspicuously and repeatedly unsatisfactory will be referred to a sub-committee of the Committee on Academic Standing. Mr. TAYLOR 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; *The Rubaiyat of Omar Khayyam*; *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. Mr. TAYLOR.

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

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as reflected in certain historical and philosophical writings. Messrs. SHROEDER, GARDNER, and HIRSCH.

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 *The Rivals* (1775), Gilbert's *Patience* (1881), and Wilde's *Lady Windermere's Fan* (1892). In addition, the course will consider collateral readings from the literatures of other countries; from the different genres, and 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 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?

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.

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 a variety of dramatic works and theories. The basic problem of the course will be to discover if there is a common ground for all tragic drama. Messrs. MONTEIRO and CREED.

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 Stevens'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. Messrs. HUGHES and MACKENZIE.

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's *Letters from an American Farmer* and Henry James's *The American*.

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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 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.

IC 21-22. *The Modern Spirit in American Literature*

All of T. S. Eliot's poems and plays will be read in the first semester, and major novels and short stories of William Faulkner in the second. Working from close reading or explication toward general ideas, the course will attempt to isolate and define the features of these two writers that make their works representative of the artist's sensibility and forms of expression of the first half of the twentieth century in American literature. Students will read some of the more important criticism on the two writers and selected background studies in philosophy, religion, and aesthetics.

IC 23-24. *The Nature of Good and Evil in English Literature of Two Centuries*

A comparison of ideas of good and evil—their relationship, origin, and role in human experience, based on a close reading of Shakespeare's *Othello*, Milton's *Paradise Lost*, Bunyan's *Pilgrim's Progress*, Swift's *Gulliver's Travels*, Pope's *Essay on Man*, and selected writings of William Blake, including *The Songs of Experience*, *The Marriage of Heaven and Hell*, and *The Book of Urizen*.

3, 4. *English Composition*

An intermediate course for specially qualified freshmen and sophomores, and for qualified upperclassmen, to improve their general use of language. Students will be encouraged to work in a variety of expository and narrative forms of writing. Messrs. HUGHES and BERRYMAN, and others.

7. *Principles of Argumentative Writing*

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. POLLETTA.

9, 10. *The Writing of Fiction*

Admission is by consent of the instructor. Candidates are required to submit samples of their work. Limited enrollment. Mr. BERRYMAN.

11. *Play Writing*

Prerequisite: English 3, 4 or written consent of the instructor. Mrs. BROWN.

12. *Verse Writing*

Prerequisite: English 3, 4 or written consent of the instructor. Mr. DAMON.

M13. *Introduction to English and American Literature*

A course designed to introduce students in the Special Master's Degree Program to an appreciative and critical understanding of English and American Literature. Fiction and drama will be studied in conjunction with related works of literary criticism. Messrs. PHILBRICK and ROSENBAUM.

M14. *Introduction to English and American Literature*

A continuation of English M13. Devoted to an intensive examination of all types of poetry in conjunction with related works of literary criticism. Messrs. PHILBRICK and ROSENBAUM.

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. Mrs. LEWALSKI 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. HUGHES 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 poems. It cannot be taken by a student who has taken English D15, D16, and cannot be counted for concentration in English or American Literature. Mr. KAPSTEIN.

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21. *Voice and Diction*

Fundamentals of public speaking: voice, phonetics, and diction. Mrs. BROWN and Messrs. BARNHILL and UNUMB.

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. Messrs. BARNHILL and UNUMB.

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. Mrs. BROWN and Messrs. JONES, BARNHILL, and UNUMB.

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. SABOL and others.

30. *English Literature, 1625-1784*

A study of English literature of the seventeenth century and the Neoclassical Age, with special emphasis on Donne, Milton, Dryden, Swift, Pope, and Johnson. 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. KAPSTEIN 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. PHILBRICK and others.

41-42. *American Literature*

A survey of American literature. Elective for sophomores, juniors, and seniors. Mr. MARKS 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.

101-102. *English Composition, Advanced Course*

A course in the writing of a book-length manuscript. Students will be expected to develop and bring to completion an original work in prose or verse. Admission by written consent of the instructor for a limited number of seniors and graduate students. Candidates are required to submit samples of their work. Mr. KAPSTEIN.

105-106. *Chaucer*

Reading and discussion of Chaucer's works and their background. Elective for juniors, seniors, and graduate students. 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 examine various critical systems and to relate the practice of particular authors to them. Elective for juniors, seniors, and graduate students. Mr. BLOOM.

125-126. *Shakespeare: Selected Plays*

Careful study of a few plays, with special attention to exact interpretation. In 1962-63 the plays studied will be: *King John*, *Twelfth Night*, *Julius Caesar*, *Troilus and Cressida*, *Hamlet*, and *The Winter's Tale*. Elective for juniors, seniors, and graduate students, and for sophomores by written consent of the instructor. The course may be repeated. Mr. SABOL.

130. *Milton: Poetry and Prose*

The scope of this course is the entire range of Milton's literary production, and will culminate in extended and intensive critical study of *Paradise Lost*. Elective for juniors, seniors, and graduate students.

133. *The Eighteenth Century English Novel*

A study of important writers of fiction from 1700 to 1800. Elective for juniors, seniors, and graduate students. Mr. BLOOM.

134. *The Nineteenth Century English Novel*

A study of the important writers of fiction from 1800 to 1900. Elective for juniors, seniors, and graduate students. Mr. BRADNER.

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141-142. *American Prose Fiction*

A study of important writers of fiction. Elective for juniors, seniors, and graduate students. Mr. SHROEDER.

143-144. *American Poetry*

An intensive critical and historical study. I, Edward Taylor to Robert Frost; II, Ezra Pound to the present. Elective for juniors, seniors, and graduate students, and for students in the Master of Arts in Teaching program. Mr. WAGGONER.

145, 146. *Studies in American Writers*

Each semester a single author will be examined in depth, with attention not only to his own writings but also to the best scholarly, critical, and biographical treatments of him. Topics for 1962-63: I, Frost; II, James. Elective for juniors, seniors, and graduate students. Messrs. GARDNER (I) and VAN NOSTRAND (II).

160. *Critical Approaches to Literature*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

161. *Grammatical Analysis and Composition*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

162. *History and Structure of the English Language*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

163. *Selected American Writers*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

164. *Selected British Writers: Chaucer, Spenser, Shakespeare*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

165. *Selected British Writers: Donne, Milton, Bunyan, Dryden*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

166. *Selected British Writers: Swift, Pope, Johnson*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

167. *Selected British Writers: Wordsworth, Coleridge, Byron, Shelley, Keats*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

168. *Selected British Writers: Browning, Tennyson, Arnold*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

169. *Contemporary British and American Writers*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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. Mr. HUGHES.

172. *The Twentieth Century Novel, English and American*

A critical study of the novel since 1918; reading of selected English and American novelists of the present generation. Elective for juniors, seniors, and graduate students. Mr. KAPSTEIN.

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 end of classicism to Pinero and Shaw; the change in the poetic tradition; the naturalistic movement. Elective for juniors, seniors, and graduate students. Mr. UNUMB.

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. Mrs. BROWN.

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191. *Senior Honors Conference in English and American Literature.* The STAFF.

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. Mr. FRANCIS.

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. ANDERSON.

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. Elective for graduate students and for juniors and seniors with the written consent of the instructor. Mr. ANDERSON.

219, 220. *Literary Traditions of the English Renaissance*

The origins and developments of the major literary traditions of English Renaissance poetry and prose. Elective for graduate students and for juniors and seniors with the written consent of the instructor.

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.

233-234. *Studies in Fiction*

Intensive research into and criticism of prose fiction; development of special problems. The course will be offered cyclically as follows: (1) First year—studies in eighteenth-century fiction, with some attention to the origins of the genre. (2) Second year—studies in nineteenth-century fiction. (3) Third year—studies in contemporary fiction. The focus will be on British and American fiction, but appropriate consideration will be given to Continental writing. Students may enroll in any phase of the cycle without an

obligation to take the other phases. Elective for graduate students and for seniors with the 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. LEWALSKI.

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 1784 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 1962-63 the course will be offered in Semester II only. Topic: Shakespearian comedy. Mr. BLISTEIN.

277, 278. *Studies in American Literature: Major American Writers*

One writer will be studied each semester. Topics for 1962-63: I, ELIOT; II, HEMINGWAY. Elective for graduate students and for seniors by written consent of the instructor. Mr. WAGGONER.

279, 280. *Studies in American Literature: Special Problems*

281. *Introduction to the Bibliography of English and American 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, Mr. BRADNER and Mrs. LEWALSKI; Neoclassicism, Messrs. KENNY and BLOOM; Nineteenth and

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Twentieth Centuries, Messrs. ANDERSON and KAPSTEIN; American Literature, Messrs. WAGGONER and SHROEDER. Elective for approved graduate students and at the pleasure of the instructor.

291. *Seminar: Yeats*

Elective for graduate students and for seniors by written consent of the instructor. Mr. POLLETTA.

292. *Seminar: Sixteenth Century Prose*

Elective for graduate students and for seniors by written consent of the instructor. Mr. BRADNER.

293. *Seminar*

No topic offered in 1962-63.

294. *Seminar: Ben Jonson*

Elective for graduate students and for seniors by written consent of the instructor. Mr. SABOL.

295. *Seminar: No topic offered in 1962-63.*

296. *Seminar: Melville*

Elective for graduate students and for seniors by written consent of the instructor. Mr. DAMON.

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.

H1-2. *Shakespeare*. Mr. BLISTEIN.

H3-4. *The Seventeenth Century*

H5-6. *The Eighteenth Century*. Mrs. LEWALSKI.

H7-8. *The Age of Romanticism*. Mr. POLLETTA.

H9-10. *The Victorian Period*. Mr. PHILBRICK.

H11-12. *American Literature*. Mr. GARDNER.

See also course offerings under Comparative Literature and Linguistics.

European Literature in Translation

IC 7-8. *The European Writer and the Non-European World*

The impact upon the European consciousness of the discovery of the lands, races, and cultures of other continents, as revealed in imaginative literature from the Renaissance to the present. Works read will include: Camoëns, *The Lusiads* (1572), selected essays of Montaigne (1580), Chateaubriand, *Atala* (1801) and *René* (1805), Tolstoy, *The Cossacks* (1863), Conrad, *Heart of Darkness* (1899), Hudson, *Green Mansions* (1904), Forster, *A Passage to India* (1924), Lawrence, *The Plumed Serpent* (1925), Dinesen, *Out of Africa* (1938), and Saint-Exupéry, *Wind, Sand and Stars* (1939). Mr. TRUEBLOOD.

OTHER COURSES IN TRANSLATION. The following courses in modern foreign literatures do not require a knowledge of the language concerned: German 29, 30; Italian 161, 162; Russian 29, 30.

French

Professors BROWN, KELLENBERGER (Chairman), SALVAN, GORDON, ECHEVERRIA, HACKETT; Associate Professors SCHNERR, RIDGELY; Assistant Professors DEWART, FIELDS, MAJEWSKI, BAUER, WHITNEY; Instructors, Messrs. BUCHER and GILBERT; Assistants, Messrs. DOUCETTE, FENNER, FRASER, and STEIN, and Misses LALAGUE and TELLA, and Mrs. DONOGHUE.

DISTRIBUTION REQUIREMENT. See pages 72-75.

LANGUAGE REQUIREMENTS. See pages 62, 72, 80-83.

PLACEMENT. See page 62.

CONCENTRATION. Prerequisite: either French D11-D12; any French IC course; French M21-M22; or French 10 plus a two-semester distribution or IC course in another literature. The requirements for concentration are French 101 and 102 plus two of the following: French 19, 51, or 170; plus four additional courses from the following: French 112, 114, 115, 117, 118, 119, 121, 122, 124, 125, 127, 128, Linguistics 156. With the approval of the concentration advisor, a 200-course may be substituted for any course in the last group. Courses numbered 112-119 are largely focussed on the imaginative, aesthetic, critical, and creative aspects of literature, and reach toward the fine arts and music. Those numbered 121-128 are directed

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toward ideological and intellectual aspects, and embrace philosophical, political, scientific, and religious thought as a background for literature. Programs of study may be planned to specialize in one approach or the other, or may combine the two.

INTERDEPARTMENTAL CONCENTRATION AND HONORS PROGRAMS. See pages 66, 79.

HONORS. Candidates for Honors will arrange a program of at least ten courses. They will add to the concentration program French 198 (Honors Thesis) and normally choose five instead of four courses from the final group of concentration courses, or add an Independent Study course. Special readings and reports may be assigned in connection with selected courses.

RELATED COURSES. Students in French 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.

1-2. *Basic French*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; language laboratory one hour weekly; intensive oral drill and supervised reading practice in small sections three 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. MAJEWSKI 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 juniors and seniors (and occasionally to sophomores with written permission of the instructor) 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. WHITNEY and STAFF.

2. *Elementary French II*

Reading of simple French prose. Grammar review, oral practice, language laboratory, written exercises. Four hours per week. Prerequisite: placement.¹ Mr. WHITNEY and STAFF.

¹ See statement on Placement Tests, page 62.

3. *Intermediate French*

Intensive and extensive reading of modern novels and plays. Grammar review, oral practice, language laboratory, 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 or placement.¹ Mr. BUCHER and STAFF.

4. *Intermediate French II*

Readings and discussion of a number of French texts related to a significant aspect of French literature and culture. Training in oral and written expression and in aural and reading comprehension, including one period weekly in the language laboratory. Four hours per week. Prerequisite: French 3 (2 with special permission) or placement.¹ Mr. BAUER 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. In combination with French 101, or 102, satisfies the distribution requirement in literature. May not be taken in addition to any French IC course or D11-D12 or M21-M22. Prerequisite: placement¹ or fulfillment of the language requirement. The 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. Prerequisite: placement¹ or fulfillment of the language requirement. Occasionally, with written permission, this course may be taken concurrently with French 4. Mr. BROWN.

IC 3-4. *The Dialogue Between the Ideal and the Real*

An examination of works from the fifteenth century to the present exemplifying the recurrent dialectic in French literature between idealism and realism. The works to be read include: Voltaire, *Candide*; Villon's poems; Rabelais, Books I-III (selections); Montaigne, selected *Essais*; Molière,

¹ See statement on Placement Tests, page 62.

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Le Misanthrope; Diderot, *Le Neveu de Rameau*; Balzac, *Eugénie Grandet*; Sartre, *Les Séquestrés d'Altona*; Camus, *La Peste*. They describe a conflict between tangible reality with its immediate values and an inherited or revealed ideal which is often fragile and artificial. A dialogue is thus created between the idea and the fact, the spiritual and the material, so that each affirmation finds an immediate contradiction. Each work, far from offering the mere presentation of this universal problem—how to apply the ideals of a personal ethic to life—proposes a constructive solution varying with the social and historical background. The purpose of the course is to examine the various treatments of this theme, the techniques of dialectical discussion, and the artistic form employed, and to discover the solutions proposed. This course will be conducted in French. Prerequisite: placement¹ or fulfillment of the language requirement. Mrs. FIELDS.

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 under Humanities. Prerequisite: placement¹ or fulfillment of the language requirement. Mr. DEWART and STAFF.

19. *Writing and Speaking French I*

Practice in writing and speaking French. Four hours per week: two hours of discussion and analysis; one hour of oral practice; one hour of language laboratory work. Prerequisite: placement¹ or fulfillment of the language requirement. Mrs. FIELDS and STAFF.

M21–M22. *French Literature: A Critical Introduction*

Study and criticism of works which, representing various types of literary expression, illustrate basic literary and human problems with which French writers have been concerned from the Renaissance to the present day. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Conducted in French. Prerequisite: placement¹ or fulfillment of the language requirement. Mr. RIDGELY.

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; one hour of oral practice; one hour of laboratory work. Prerequisite: French 19. Open also, with written permission of the in-

¹ See statement on Placement Tests, page 62.

structor, to students who have completed French D11-D12 or French M21-M22 or any French IC course or French 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 French M21-M22 or any French IC course or French 10. Offered every semester. 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, and other writers. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered every semester. Messrs. ECHEVERRIA and MAJEWSKI.

112. *Poetry of the Renaissance*

Developments in poetic aim, form, and content from 1550 to 1630. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. BROWN.

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 French M21-M22 or any French IC course or French 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: French D11-D12 or French M21-M22 or any French IC course or French 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 French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. HACKETT.

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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 French M21-M22 or any French IC course or French 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. Conducted in French. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. SALVAN.

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 *soities* and *sermons joyeux*, Rabelais, the doctrine of the poets of 1550. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. BROWN.

122. *Montaigne, Descartes, Pascal, and La Bruyère*

The quest for individualism, reason, and faith, as seen in the works of four French *moralistes*. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. KELLENBERGER.

124. *Literature and the Rise of Science*

The study of writers and works representative of the influence of science on literature and the place of scientific material in literature from Ronsard through Voltaire. Prerequisite: French D11-D12 or French M21-M22 or any French IC course or French 10. Offered in alternate years. Mr. RIDGELY.

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 French M21-M22 or any French IC course or French 10. Offered in alternate years. Mrs. FIELDS.

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 French M21-M22 or any French IC course or French 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 French M21-M22 or any French IC course or French 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 1962-63. Le Dix-neuvième siècle. For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. BAUER.

183. *Studies in the French Language*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

186. *Studies in French Literature*

Topic for 1962-63: To be announced. 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. RIDGELY and STAFF.

202. *History of the French Language*

The development of the French language from the *Oaths of Strasbourg* to the modern period. This course should be preceded by General Romance 201. Offered in 1962-63 and in alternate years. Mr. SCHNERR.

203. *Old French Literature*

A study of the *chanson de geste*, the Arthurian romance, lyric poetry, and the drama. Offered in 1962-63 and in alternate years. Mr. GORDON.

211. *Studies in the French Renaissance*

Analysis and study of selected works and of basic trends. An introduction to research materials and scholarly accomplishment in the field of the period. Offered in 1962-63 and in alternate years. Mr. BROWN.

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212. *Seminar in the French Renaissance*

This course normally should be preceded by French 211 or a similar course. Offered in 1963-64. Mr. BROWN.

213. *Studies in French Literature of the Seventeenth Century*

Analysis and study of selected works and of basic trends. An introduction to research materials and scholarly accomplishment in the field of the period. Offered in 1963-64 and in alternate years. Mr. RIDGELY.

214. *Seminar in French Literature of the Seventeenth Century*

Topic for 1962-63: French Tragedy, 1656-1671. This course normally should be preceded by French 213 or a similar course. Mr. KELLENBERGER.

215. *Studies in French Literature of the Eighteenth Century*

Analysis and study of selected works and of basic trends. An introduction to research materials and scholarly accomplishment in the field of the period. Offered in 1962-63 and in alternate years. Mr. ECHEVERRIA.

216. *Seminar in French Literature of the Eighteenth Century*

Topic for 1962-63. Voltaire's work to 1750: the author and his European public. This course normally should be preceded by French 215 or a similar course. Mr. BROWN.

217. *Studies in French Literature of the Nineteenth Century*

Analysis and study of selected works and basic trends. An introduction to research materials and scholarly accomplishment in the field of the period. Offered in I, 1962-63. Mr. HACKETT.

218. *Seminar in French Literature of the Nineteenth Century*

Topic for 1962-63: Arthur Rimbaud. This course normally should be preceded by French 217 or a similar course. Mr. HACKETT.

219. *Studies in French Literature of the Twentieth Century*

Topic for 1962-63: La Littérature engagée. Mr. SALVAN.

220. *Seminar in French Literature of the Twentieth Century*

Topic for 1962-63; André Gide, conscience de son temps. This course normally should be preceded by French 219 or a similar course. Mr. SALVAN.

231. *French Stylistics*

The expression of affective and artistic values in French. A study of stylistic procedures and comparisons with English usage. Offered in 1963-64 and in alternate years. Mr. KELLENBERGER.

261. *Studies in French Literature*

Topic for 1962-63. Le Théâtre contemporain. Mrs. FIELDS.

262. *Seminar in French Literature*291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. Offered every year. The STAFF.

GENERAL ROMANCE

201. *Introduction to Romance Linguistics*

Elements of the historical and comparative grammar of the Romance languages with special attention to the late Latin period. This course should precede French 202. Offered every year. Mr. SCHNERR.

240. *Problems in Romance Linguistics*

Studies in the history of the Romance languages. Offered upon demand. Mr. SCHNERR.

Geology

Professor QUINN¹; Associate Professors ECKELMANN (Chairman), GILETTI; Visiting Associate Professor R. L. MILLER; Assistant Professors LAPORTE, MUTCH, YUND; Instructor, Mr. CHAPPLE²; Teaching Associate, Mr. FEININGER; Assistants, Messrs. ANDERSON, BUYCE, FLEMING, HARAKAL, MCKNIFF, MESOLELLA, SMITH, and THOMPSON.

GENERAL PREREQUISITE. Geology 1, DI, 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 72-75.

CONCENTRATION. In addition to the elementary course (Geology 1, DI, or IC 1-2), the requirements for concentration in geology are: Geology 2 or 24, 41, 45, 102, 11 (or 113), 198, and two of the following: Geology 2, 9, 24, 42 (or 144), advanced courses in related science. The Department should be consulted by those planning a concentration program.

The Department requires at least four semester courses 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.

¹ On leave of absence, Semester I, 1962-63.

² On leave of absence, 1962-63.

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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 students are urged also to take at least a full year of college chemistry, a full year of college physics, and mathematics into calculus. In addition to these, one year of biology is highly recommended for students planning to specialize in paleontology.

D1. *Elementary Physical Geology*

An introductory course concerned with the present geologic state of the earth and the physical-chemical processes active in the earth during geologic time. Major topics for consideration include the atomic structure of common rock forming minerals; genesis of igneous, sedimentary, and metamorphic rocks; 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.

IC 1-2. *Evolution as a Geologic Concept*

The evolution of the earth, continents, and life will be studied as they are revealed by geologic phenomena. Selected readings, including original sources, will illustrate the historical growth of evolutionary ideas regarding the nature and development of the earth and its inhabitants. Recent discoveries and theories will be discussed in the light of these ideas. May not be taken in addition to Geology D1 or 1. Messrs. GILETTI, LAPORTE, and MUTCH.

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. MUTCH.

9. *Methods of 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 on the area. Mr. QUINN.

11. *Paleontology*

Biology, morphology, paleoecology, taxonomy, and evolutionary history of the major groups of fossil animals and plants. Principles of evolution as illustrated by various fossil taxa are stressed. Prerequisite: elementary geology, biology, or botany. Mr. LAPORTE.

24. *Stratigraphy and Sedimentation*

Introduction to processes responsible for formation of sedimentary rocks and investigation of these processes as they are reflected in the stratigraphic record. Classic stratigraphic sequences will be reviewed with emphasis on the general stratigraphic principles illustrated by these sequences. Mr. MUTCH.

41. *Elementary Mineralogy*

A study of the fundamental principles of mineralogy including crystallography and crystal chemistry. Special emphasis on atomic structure and chemical variability of minerals. Laboratory work in crystal morphology and determinative mineralogy of all of the major mineral groups; native elements through silicates. Sequential in subject matter to Geology 1. Prerequisite: Chemistry D1 or D2; Geology 1 or D1 also recommended. Mr. YUND.

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. Mr. FEININGER.

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.

110. *Field Geology*

This course assumes a knowledge of the basic methods of field geology and is designed to develop a higher degree of competence in interpreting field relations. The course provides opportunity to study both simple and complex geological relations of the northern Appalachian area. Prerequisite: Geology 9 or equivalent. Mr. QUINN.

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111. *Biostratigraphy*

The temporal, lithologic, and ecologic relationships of fossil invertebrates. Principles of biostratigraphy, stratigraphic paleontology, and paleoecology are emphasized. Laboratory will consist of a comprehensive review of important invertebrate fossils as well as the study of representative faunal suites arranged by time and by sedimentary environment. Readings from the literature serve as source for discussion. Prerequisite: Geology 11 or equivalent. Mr. LAPORTE.

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.

142. *Genesis of Metallic Ores*

A study of the origin, classification, and distribution of ore deposits. Readings, discussions, and laboratory work. Prerequisite: Geology 1 and 41, or DI and 41. Mr. QUINN.

144. *Intermediate Mineralogy*

X-ray crystallography and the relation of the properties of minerals to their atomic structure and chemistry will be emphasized. Laboratory includes work in optical goniometry and x-ray powder diffraction. Prerequisite: Geology 41 or equivalent. Mr. YUND.

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. Mr. QUINN.

210. *Advanced Invertebrate Paleontology*

Principles of paleobiology, evolution, and taxonomy as elucidated by the study of the literature. Peripheral areas of interest, including problems relating to origin of life, biogeochemistry of invertebrate skeletons, and biometrics, are also considered. Students are expected to lead most of the discussions. Prerequisite: Geology 111 or equivalent, or four semester courses of biology or botany. Mr. LAPORTE.

211, 212. *Research in Geology*

Elective for graduate students, and for undergraduates by written consent of the Department. May be repeated for credit. The STAFF.

216. *Stratigraphic and Tectonic Patterns*

A study of the relationship between stratigraphy and large scale structures. Tectonic classification of sediments and the value of the stratigraphic record in interpreting tectonic evolution will be discussed. Emphasis will be placed on the examination of specific areas, including western United States and the Appalachians. Students will be expected to lead some of the discussions. Prerequisite: Geology 45 and 24. Mr. MUTCH.

217. *Vertebrate Paleontology: History and Biology of the Vertebrate Groups*

An introduction to the evolutionary history of the vertebrate classes and orders as this history has been arrived at from studies of the fossil record. A limited study of the biology of the major groups of living vertebrates is also included. Students will lead most of the discussions. This course will complement Biology/Geology 218 although it may be taken independently. Four hours of attendance. Graduate and advanced undergraduate students admitted with permission of instructors. Offered in 1962-63 and in alternate years. Messrs. KENWORTHY and LAPORTE.

218. *Vertebrate Paleontology: Evolutionary Principles and Problems*

A study of major evolutionary principles based upon vertebrate paleontology. Emphasis will be given to integration and synthesis of the various evolutionary phenomena appearing in vertebrate fossil history. Students will lead most of the discussions. This course will complement Biology/Geology 217, although it may be taken independently. Four hours of attendance. Graduate and advanced undergraduate students admitted with permission of instructors. Offered in 1962-63 and alternate years. Messrs. LAPORTE and KENWORTHY.

223. *Advanced Sedimentation*

A study of properties of sedimentary rocks and the processes responsible for their formation. Origin, transportation, deposition, alteration and lithification of rock-forming materials will be discussed. Prerequisite: Geology 24. Mr. MUTCH.

224. *Stratigraphy*

A study of the stratigraphic succession in certain important and typical areas, particularly in North America. Principles of stratigraphy, including classification, physical correlation, and environmental and tectonic interpretation will be emphasized. Prerequisite: Geology 24. Mr. MUTCH.

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241. *Advanced Mineralogy*

The stability of minerals and mineral assemblages are considered in terms of physical-chemical variables with emphasis on phase equilibria in synthetic systems. Experimental methods and geologic applications are discussed. Prerequisite: permission of the instructor. Mr. YUND.

242. *Mineralogy Seminar*

Discussion and critical evaluation of the mineralogical literature and the current problems and advances in mineralogy. Prerequisite: Geology 241. Mr. YUND.

243. *Petrology of the Igneous Rocks*

A study of the mineralogical and chemical nature of igneous rocks; the crystallization history determined from field, petrographic, and phase-equilibrium studies; and the classification and origin of igneous rocks. Reading of significant contributions to the literature is emphasized. Petrographic studies involve use of the 4-axis universal stage. Prerequisite: Geology 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 poly-metamorphic rocks are considered. Reading of significant contributions to the literature is emphasized. Petrographic studies involve use of the 4-axis universal stage. Prerequisite: Geology 102 or equivalent. Mr. ECKELMANN.

245. *Structural Geology of Igneous and Metamorphic Rocks*

The structural evolution of igneous and metamorphic rocks is considered with emphasis on megascopic structural features. Discussion of linear and platy flow structure patterns and primary fracture patterns in igneous rocks. The nature, origin, and tectonic significance of lineation, cleavage, and schistosity; and the nature and development of tectonite fabrics in metamorphic rocks are considered. Prerequisite: Geology 102 and 45. Mr. ECKELMANN.

246. *Advanced Petrology Seminar*

Subjects considered will be drawn from the fields of igneous and metamorphic geology and will emphasize results of current research in both fields. Mr. ECKELMANN.

248. *Tectonics Seminar*

Study of selected regions illustrating such structural features as strike-slip

faulting, overthrusting, and Basin-and-Range structure. Emphasis will be on the detailed examination of a small number of regions rather than on a broad coverage. Reference to the original literature and maps with critical discussion of alternative interpretations. Mr. CHAPPLE.

250. *Mechanics of Rock Deformation*

Mathematical description of stress and strain; equations of equilibrium; rheological laws. Mechanisms of deformation of single and polycrystals: twinning, translation gliding, recrystallization. Petrofabric studies and experimental deformation. Application to specific geologic examples such as folding and glacier flow. Emphasis will be placed on those laws, methods, and approximate techniques of direct relevance to geologic problems. Prerequisite: knowledge of differential and integral calculus. Mr. CHAPPLE.

251, 252. *Advanced Structural Geology*

Stress and strain; mechanics of continuous media; faulting and fracture. Experimental deformation; single crystal deformation; theory of scale model studies. Examples of typical geologic structures: folds, faults, diapirism, mechanics of igneous intrusion, shallow and deep structures. Orogenic belts, island arcs, structure of mountain ranges, theories of orogeny. Prerequisite: Geology 45. Mr. CHAPPLE.

273, 274. *Geochemistry*

Geologic systems are studied in terms of thermodynamic properties and the phase rule. The distribution of the elements and isotopes is treated so as to illustrate principles of geochemical behavior and to derive a chronology for the earth and the events leading to its formation. Prerequisite: permission of the instructor. Mr. GILETTI.

275, 276. *Geochemistry Seminar*

Discussion of current problems in geochemistry including study of recent publications on cosmic or terrestrial isotopic and element distribution. Theoretical implications will be stressed. Prerequisite: permission of the instructor. Mr. GILETTI.

German

Professors SCHUMANN (Chairman), HOLSKE, TWADDELL; Associate Professor WEIMAR; Assistant Professor LOVE; Instructors, Messrs. CROSSGROVE, HOFFMEISTER, and SAMMONS; Assistants, Miss BABER and Messrs. KAISER, SMITH, and TIMMERMANN.

DISTRIBUTION REQUIREMENT. See pages 72-75.

LANGUAGE REQUIREMENT. See pages 62, 72, 80-83.

PLACEMENT. See page 62.

CONCENTRATION. Prerequisite: German D11 and D12. The requirements for concentration are German 131, 132, 19, and 51 plus four additional courses from the following: German 121, 143, 144, 145, 146, 153, 154, 194, 198, Linguistics 156, and 161.

INTERDEPARTMENTAL CONCENTRATION AND HONORS PROGRAMS. See pages 66, 79.

HONORS. Candidates for Honors will arrange a program which will (a) acquaint them with the main writers and movements in German literature 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 or eighth semester they will prepare a thesis for which they will receive credit.

RELATED COURSES. Students in German 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.

1-2. *Basic German*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; language laboratory one hour weekly; intensive oral drill and supervised reading practice in small sections three 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. TWADDELL 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 (and occasionally to sophomores with written permission of the instructor) 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, language laboratory, and oral practice. Four hours per week. Prerequisite: placement.¹ Mr. CROSS-GROVE.

3. *Intermediate German I*

Reading of modern German prose. Intensive vocabulary expansion, training in reading technique, language laboratory, and oral practice. Four hours per week. Prerequisite: German 2 or placement.¹ No credit if student has credit for German 3S. Mr. SAMMONS 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. Four hours per week. Prerequisite: placement,¹ German 3, or German 3S with a grade of C or better. Mr. SAMMONS and STAFF.

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. Admission by placement¹ or fulfillment of the language requirement. Messrs. LOVE and HOFFMEISTER.

19. *Composition and Conversation*

Practice in writing and speaking German. Four hours per week: two hours

See statement on Placement Tests, page 62.

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of discussion and analysis, one hour language laboratory, one hour of oral practice. Admission by placement¹ or fulfillment of the language requirement. Mr. HOFFMEISTER.

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. The STAFF.

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.

51. *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. Mr. HOFFMEISTER.

121. *Luther to Lessing*

The development of German literature from the end of the Middle Ages to the eighteenth century. Reading of works representative of the Age of Humanism, the Baroque Period, and the Enlightenment. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years.

131. *The Young Goethe; Schiller*

A study of works representing the Storm and Stress movement; Schiller's development to classical maturity. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. HOLSKE.

132. *Goethe (1786-1832)*

A study of the work and thought of the mature Goethe. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. HOLSKE.

143. *Prose of the Nineteenth Century*

A study of representative prose from Romanticism to Naturalism: E. T. A. Hoffmann, Heine, Keller, Meyer, and others. Aesthetic credos and the relations of literature to intellectual and social trends will be examined. 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.

145. *The German Theater from Kleist to Bert Brecht*

A study of progressive trends in the nineteenth and twentieth centuries. Prerequisite: German D11 or D12 or (with written permission of the instructor) German 19. Offered in alternate years. Mr. LOVE.

146. *Poetry of the Nineteenth and Twentieth Centuries*

A study of themes, attitudes, and forms from the Romantics to Gottfried Benn. 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. CROSSGROVE.

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. Mr. TWADDELL.

194. *Undergraduate Seminar*

A careful study of a major topic or writer. Topic for 1962-63: Freedom and Order in 19th-Century Literature. A study of changing conceptions of human personality and of the tension between the idea of freedom and integrative pressures in life and art. Works of Kleist, Heine, Keller, Storm, and others will be examined. Prerequisite: one course in German literature beyond D11, D12. A student may receive credit for this course in successive years. Mr. HOLSKE.

GERMAN

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. HOLSKE and STAFF.

PRIMARYLY FOR GRADUATES

201. *Gothic*

202. *Old High German*

Offered in 1962-63. Mr. TWADDELL.

220. *Old Saxon Heliand and Genesis*

222. *Middle High German Literature*

(1) The national epic; (2) The courtly epic; (3) The courtly lyric; (4) Prose.

227. *Baroque Literature*

(1) Lyric; (2) Drama; (3) Novel.

228. *Literature of the Enlightenment*

Offered in 1962-63. Mr. SCHUMANN.

229. *Sturm und Drang*

231. *Goethe*

(1) Poetry and *Faust*; (2) Dramas; (3) Prose. Topic for 1962-63: *Faust*. Mr. SCHUMANN.

234. *Romanticism*

(1) Theories and chief works; (2) A major writer. Offered in 1962-63. Mr. SCHUMANN.

243. *Literature of the Nineteenth Century*

246. *Modern Literature*

(1) A major figure; (2) A trend. Topic for 1962-63: Hauptmann and Stehr. Mr. WEIMAR.

284. *Lyric Poetry*

Topic for 1962-63: Representative Poets from Barock to Expressionism. Mr. SCHUMANN.

285. *Narrative Prose*

(1) Development of the novel; (2) The Novelle; (3) A major writer.

286. *The Drama*

(1) History of theory, form, style; (2) A major dramatist. Topic for 1962-63: Kaiser, Brecht. Mr. LOVE.

288. *Literary Criticism*290. *Bibliography and Methods*

Offered in 1963-64. Mr. WEIMAR.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

History

Professors HEDGES, WROTH, KIRBY, BRIDENBAUGH,¹ KEENEY, CHURCH; Associate Professors EPSTEIN,² McDONALD,² McLoughlin, ROHR (Chairman), JORAVSKY; Visiting Associate Professor GREENLAW; Assistant Professors BISSON, WRESZIN; Lecturer, Mr. SCHUESSLER; Instructor, Mr. GREENBERG; Assistants, Messrs. STERNSTEIN, TAYLOR, WILLIAMS, and WOHL.

PREREQUISITES. For students in Semesters I-V, History 1, 2, one of the IC courses or Classics D1, D2, or written consent of the instructor is prerequisite for all other courses in the department. Students in Semesters VI-VIII may elect without prerequisite any course in the department above the distribution level with the exception of Honors courses and graduate courses. Any other course in the department (except IC, 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 1, 2 or a History IC course or Classics D1, D2 or by written consent of the instructor.

DISTRIBUTION REQUIREMENT. See pages 72-75. 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.

¹ On leave of absence, Semester I, 1962-63.

² On leave of absence, 1962-63.

HISTORY

CONCENTRATION. The requirements for concentration in history are: History 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 116.

1, 2. *European History since the Middle Ages*

The development of ideas and institutions in Europe since the Middle Ages. Messrs. ROHR, GREENLAW, and BISSEON, and others.

M3, M4. *Western Civilization since the Middle Ages*

A discussion course on topics in the history of western civilization from the middle ages to the present. Reading in broad interpretive works as well as

training in the analysis of documents and monographic studies of particular historical problems. Two conferences a week, each to run for 1½ hours. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Mr. JORAVSKY.

51, 52. *American History since 1763*

A general study 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*

The political, constitutional, intellectual, and social-economic history of Europe from the late Roman Empire to the Renaissance. Mr. BISSON.

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. Mr. BISSON.

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.

115. *Germany since 1848*

A survey of the period with emphasis upon intellectual development.

117, 118. *Europe 1789-1870*

A survey of the political, economic, and cultural development of Europe in the period.

119, 120. *Europe since 1870*

The political and cultural history of Europe during the last ninety years. Mr. ROHR.

HISTORY

131, 132. *Russian History*

The development of Russia from the Kievan period to the present. Mr. JORAVSKY.

141, 142. *English History since 1485*

The political and cultural development of England and Greater Britain in the modern period. Mr. KIRBY.

151. *The History of the American Colonies, 1492-1763*

The origin and development of an American society out of European elements, and the New World environment. Mr. BRIDENBAUGH.

152. *The American Revolution, 1763-1776*

The American Revolution, 1763-1776, the War for Independence, and the beginnings of the new nation to 1789. Mr. BRIDENBAUGH.

155. *Changing Interpretations of American History*

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, 1962, for students in the Master of Arts in Teaching program. Not open to undergraduates.

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.

163. *The Formation of the American Republic, 1783-1801*

The establishment and implementation of early national political and economic institutions; conflicts between states, localities, and economic groups; the emergence of political parties; the decline of aristocracy.

164. *The Decline of Laissez-Faire Capitalism in the United States, 1897 to the Present*

The rationalization of the economic, social, and political order; the growth of big business, big labor, and big government; mass production, mass communication, and the mass man.

167. *The Age of Jackson*

An examination of Jacksonian politics and institutions (1824-1848) with an historical treatment of such topics as constitutional problems, Manifest

Destiny and foreign policy, social reform, slavery, and abolitionism. Mr. WRESZIN.

168. *The Civil War and Reconstruction*

An examination of the political crisis of the Fifties, secession, the Civil War, and Reconstruction (1848-1877) with emphasis on political parties, the causes of the war, institutional and constitutional problems of Reconstruction. Mr. WRESZIN.

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. McLoughlin.

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.

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.

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.

219. *Seminar in Modern European History*

Topics in the History of the Weimar Republic.

HISTORY OF MATHEMATICS

241, 242. *Seminar in English History*

Topics in the history of nineteenth century England. Mr. KIRBY.

251, 252. *Seminar in the History of the American Colonies to 1776.* Mr. BRIDENBAUGH.

262. *Seminar in American History, National Period*

273. *Seminar in the Social and Intellectual History of the United States*

289. *Historiography and Historical Criticism*

Introduction to the history of historical writing; aids to research; and experience in textual criticism. Mr. CHURCH.

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.

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. Offered in 1962-63. 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 the mathematical astronomy of Ptolemy. 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*

Elementary Akkadian. Offered in 1962-63. Mr. SACHS.

Linguistics

Professors TWADDELL (Chairman), FRANCIS; Associate Professors KUCERA, O'CONNOR; Lecturer, Mr. WRENN; and members of associated departments.

HONORS. Candidates for Honors in Linguistics must have some knowledge of Latin or Greek and proficiency in at least one foreign language. The program of studies includes Linguistics 156, 161, and 198 (Honors thesis), plus courses in one or more of the major language families available for study in the University (Indo-European, Chinese, Semitic, Hamitic). Students will study the historical development of one language, normally including one of its older stages.

GENERAL LINGUISTICS

M1-M2. *Introductory Course*

Study of significant documents in the development of the scientific analysis of language. First semester: reading and discussion of selected articles and chapters in one or more of the anthologies. Second semester: individual student reports on research papers in the journals, and projects of analytical description of an aspect of English or some other language. The documents to be examined touch upon the nature of speech, the structure of pronunciation and grammar systems, and types of language structures with examples from a variety of world regions. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Mr. TWADDELL.

156. *Introduction to Linguistics*

The nature, function, and structure of language: sounds, grammar, vocabulary. Methods of analysis and types of structures in various languages. Dialects, stylistic levels. Processes of linguistic change. American English will be used as the basis for discussion and illustration. Elective for juniors and seniors. Mr. FRANCIS.

157. *Modern English Phonology*

A general consideration of the physical properties of the speech act: an introduction to articulatory phonetics. Phonemics, including the nature of the phonemic principle, the definition of phonetic similarity, complementary distribution, free variation, and pattern congruity; discussion of stress, pitch, and juncture; laboratory practice in phonemic transcription

LINGUISTICS

of English. The occurrence of English phonemes, the restrictions upon consonant clustering, and the canonical forms of English morphemes. Offered in 1962-63. Mr. FRANCIS.

158. *Modern English Grammar*

Morphemics and morphology; the morph as minimum meaningful linguistic unit; the grouping of allomorphs into morphemes; English derivational and inflectional paradigms, paradigmatic sets, and form-classes. English syntax: "parts of speech"; phrase-structure; principal kernel sentence patterns and their expansions; optional and obligatory transformations resulting in derived sentences. Offered in 1962-63. Mr. FRANCIS.

159. *The Development of English Grammar from Elizabethan Times to the Present*

The changes that have taken place in English grammar over the last four hundred years, with particular but not exclusive emphasis on the literary language. Changes in morphological patterns, especially of pronouns and strong verbs; the development of verb-phrases and the changing distributions and meanings of auxiliaries; changes in phrase-structure patterns, in the order and position of modifiers, and in the structure of statement, question, and request sentences. Materials used will primarily be mimeographed samples of texts and photostatic reproductions of handwritten and printed materials. Offered in 1963-64. Mr. FRANCIS.

161. *Historical and Comparative Linguistics*

Topic for 1962-63: Introduction to the Indo-European languages. Knowledge of a modern European language (other than English) and some knowledge of Latin or Greek are desirable. Elective for juniors and seniors. Mr. SCHNERR.

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. Messrs. FRANCIS, TWADDELL, and KUCERA.

251, 252. *Seminar in Structural Linguistics*

Topics for 1962-63: I, Comparative syntax. Mr. TWADDELL; II, Digital computers in linguistic research. Mr. KUCERA.

APPLIED LINGUISTICS

181. *Introduction to Linguistics for Foreign Language Teachers*

The analysis and description of language; study of differences between the speech habits and patterns of English and those of other languages. Open

to juniors, seniors, and graduate students, including candidates for the Master of Arts in Teaching degree. Miss O'CONNOR.

182. *Problems in Applied Linguistics*

Open to students in the Master of Arts in Teaching program and, during the academic year, also to juniors, seniors, and graduate students. This course may be repeated for credit when offered on different topics. Topic for 1962-63: The foreign language laboratory in the secondary school. Miss O'CONNOR.

185. *Evaluation and Construction of Specialized Language-Teaching Materials.*

For students in the Master of Applied Linguistics program. Not open to undergraduates. Offered in 1963-64. Miss O'CONNOR.

291. *Special Topics*

Analysis of Cairene Arabic by native speakers. I. Phonology; II. Morphology. Mr. TWADDELL.

CHINESE¹

1-2. *Basic Chinese*

Extensive practice of the pronunciation system and of the basic grammatical patterns. Introduction to the writing system and the beginning of character learning. Lectures two hours weekly; three practice sessions weekly; tape-lab sessions to be arranged. A year course; no credit is given for the first semester alone. Mr. WRENN.

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*

¹ For full description of the courses see departmental statements in this catalogue.

LINGUISTICS

ENGLISH LANGUAGE¹

201, 202. *History of the English Language*

203, 204. *Old English Language and Literature*

205, 206. *Middle English Language and Literature*

FRENCH¹

202. *History of the French Language*

203. *Old French Literature*

231. *French Stylistics*

GENERAL ROMANCE¹

201. *Introduction to Romance Linguistics*

240. *Problems in Romance Linguistics*

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*

220. *Old Saxon Heliand and Genesis*

RELIGIOUS STUDIES¹

151, 152. *Elementary Hebrew*

171. *Hellenistic Greek*

SLAVIC LANGUAGES¹

221. *Introduction to Slavic Linguistics and Old Church Slavonic*

222. *Structure of Modern Russian*

223. *History of the Russian Language*

¹ For full description of the courses see departmental statements in this catalogue.

224. *Introduction to West Slavic Linguistics*

225, 226. *The Structure of Czech*

SPANISH¹

202. *History of the Spanish Language*

203. *Studies in Spanish Literature of the Middle Ages*

Mathematics

Professors ADAMS,² FEDERER, GALE,³ STEWART (Acting Chairman), WERMER; Associate Professors FLEMING,³ FRANKEL, HARRIS, NOMIZU; Visiting Associate Professor MARSTRAND; Assistant Professors ACCOLA, BROWDER, GREENBERG; Instructors, Messrs. CLARK, ITO, KAMBAYASHI, OZEKI, ROSEN, and WARD, and Mrs. LEE; Lecturer, Mr. McKISSICK; Assistants, Messrs. BARRON, DRACHMAN, FRIEDMAN, HAMILTON, HARRIS, HOWARD, PRESKENIS, and STODGHILL, and Miss O'CONNOR.

DISTRIBUTION REQUIREMENT. See pages 72-75.

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 9, 10 or M11-M12 in their freshman year, and for Mathematics 21 or 29, and 52 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 21 or 29, 52, 153, and five approved courses in mathematics or related subjects.

2. *Interdepartmental Concentration in Mathematics and Economics*: Mathematics 9, 10 or M11-M12, and Economics D1 or IC 1-2 as prerequisites; Mathematics 21 or 29, 52, 111 or an approved alternative, 161, and 162, Economics 101, 102, and 192.

¹ For full description of the courses see departmental statements in this catalogue.

² On leave of absence, Semester I, 1962-63.

³ On leave of absence, 1962-63.

MATHEMATICS

3. *Interdepartmental Concentration in Mathematics and Physics*: Mathematics 9, 10, and Physics 3 (or 2) as prerequisites: Mathematics 29, 52, 112, and either 106 or 161, Physics 4 (or 37), 38, and three additional courses chosen from 37, 111, 114, 116, 121, 122, and 125. At least one course in each department must be taken in each semester of the senior year.

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. Students contemplating further work in mathematics should register for 9, 10 or M11-M12, not for D1, D2. Mr. ADAMS and others.

D2. *Analytic Geometry and Calculus*

Inequalities, functions, limits, differentiation of algebraic functions, maxima and minima, related rates, graphing. Students contemplating further work in mathematics should register for 9, 10 or M11-M12, not for D1, D2. Mr. GREENBERG and others.

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 and often recommended

for students intending to concentrate in chemistry, engineering, mathematics, or physics. Mr. ACCOLA and others.

M11-M12. *A Modern Introduction to Analytic Geometry and Calculus*

A course in analytic geometry and calculus designed for students who plan to continue the study of mathematics. Special emphasis will be placed on thorough understanding of fundamental concepts. Registration will be limited to students who have given evidence of mathematical ability. Students contemplating further work in Physics normally take Mathematics 9, 10, not M11-M12. Mr. NOMIZU.

21. *Analytic Geometry and Calculus*

Trigonometric, exponential, and logarithmic functions. Integration, geometrical applications, polar coördinates, Taylor's Theorem. Prerequisite: Mathematics M11-M12. Mr. CLARK.

29. *Calculus*

Linear differential equations with constant coefficients, series, partial differentiation, line integrals. Prerequisite: Mathematics 10. Required in the sophomore year of candidates for the degree of Bachelor of Science. Mr. HARRIS and others.

52. *Linear Algebra*

Vector spaces, linear dependence and independence, bases, linear transformations, determinants, systems of linear equations, inner product spaces. Prerequisite: Mathematics 21 or 10 (with permission of the instructor, 10 may be taken concurrently). Mr. NOMIZU.

106. *Differential Geometry*

Elementary theory of curves and surfaces in three spaces. Prerequisite: Mathematics 29 or 111, and 52. Mr. GREENBERG.

111. *Intermediate Calculus and Differential Equations*

Partial differentiation. Infinite series. First order differential equations and applications, linear differential equations with constant coefficients, systems of simultaneous linear differential equations. May not be taken in addition to Mathematics 29. Prerequisite: Mathematics 21 and 52. Mr. FRANKEL.

112. *Functions of One Variable and Differential Equations*

Basic theorems in differentiation and integration with applications to selected topics in ordinary and partial differential equations. Prerequisite: Mathematics 52 and either 29 or 111. Mr. FRANKEL.

MATHEMATICS

121-122. *Advanced Calculus*

Convergence, continuity, Fourier series, functions of several variables, multiple integrals, line integrals. Prerequisite: Mathematics 22 or 29. Messrs. FEDERER and MARSTRAND.

126. *Elementary Complex Analysis, A*

Cauchy-Riemann differential equations, contour integration, conformal mapping, Dirichlet problem. Required of candidates for the degree of Bachelor of Science in Applied Mathematics; elective for others. Prerequisite: Mathematics 121.

127. *Elementary Complex Analysis, B*

Fourier series and integrals, Laplace transforms and integrals, applications. Required of candidates for the degree of Bachelor of Science in Applied Mathematics; elective for others. Prerequisite: Mathematics 126. Mr. BROWDER.

143, 144. *Developments and Techniques of Modern Mathematics*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. GREENBERG.

153, 154. *Algebra*

Groups, rings, integral domains, fields, and related topics. Mathematics 153 is required of all students concentrating in mathematics. Prerequisite: Mathematics 52. Messrs. ROSEN and WARD.

161. *Introduction to Probability*

Required of students concentrating in mathematics and economics jointly; elective for others. Prerequisite: Mathematics 52 and either 29 or 111 or permission of the instructor. Mr. STEWART.

162. *Mathematical Statistics*

Discrete sample spaces, probability distributions, conditional probability, random variables, and tests of hypotheses. Required of students concentrating in mathematics and economics jointly; elective for others. Prerequisite: Mathematics 161 or permission of the instructor.

197. *Honors Conference*

Collateral reading, individual conferences. The STAFF.

201, 202. *Differential Geometry*

Offered in 1961-62 and alternate years.

MILITARY SCIENCE: NAVAL

205, 206. *Algebraic Geometry*

Offered in 1962-63 and in alternate years. Mr. FEDERER.

221, 222. *Real Function Theory*

Fundamentals of the theory of functions of a real variable. Elective for approved graduate students. Mr. BROWDER.

225, 226. *Complex Function Theory*

Elective for approved graduate students. Mr. ACCOLA.

227, 228. *Advanced Topics in Mathematics*

Devoted to special topics which usually are not treated in a general course in the theory of functions. Topics for 1962-63: Harmonic Analysis. Mr. WERMER; Complex Manifolds. Mr. FRANKEL.

237, 238. *Differential and Integral Equations of Mathematical Physics*. Mr. ITO.

241, 242. *Introduction to Topology*. Mr. HARRIS.

251, 252. *Modern Algebra*

Set theory, groups, fields, linear dependence, linear transformations, and Galois theory. Elective for approved graduate students. Mr. CLARK.

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—Colonel LANTZ, U.S.M.C.; CDR. MASON, U.S.N.; Major KAGAN, U.S.M.C.; LCDR. HALL, U.S.N.; Lt. GREEN, U.S.N.; Lt. EVANS, U.S.N.; Lt.j.g. WOLFE, U.S.N.

AIR FORCE—Lt. Col. GRUNDMANN, U.S.A.F.; Major POTTER, U.S.A.F.; Captain JEPSON, U.S.A.F.

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

MILITARY SCIENCE: NAVAL

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 systems.

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 when commissioned to serve at the pleasure of the President of the United States. At the present time a minimum duty requirement of four years has been established. Further, the student agrees to retain a commission until the sixth anniversary of his first commission. The cost 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 three years, if called. Superior students on graduation may request deferment of active duty for the purpose of graduate study leading to the Master or Doctoral degrees. He must be unmarried and remain so until graduation. He is obligated to take the Naval Science curriculum prescribed for the Regular Students and make one summer cruise of approximately six weeks.

With the approval of academic authorities, any student may be permitted to pursue Naval Science courses for college credits, provided ac-

ceptance 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 NROTC Unit, beginning with Freshmen entering in the Fall of 1958, will be required to take a total of seven Naval Science courses. During their sophomore year, these students are required to take NS201 and any one of the following Psychology courses: D1, IC 1-2, IC 3-4.

CONCENTRATION. Students may not concentrate in Naval Science.

NS101. *Fundamentals of Sea Power*

A study of the Modern Navy, its organization, customs, traditions, and functions in peace and in war. A survey of the early evolution of sea power and its effects on history.

NS102. *The Influence of Sea Power Upon History*

A continuing study of the fundamental influence of sea power on the geopolitical course of world history. In general, Mahan's analysis of Naval History from the beginning of the age of sail to the early 20th century is examined. Special attention is given to the rationale of strategic decision in employment of naval forces and to the position of the U. S. Navy as an instrument of national policy.

NS201. *Naval Weapons*

A study of the application of naval weapons systems to the Navy's traditional mission of supporting national policies by providing a powerful, mobile striking force. The specific areas investigated include the basic problem of weapon delivery, fundamentals of guided missile systems, nuclear weapons, and space technology. The course stresses the weapon system concept, control of these systems, and their tactical and strategic employment.

NS301. *Navigation*

Fundamental principles of terrestrial and celestial navigation. The course includes familiarization with piloting, dead reckoning, and electronic aids to navigation; the history and practice of celestial and inertial navigation.

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.

MILITARY SCIENCE: NAVAL

NS302. *Naval Operations*

An introduction to the theory and problems of the principles of naval operations as experienced by junior naval officers. Especial emphasis is placed on the graphic solution of the relative motion encountered in basic tactics, the importance of effective communications, Rules of the Nautical Road, and weather from an operational point of view.

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 Engineering*

Introduction to Naval machinery and engineering systems. An overview of the basic concepts of mechanics, thermodynamics, hydraulics, statics, electricity, and nuclear physics. All topics are treated in marine applications.

NS401M. *Amphibious Warfare*

A survey of Marine amphibious operations in World War II and Korea culminating in the basic principles of amphibious operations.

NS402. *Naval Leadership*

Fundamental principles and techniques of management, treated as an entity, applicable to various activity such as production, education, government, and marketing. The attribute of Moral Leadership and the effectiveness of personal example are stressed. Case studies are used to demonstrate application of principles in the solution of industrial and personnel problems. The Military Judicial system is briefly outlined. Prerequisite: Psychology D1 or IC 1-2, or IC 3-4.

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 ROTC is to develop in selected college students, through a permanent program of instruction at designated civilian educational institutions, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force.

ORGANIZATION AND STAFF. The United States Air Force details three officers and two enlisted airmen for the staff at Brown University. The senior officer is designated as Professor of Air Science.

INSTRUCTION. As a Department of Brown University and as an agency of the United States Air Force, the Department of Air Science provides a four-year course of instruction in Air Science and leadership for which academic credit is given. The first two years consist of Basic Courses for which one semester course credit is given. The Advanced Course is offered to all physically and mentally qualified students who are interested in receiving further Air Force training after graduation. Full academic credit is given for Advanced Course study.

The Advanced students are required to attend a summer training session at an Air Force Base for four weeks between the junior and senior year. They are paid \$75 a month and are furnished food, housing, medical care, indemnity insurance, and transportation to and from the Air Base.

FLIGHT INSTRUCTION PROGRAM: AFROTC Flight Instruction Program (PL 874, 84th Congress) authorizes qualified Senior Advanced Corps Cadets to receive 36½ hours of flight training. Flight instruction is provided by FAA approved civilian flying school operators and administered by the Federal Aviation Agency (FAA). The entire flying program is provided at no cost to the student.

GENERAL. Advanced students are paid a commuted value of the military subsistence for 609 days (currently \$.90 a day). The United States Air Force also furnishes without charge uniforms, textbooks, and military training equipment.

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

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the pay and allowances of their rank during this course of instruction, in addition to incentive pay.

CONCENTRATION. Students may not concentrate in Air Science.

BASIC COURSES

During the freshman and sophomore years, students enrolled in the AFROTC are required to complete two courses in Air Science: 12 (Semester II) and 21 (Semester III). Each of these courses is taken as a half course in addition to the normal program of four courses. No credit will be allowed for Air Science 12 alone, but upon completion of Air Science 21 the grade for 21 will revert to 12 and the two courses will be treated as the equivalent of one semester course.

In Semester I and Semester IV, any course acceptable for distribution credit or certain advanced courses (upon approval by the Professor of Air Science) will be accepted in lieu of an Air Science course for AFROTC students. A leadership Laboratory is conducted for all students each semester.

12. *Foundations of Aerospace Power* (Freshmen)

An introductory examination of the factors of aerospace power, major ideological conflicts, requirements for military forces in being, responsibilities of citizenship, development and traditions of the military profession, role and attributes of the professional officer in American democracy, organization of the armed forces as factors in the preservation of national security, and the United States Air Force as a major factor in the security of the free world. A half course.

21. *Fundamentals of Aerospace Weapon Systems* (Sophomores)

An introduction to aerospace missiles and aircraft; their propulsions systems; aerospace defense; modern targeting and electronic warfare; high explosive, nuclear, chemical, and biological warheads; and aerospace strategic and tactical organizations and operations with contemporary Air Force weapon systems. Also includes problems, mechanics, and military implications of present and future space operations, and contemporary aerospace military thought. A half course.

ADVANCED COURSES

During the junior and senior years, AFROTC students are required to complete three courses of Air Science: 31, 32, *Air Force Officer Development*, and 42, *Global Relations*. Each of these courses is equivalent to one semester course credit. In addition, Political Science 117, *International Politics*,

must be completed. A leadership Laboratory is conducted for all students each semester.

31, 32. *Air Force Officer Development*

Staff organization and functions, and the skills required for effective staff work, to include oral and written communication and problem solving; basic psychological and sociological principles of leadership and their application to leadership practices and problems; and an introduction to military justice. An average of not less than four classroom hours per week for the full academic year. Offered in alternate years.

42. *Global Relations*

An intensive study of global relations of special concern to the Air Force officer, with emphasis on international relations and geography, and briefing for commissioned service. An average of not less than four classroom hours per week. Offered in alternate years.

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 Training Unit for a four-week period. No course credit.

Music

Professors COOLIDGE (Chairman), DINNEEN; Associate Professors FISCHER, LAURENT, NELSON; Visiting Associate Professor MADEIRA; Assistant Professors WALDBAUER, KUNZEL; Instructor, Mr. WARNER; Assistant, Mr. STEWART.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. In addition to the elementary course (Music DI or IC 1-2), the requirement for concentration in music is: eight semester courses or equivalent, including Music 13, 14; 197, 198; and ordinarily several from 3, 4, 105, and 107. 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, the orchestra, or the concert band 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,

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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.

Honors students must exhibit quality work in the several areas of the comprehensive examinations.

HISTORY AND LITERATURE

DI. *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, WALDBAUER, and WARNER, and STAFF.

IC 1-2. *Opera as Drama*

An inquiry into the concept of opera as drama based on a critical study of important operas from the seventeenth century to the present. Examples of specific operas to be considered are: Monteverdi, *L'Orfeo*; Gluck, *Alceste*; Mozart, *Don Giovanni*; Weber, *Der Freischütz*; Wagner, *Tristan und Isolde*; Verdi, *Otello*; Debussy, *Pelleas et Melisande*; Berg, *Wozzeck*; Walton, *Troilus and Cressida*; Stravinsky, *The Rake's Progress*. There will be collateral study of the libretti and drama related to the operas, and reading assigned in books dealing with aesthetic principles of the Baroque-Rococo, Romantic, and contemporary periods. Students will be required to do research on an opera of their choice and report in a paper of some length. (The subject of the paper may not be one of the operas in the general assignment.) There will be regularly scheduled examinations. If possible there will be a trip to New York or Boston to hear an operatic performance.

The basic premise to be examined is that opera is properly a musical form of drama with its own individual dignity and force. Prerequisite: The ability to read music at least to a modest degree. Each student must be interviewed by the instructor previous to registration. Mr. LAURENT.

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 DI or IC 1-2. Recordings and reading assigned for outside study. Mr. LAURENT.

3. *Instrumental Music in the Seventeenth and Eighteenth Centuries*

The dance suite, sonata da chiesa, fugue, variation forms, overture, concerto grosso, choral prelude. Lectures; recordings and reading assigned for outside study. Prerequisite: Music DI, IC 1-2, or written permission.

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 DI or IC 1-2 or the written consent of the instructor.

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. Prerequisite: Music DI, IC 1-2, or written consent of the instructor.

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 DI or IC 1-2.

71. *Choral Music*

An historic survey of choral literature including a consideration of program building and elementary conducting. Bibliography of choral literature. Prerequisite: Music DI and membership for one year in the Brown or Pembroke Glee Club or the Choir. Elective by written consent of the instructor.

105. *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, Honegger, Walton, Hindemith, Prokofiev, Ives, 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 DI or IC 1-2 or the written consent of the instructor. Mr. COOLIDGE.

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107. *Music in the Renaissance (Circa 1300-1600)*

The development of a central musical language during the fourteenth and fifteenth centuries and its underlying techniques will be studied through the secular and sacred music of the leading masters. In the vocal, choral, and instrumental music of the sixteenth century the breaking up of the central language, the resulting emergence of regional styles, and the differentiation of the repertory according to performing media will be traced. Prerequisite: Music D1 or written consent of the instructor. Mr. WALDBAUER.

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.

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. Prerequisite: Music D1, IC 1-2, or written consent of the instructor. The STAFF.

140. *Choral Music*

An historic survey of choral literature. Analysis of important choral works. Choral techniques and program building. For students in the Master of Arts in Teaching program. Not open to undergraduates.

141. *Oratorio and Symphony in the Classic and Romantic Eras*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

142. *Music in the Twentieth Century*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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, LAURENT, WALDBAUER, KUNZEL, and WARNER.

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. COOLIDGE, DINNEEN, WALDBAUER, and WARNER.

291, 292. *Reading and Research*

Special topics in European or American music. Messrs. COOLIDGE, DINNEEN, LAURENT, and WALDBAUER.

THEORY

12. *The Theory of Music*

Studies in elementary harmony, counterpoint, form, and analysis, with written and keyboard exercises, and ear training. This is a one-semester course for non-music majors. Elective by written consent of the instructor. Mr. KUNZEL.

13. *Modal Counterpoint and Elementary Harmony*¹

Studies of monody from the Middle Ages and contrapuntal techniques in the style of sixteenth century composition. This course will also introduce students to the harmonic practice of eighteenth century composition by means of analysis, written and keyboard exercises, and ear training. Elective by written consent of the instructor. Messrs. NELSON and KUNZEL.

14. *Intermediate Harmony*¹

A continuation of harmonic studies introduced in Music 13. Prerequisite: Music 13 or written consent of the instructor. Mr. NELSON.

15. *Advanced Harmony*

Studies in the harmonic practice, form, and analysis of nineteenth and twentieth century composition. Elective by written consent of the instructor. Prerequisite: Music 13, 14. Mr. KUNZEL.

16. *Seminar in 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 this course prior to their seventh semester or establish proficiency by passing an examination drawn up by the Department.

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117. *Tonal Counterpoint*

Contrapuntal techniques in the style of eighteenth century composition. Analysis and written exercises in canon, two-part inventions, fugal exposition, and chorale preludes. Elective by written consent of the instructor. Prerequisite: Music 13, 14. 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 238 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. FISCHER and STAFF.

53-54. *Instruction in Vocal or Instrumental Music; or Instrumental Ensemble Music* (second year)^{1,2}

Half-course each semester. Elective by written consent of the chairman of the Department. Mr. FISCHER and STAFF.

155-156. *Advanced Instruction in Vocal or Instrumental Music*^{1,2}

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 academic 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

¹ Permanent credit for concentrations in Music only when Music 13, 14 is completed or proficiency in Theory is established by passing an examination given by the Department. For non-concentrators, permanent credit only when Music 12 is completed or proficiency 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.

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)^{1,2}

Half-course each semester. Elective by written consent of the chairman of the Department. The STAFF.

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 several out-of-town games. 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 Brown University Glee Club. Mr. KUNZEL, Director.

The Glee Club presents both campus and out-of-town concerts and features a concert tour during the Spring recess. The Club combines with the Pembroke Glee Club to constitute the Brown University Chorus, performing major choral works with the University Orchestra and the Rhode Island Philharmonic Orchestra. Membership is open to sophomores, juniors, seniors, and graduate students who satisfy an audition requirement. All applicants must have participated in the Canticum Glee Club for one year. Auditions are scheduled during the registration period. Two or more rehearsals are held each week.

The Brown Canticum Glee Club. Mr. KUNZEL, Director.

The Canticum Glee Club has an organization similar to that of the Brown Glee Club. Membership is open to freshmen and other students who satisfy an audition requirement. Auditions are scheduled during the registration period. Two rehearsals are held each week.

¹ Permanent credit for concentrators in Music only when Music 13, 14 is completed or proficiency in Theory is established by passing an examination given by the Department. For non-concentrators permanent credit only when Music 12 is completed or proficiency 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.

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The Pembroke College Glee Club. Mr. KUNZEL, Director.

The Glee Club appears in concerts with prominent Eastern men's college glee clubs and combines with the Brown Glee Club to constitute the Brown University Chorus, performing major works with the University Orchestra and the Rhode Island Philharmonic Orchestra. Membership is open to sophomores, juniors, seniors, and graduate students who satisfy an audition requirement. Auditions are scheduled during the registration period. Two rehearsals are held each week.

Convocation Music. Mr. DINNEEN, Director.

A convocation choir of 80 voices from both Brown and Pembroke rehearses twice weekly in the afternoon period at the call of the Director. This group sings a wide variety of choral literature, both sacred and secular, at regular and special University Convocations.

Manning Chapel Choir. Mr. GRANT, Director.

This choir of ten voices rehearses Monday afternoons and sings daily Monday through Friday at morning services in Manning Chapel as well as for special events arranged by the Chaplain of the University.

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), TAYLOR,¹ TOMAS, LADD; Visiting Professor HINTIKKA; Associate Professors LENZ, SALMON;² Assistant Professors BENNETT, SCHMITT; Instructor, Mr. HEIDELBERGER; Assistants, Messrs. BAKER, DYKE, GROVER, and JEWELL, and Mesdames BAKER and ROSEN.

DISTRIBUTION REQUIREMENT. See pages 72-75.

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, M1, M2, and IC 1-2 do not count toward concentration.

HONORS. The following courses are required: Philosophy 55, 58, 101, 102,

¹ On leave of absence, Semester II, 1962-63.

² On leave of absence, 1962-63.

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.

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. LENZ, HEIDELBERGER, and TOMAS.

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. LENZ, HEIDELBERGER, and TOMAS.

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 Descartes' *Meditations* 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. TAYLOR, LADD, HEIDELBERGER, BENNETT, and SCHMITT.

M1. *The Basic Problems of Philosophy*

The fundamental problems of ethics, political philosophy, and aesthetics, with emphasis upon: the meaning and validity of moral and aesthetic judg-

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ments; moral responsibilities; punishment; and the problem of free-will. Lectures and conferences. To be followed by M2. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor.

M2. *The Basic Problems of Philosophy*

The relations between knowledge, belief, and faith; the logic of scientific investigation and confirmation; and the problem of the relation between mind and body. Lectures and conferences. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Prerequisite: Philosophy M1.

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. *Social 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. LADD.

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. BENNETT.

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. Elective for sophomores, juniors, and seniors; also for students in the Master of Arts in Teaching program. 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.

163. *Symbolic Logic*

Truth functions, quantification theory with identity, axiomatic systems, introduction to set theory. Prerequisite: Philosophy 55 or Mathematics D1 or consent of the instructor. Mr. HINTIKKA.

164. *Ethical Theory*

The analysis of moral judgments, the possibility and nature of moral knowledge, moral sentiments and the logic of moral reasoning, with special attention to contemporary ethical theories. Mr. LADD.

166. *Metaphysics*

Problems of mind and matter, the self, causation, and time. Mr. TAYLOR.

169. *Philosophy of Science*

Analysis of the methodology of the empirical sciences and 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. Mr. SALMON.

175. *Theory of Knowledge*

Problems of evidence, appearance, perception, and intentionality. Prerequisite: Philosophy 55 or 163. Mr. CHISHOLM.

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

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to the present time. Prerequisite: Philosophy 101, 102 or their equivalent. Elective for juniors and seniors. Mr. SCHMITT.

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. BENNETT.

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 II, 1962-63: Kant. Mr. LADD.

203, 204. *Seminar*

Topic for I, 1962-63: The Concept of Evidence. Mr. CHISHOLM.

205, 206. *Seminar*

Topic for I, 1962-63: Some Assumptions of Plato and Aristotle. Mr. HINTIKKA; Topic for II, 1962-63: Some Existentialist Philosophers. Mr. SCHMITT.

207, 208. *Seminar*

Topic for I, 1962-63: Intention and Practical Knowledge. Mr. BENNETT; Topic for II, 1962-63: Descartes. Mr. TOMAS.

209. *Seminar*

Topic for I, 1962-63: The Logic of Ethics. Mr. LENZ.

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. Offered every semester. The STAFF.

Physics

Professors BEYER, BRAY, COOPER, FARNSWORTH, FELDMAN,¹ KOLSKY, LINDSAY, MORSE, PECK, TRUELL, WILLIAMS (Chairman); Visiting Professor SHIMAOKA; Associate Professors DILLON,² ELBAUM, SHAPIRO, WESTERVELT; Visiting Associate Professor BALTENSPERGER; Assistant Professors HOOPER, FRANKLIN, LANOU, MAXSON, SEIDEL, SNYDER; Assistant Professors (Research) LUBKIN, WIDGOFF; Visiting Lecturer, Mr. PREIST; Research Associates, Messrs. BOGGIO, BULOS, ISLAM, LOVE, SUZUKI, and UL HAQUE; Technical Assistant, Mr. LUBRANO; Associate in Research, Miss BREWER; Research Assistants, Messrs. ANDO, ARRINGTON, BERMAN, BISHOP, BUCKLER, CHIARODO, COPPENS, CROUCH, FESSENDEN, GREENBLATT, GREENE, GRISCOM, HOCH, HOLMES, INGENITO, KAPLAN, KIM, D. KLINE, H. KLINE, KOOTSEY, KORONAIOS, LAMBERT, LAW, H. Y. LEE, R. N. LEE, S. LEE, LETCHER, LINEKIN, LIPTON, MARSH, MASSIMO, MOCK, OMAN, PARK, PIFER, RHEE, RING, SMITH, STÖLAN, TAYLOR, M. T. THOMAS, R. L. THOMAS, WAGNER, WAI-YIN, and YUN; Assistants, Messrs. BLINICK, BRANDENBERGER, COOPERSTOCK, HARGRAVES, KENDALL, MASCALL, METCALF, SCHEMP, WILLIAMSON, and WOOD, and Miss LEVINE.

DISTRIBUTION REQUIREMENTS. See pages 72-75.

CONCENTRATION. The minimum requirements for concentration in physics for the Bachelor of Arts degree are Physics 3, 4, 37, 40, 120, 131, 132, another 100-level course in Physics or Mathematics 29 or 111. The following is also acceptable: 2, 37, 40, 120, 131, 132, either 115, or 118, and Mathematics 29 or 111.

¹ On leave of absence, 1962-63.

² On leave of absence. Semester II, 1962-63.

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The Joint Concentration in Mathematics and Physics is described on page 78. 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.

Requirements for the degree of Bachelor of Science in Physics are given in the section "Requirements for Degrees," page 82.

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 to 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. Messrs. DILLON and MORSE.

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. BEYER.

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 in Mathematics and Physics. Mr. BRAY.

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. SNYDER.

40. *Electricity and Magnetism*

Electric and magnetic fields. Motion of charged particles in fields. Electric and magnetic properties of matter. Direct and alternating currents. Maxwell's equations. Laboratory work is provided, with emphasis on circuits. Six hours of attendance. Prerequisite: Physics 4 and Mathematics 9, 10, or approved equivalents. Mr. MAXSON.

60. *Wave and Quantum Physics A*

Fundamentals of wave physics. Elements of optics. Kinetic theory; origin of quantum theory; structure and spectra of atoms. Molecules and solids. Laboratory work is provided. Six hours of attendance. Primarily for engineering students at the fourth-semester level, but open to others with these prerequisites: Physics 4 and Mathematics 29, or approved equivalents. Mr. HOOPER.

107. *Structure of Matter*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

108. *Electricity and Electronics*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

109. *Atomic Physics*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

115. *Thermodynamics and Statistical Mechanics*

The laws of thermodynamics and of heat transfer. Atomic interpretation in terms of kinetic theory and elementary statistical mechanics. Applications to physical problems—in particular, properties of solids. Prerequisite: Physics 37 and Mathematics 29, or approved equivalents. Mr. BEYER.

116. *Introduction to Nuclear Physics*

Survey of nuclear phenomena; origin, properties, and effects of nuclear radiations; artificial transmutation of the elements; nuclear binding forces;

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energy levels; cosmic rays; nuclear biophysics. Laboratory work will be provided. Five hours of attendance. Prerequisite: Physics 111 or equivalent with permission of the instructor. Mr. BUROS.

118. *Optics and Wave Theory*

Elements of applied optics; analogous topics in ion optics. Propagation, interference, diffraction, absorption, and polarization of waves, with particular reference to light and acoustics. The wave properties of matter; Schrödinger's equation. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 37 and 40 and Mathematics 29, or approved equivalents.

120. *Wave and Quantum Physics B*

Development of quantum mechanics from earlier theories of quantum effects and atomic structure. Applications to theory of atoms, molecules, and solids. Nuclear and particle physics. Laboratory work is provided. Six hours of attendance. Primarily for engineering students at the eighth-semester level, but open to others with these prerequisites: Physics 40 or 60 and Mathematics 29, or approved equivalents. Mr. SNYDER.

131, 132. *Theoretical Physics A, B*

A unified treatment of classical mechanics and electromagnetism, introducing vector and tensor concepts and various mathematical methods. (A) Dynamics of particles, rigid bodies, and elastic continua. Normal modes. Lagrangian and Hamiltonian formulations. (B) Maxwell's laws and electromagnetic theory. Electromagnetic waves and radiation. Special relativity. Prerequisite: Physics 40 and Mathematics 29 or 111, or approved equivalents. Mr. LANOU.

141, 142. *Modern Physics A, B*

A unified treatment of quanta, photons, electrons, atoms, molecules, matter, nuclei, and particles. Quantum mechanics will be developed at the start and used to link and explain both the older and the newer experimental phenomena of modern physics. Laboratory work is provided. Six hours of attendance. Prerequisite: Physics 118, 131, 132, or approved equivalents. Prerequisite or corequisite: Physics 115.

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 the department. Mr. WESTERVELT and STAFF.

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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*

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; Associate Professors CORNWELL (Chairman), PERKINS, GOODMAN,¹ WILLIAMS;¹ Visiting Associate Professor ROWE; Assistant Professors RINTALA, MAGRATH, ESSIEN-UDOM; Instructors, Messrs. HARGROVE and CH'EN.

GENERAL PREREQUISITE. Political Science DI or IC 1, 2 or IC 3, 4 or IC 5, 6 or MI, M2 is prerequisite to all other courses in political science, ex-

¹ On leave of absence, 1962-63.

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cept where other provision is made in the course statement, or by written consent of the instructor.

DISTRIBUTION REQUIREMENT. See pages 72-75.

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 D1 or IC 1, 2 or IC 3, 4 or IC 5, 6 or M1, M2) 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.

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.

D1. *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 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, CH'EN, and ESSIEN-UDOM.

IC 3, 4. *The Idea of World Peace*

A critical study of the main ideas associated with the search for world peace from antiquity to the present. The classics studied will be the writings of theorists such as Thucydides, Cicero, Grotius, the Abbe de St. Pierre, Rousseau, and Kant. Assessment of the League of Nations, United Nations, and various plans for regional and world government. Mr. ROWE.

IC 5, 6. *Human Nature and Politics*

An analysis of the relationship between democratic and totalitarian conceptions of human nature and democratic and totalitarian political thought and action. The theme of the course will be provided by the conflicting

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interpretations of human nature in Fyodor Dostoevsky's *Legend of the Grand Inquisitor*. The goal of the course will be an understanding of the fundamental elements of democracy and of totalitarianism. Mr. RINTALA.

MI, M2. *Political Thought and Institutions*

An examination of the inter-relations of political thought and institutions in selected modern liberal and totalitarian systems. Open to freshmen in the Special Master's Degree Program and others by written permission of the instructor. Mr. HARGROVE.

101. *World Communism*

Open to students who have taken Political Science 106 or History 132 or the equivalent. A study of the impact of Soviet society and Communist theory on the world outside the Soviet Union. Mr. ROWE.

103. *Problems of American 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. ROWE.

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.

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. *Chinese Government and Politics*

Political ideas and institutions in China during dynastic, republican, and communist times. Mr. CH'EN.

114. *Japanese and Southeast Asian Politics*

An investigation of Japanese political development and a study of the contending forces of imperialism and nationalism in Burma, Thailand,

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Malaya, Indonesia, the Philippines, and the Indo-Chinese states. Mr. CH'EN.

115. *American Constitutional Law*

A study of the operation of the Supreme Court. Historical survey from 1789 to 1940 with emphasis on leading opinions, judicial personalities, and relationships between the Court and political events in the national arena. Mr. MAGRATH.

116. *American Constitutional Law*

The study of the modern Supreme Court's attempt to find constitutional solutions to the controversies over free speech, Church-State relations, fair trials, and civil rights. Mr. MAGRATH.

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.

119. *Contemporary Africa and Its Background*

Utilizing the comparative approach, this course examines the evolution of political institutions in Sub-Saharan Africa. Such topics as these will be analyzed: indigenous political systems, colonial policies and governments, rise of nationalism, independence and nation-building, patterns of cooperation and conflict among African states, and the foreign policies of these states. Selected territories will be studied intensely so as to emphasize problems which are unique and common to this region. Mr. ESSIEN-UDOM.

120. *Problems of International Policy*

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. Open to seniors who have taken or are taking Political Science 117, History 120, and Economics 154, and to graduate students with the permission of the instructor. Mr. PERKINS.

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121. *Parliamentary Governments of Continental Europe*

Comparative analysis of political thought, action, and organization in France, Germany, Sweden, and Switzerland. Mr. RINTALA.

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.

123. *Parliamentary Democracy in Britain and the Commonwealth*

Comparative analysis of political thought, action, and organization in the United Kingdom, Canada, Australia, New Zealand, and the Union of South Africa. Mr. RINTALA.

124. *American Political Theory*

A study of the development of American political thought from the colonial period to the present. Mr. DODGE.

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 1962-63. Latin America in United States Foreign Relations. Mr. PERKINS.

203. *Modern Political Thought*

Topic for 1962-63. Jean Jacques Rousseau. Mr. DODGE.

205. *American Politics and Administration*

Topic for 1962-63. The Presidency since 1945. Mr. CORNWELL.

206. *The American Supreme Court*

Topic for 1962-63: Studies in Judicial Biography. Mr. MAGRATH.

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207. *Imperialism and Nationalism*. Mr. WILLIAMS.

208. *Problems of Soviet Government*. Mr. ROWE.

209, 210. *Reading and Research*

Work with individual students in connection with special reading, research problems, or preparation of theses. Offered every year. The STAFF.

Psychology

Professors SCHLOSBERG (Chairman), PFAFFMANN, RIGGS; Associate Professors BLOUGH, CHURCH, CLAYTON,¹ DAVIDS, ENGEN, KLING, LIPSITT, PIERREL, SCHRIER; Assistant Professors BARTOSHUK, LEVIN, MILLWARD, OAKLEY, WEISBERG; Lecturer, Mr. BOSQUET; Administrative Assistant, Mrs. FOWLER; Research Associate, Mr. FISHER; Teaching Assistants, Messrs. ANDERSON, BURKHARDT, CAMP, HEGGE, McCUTCHEON, REBER, and WALKER, and Mrs. DEVLIEG, and Misses KENT and WU; Research Assistants, Messrs. CARNATHAN, DECKER, MATHEWS, RAYMOND, SADOWSKY, SEKULER, and SNELL, and Miss SCHICK; Trainees, Messrs. KAYE and MARUM and Mrs. LEVENTHAL.

PREREQUISITE. One of the following courses is prerequisite to all other courses in the department: Psychology D1, IC 1-2, or IC 3-4, or M1-M2.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. In addition to the elementary courses (Psychology D1, or IC 1-2, or IC 3-4, or M1-M2), the requirements for concentration in psychology are: 101, 102 or 106, 103 or 105, 104, 107, 198, and two optional courses numbered 81 or higher. 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 77.

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 theses 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.

¹ On leave of absence, 1962-63.

Course Requirements. Honors candidates will take the basic concentration courses (Psychology 101, 102 or 106, 103 or 105, 104, 107, 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.

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 Sciences. Messrs. KLING and SCHLOSBERG.

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. Class and discussion meetings, laboratory experiments, and demonstrations. Messrs. BLOUGH, CHURCH, LIPSITT, MILLWARD, and SCHRIER, and Miss PIERREL.

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. Messrs. BARTOSHUK and ENGEN.

M1-M2. *Issues in Experimental Psychology*

This course introduces the student to Psychology as an experimental science through intensive study of several specific, significant problems currently under investigation. The problems are drawn from the areas of instinctive behavior, learning, perception, and motivation. Students read

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original experimental and theoretical material; discussion stresses the development of each problem area as new ideas are advanced and new data brought forward. Laboratory experiments in each area supplement the reading and discussion. Messrs. BLOUGH and FISHER.

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. SCHRIER.

81. *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.

101. *Statistical Methods in Psychology*

An introduction to the principles and techniques of statistical analysis. Topics include the treatment of data, experimental design, sampling, and testing experimental hypothesis. Mr. SCHRIER.

102. *Physiological Psychology*

The neural and endocrine foundations of behavior. Topics to be covered: mechanisms of response, unlearned behavior, physiological drives and appetites, emotion, neural mechanisms of learning and reinforcement, brain functions in perception, intelligence, and language. Prerequisite: Biology DI and Physics DI. Mr. OAKLEY.

103. *Methods in Child Psychology*

A study of research methods in child psychology. The history of and current trends in child development. Laboratory periods permit observations of infants and young children under both natural and experimental conditions. Prerequisite: Psychology 101. Mr. LIPSITT.

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. Prerequisite: Psychology 101. Mr. KLING.

106. *Experimental Psychology: Receptive Processes*

An experimental study of vision, audition, touch, taste, smell, and perception. Prerequisite: Psychology 101. Mr. RIGGS.

107. *Normal and Abnormal Personality*

A survey of such topics as conflict, anxiety, social reinforcement, and aggression will be followed by a discussion of recent trends in the field of psychopathology. Open to juniors and seniors with a previous course in psychology. Mr. LEVIN.

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.

113. *Educational Psychology*¹

The application of psychology to education. Special attention will be given to the topics of learning and educational measurement. Prerequisite: Open to juniors and seniors who have taken a course in psychology previously. Mr. LEVIN.

134. *Studies in Personality*

An intensive study of one or two selected topics. Class meetings will be conducted on a seminar basis and students will be encouraged to carry out independent projects. Prerequisite: Open to seniors concentrating in psychology who have the permission of the instructor. Mr. LEVIN.

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

¹ Offered also in the Graduate Summer School for Teachers, 1962, for students in the Master of Arts in Teaching program. Miss Dunn.

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interpersonal relations of emotionally disturbed children. This course will utilize the case method in local institutions. Prerequisite: Psychology 81 or 107, and written permission of the instructor. 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. Messrs. KLING and RIGGS.

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 and non-parametric statistics. Prerequisite: Psychology 101 or the equivalent. Offered every year. Mr. CHURCH.

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 every year. Mr. MILLWARD.

203. *Research in Experimental Psychology*

Elective by written consent of the instructor. Offered every semester. The STAFF.

204. *Experimental Child Psychology*

A study of learning and motivational processes of children. Methodological and theoretical considerations in the design and execution of psychological research with children. Offered in alternate years. Mr. LIPSITT.

205. *Teaching Practicum in Psychology*

Each student will be assigned to one or two laboratory sessions, with increasing responsibility for supervising the laboratory work, giving lectures under supervision, and for grading reports. This course is repeated with progression from the elementary course to more advanced courses. Offered every semester. The STAFF.

206. *Systematic Psychology*

A detailed consideration of theoretical and historical problems.

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 vision, 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. Normally offered every year. Messrs. OAKLEY and RIGGS.

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. Offered every year. Mr. ENGEN.

214. *Conditional Reflexes*

Offered in alternate years. Mr. SCHLOSBERG.

229. *Neural Foundations of Behavior*

A seminar devoted to the intensive study of selected problems in physiological psychology, with emphasis on the neurophysiological mechanisms underlying behavior. Offered in alternate years.

231. *Introduction to Learning*

A survey of the basic theories and principles of learning. Offered every year. Mr. MILLWARD.

232. *Seminar in Learning*

Offered every semester. May be repeated for credit. Topics for 1962-63: I,

RELIGIOUS STUDIES

Generalization and Discrimination. Mr. BLOUGH; II, Negative Reinforcement. Mr. CHURCH.

236. *Personality and Social Development of the Child*

This advanced seminar will deal in detail with systematic approaches to the understanding of personality and social development in the child. Both the theoretical backgrounds and the researches resulting from them will be considered for each of the orientations. Offered in alternate years.

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 as needed. The STAFF.

Psychological Colloquium

Weekly meetings for the discussion of research problems presented by visiting scholars and members of the department. No credit.

Religious Studies

Professor CRARY (Chairman); Visiting Professor WERBLOWSKY; Associate Professor FRERICHS¹; Assistant Professors MOEHRING, SANDERS, DIETRICH, BOLLE; Lecturer, Mr. BALDWIN; Visiting Lecturer, Mr. GOTTWALD; Instructor, Mr. SCHOEDEL; Assistants, Messrs. CROCKETT, GOODWIN, and JONES.

DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. The requirement for concentration in Religious Studies is eight semester courses which must include Religious Studies 21 and 22 and at least one course from each of the following groups: 110, 121, 122, or 133; 111 or 112; 113 or 114; 41 or 106.

PREPARATION FOR SPECIAL FIELDS. Students planning to study theology should elect the Biblical language courses, beginning with Religious Studies 12 or 151, 152.

RELATED COURSES. Anthropology 130, *Religion of Non-literate Peoples*; History 107, 108, *The Renaissance and the Reformation*; History 177, *History of Religion in America*; Philosophy 151, *Philosophy of Religion*.

¹ On leave of absence, 1962-63.

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. SANDERS, BALDWIN, and JONES.

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. SCHOEDEL.

IC 3, 4. *The Christian Man in Western Society: Two Case Studies*

St. Augustine, a Catholic, and Reinhold Niebuhr, a Protestant, through their principal works, *The City of God* and *The Nature and Destiny of Man*, will be examined with respect to their intellectual background, their understanding of the meaning of Christianity, and their social ethic.

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. Offered in alternate years. Mr. SCHOEDEL.

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. GOTTWALD.

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.

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. SANDERS.

106. *Religion and Society*

A study of the relationships between religious thought and practice and

RELIGIOUS STUDIES

the social, economic, and political structures of the modern western world.
Mr. SANDERS.

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. WERBLOWSKY.

111, 112. *History of Christian Thought*

The development of Christian thought in the West. Its institutional context; representative thinkers and movements; the church's dialogue with the world. I, Early and Medieval; II, Reformation and the Modern Period. 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.

121, 122. *Topics in the Bible and Its Background*

Topics for 1962-63: I, Patristics: Introduction to Early Christian Literature. Mr. SCHOEDEL; II, Background of New Testament Thought. Hellenistic. Mr. MOEHRING. Prerequisite: Religious Studies 22 or by permission of the instructor.

123. *Textual Criticism of the New Testament*

Introduction to the materials, principles, methods, and history of criticism. Prerequisite: Greek, also Religious Studies 22, or permission of the instructor. Mr. MOEHRING.

131, 132. *Religions of the East*

Topic for I, 1962-63: Religions of India. A historical survey, dealing with the Indus Valley Civilization, the question of pre-Vedic cults, the religion of the Vedas, Brahmanism, Buddhism and Jainism, and the rise and development of Hinduism. Mr. BOLLE.

Topic for II, 1962-63: A study of classical yoga of Patanjali's Yoga sutras, its origins and philosophical setting, the Tantric and popular forms of

RELIGIOUS STUDIES

Yoga. Special attention will be given to the transformation of symbols in the history of Yoga and to the influence of Yoga on other systems of thought and religion in India. Prerequisite: Religious Studies 131 or by permission of the instructor. Mr. BOLLE.

133. *Ancient Greek Religion*

Religious thought and institutions of the Greeks from the Homeric to the Hellenistic Age. Offered every year. Mr. MOEHRING.

151, 152. *Elementary Hebrew*

Elements of Hebrew grammar and syntax. Translation of Old Testament prose narratives. Offered in 1963-64 and in alternate years. Mr. FRERICHs.

153, 154. *Intermediate Hebrew*

Prerequisite: Religious Studies 151, 152 or its equivalent. Offered in 1962-63 and in alternate years. Mr. GOODWIN.

156. *Advanced Hellenistic Greek*

Offered in 1963-64 and in alternate years.

157, 158. *Elementary Sanskrit*

Study of the Devanagari script. The basic grammar and phonetics of classical Sanskrit. Reading from classical texts. Mr. BOLLE.

191, 192. *Individual Study Project*

Directed reading, research, and thesis preparation. Required of seniors in the Honors Program. Open to others only by written consent of the chairman of the department. The STAFF.

198. *Topics in Religion*

Topic for II, 1962-63: Types of Modern Roman Catholic Thought. Mr. DIETRICH.

201. *Materials and Methods of Research*

An introduction to bibliographical resources and methods of research in religious studies. Required of first-year graduate students and junior Honors candidates. No course credit. The STAFF.

209, 210. *Seminar in Religious Thought*

Analysis of problems in ethics, philosophical theology, and theology. Topic for II, 1962-63: Chapters in the Phenomenology of Religion. Mr. WERBLOWSKY.

SLAVIC LANGUAGES

211, 212. *Seminar: Historical Studies*

Investigations in Christian literature, historical theology, and church history. Topics for 1962-63: I, Some religious views of the political order with particular attention to problems of the churches and the state in the United States. Mr. SANDERS; II, Schleiermacher. Mr. DIETRICH.

221, 222. *Seminar: Biblical Studies*

Topic for II, 1962-63: The Old Testament in the New. Mr. SCHOEDEL.

224. *Seminar: Textual Criticism*

Selected problems in Textual criticism. Prerequisite: Religious Studies 123. Mr. MOEHRING.

233. *Seminar: Greek Religion*

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. The STAFF.

Slavic Languages

Professor E. J. BROWN (Chairman)¹; Associate Professor KUCERA²; Assistant Professors TUMINS, FANGER, BANERJEE; Instructor, Mr. DRIVER; Lecturer, Mrs. ROMAN; Assistants, Mr. TURLO and Mrs. POWELL.

LANGUAGE REQUIREMENTS. See pages 62, 72, 80-83.

PLACEMENT. See page 62.

CONCENTRATION IN RUSSIAN LITERATURE. Prerequisite: A reading knowledge of Russian to be demonstrated by passing Russian 4 with a grade of C or better or by demonstrating equivalent training by examination. The requirements for concentration are Russian 19, 51, 41, 42, 131, 132, plus two of the following: Russian 161, 162, 170, Linguistics 156, and 161. With the approval of the department, a 200 course in Russian literature or Slavic linguistics may be substituted for any course in the last group.

HONORS IN RUSSIAN LITERATURE. Students will normally take the following courses: Russian 19, 41, 42, 51, 131, 132; two courses in preparation of a thesis (Russian 198 twice); plus two courses from the following: Russian 161, 162, 170, Linguistics 156, or 161, or (with the permission of the instructor) any 200 course in Russian literature or Slavic linguistics.

¹ On leave of absence, Semester I, 1962-63.

² Acting Chairman, Semester I, 1962-63.

SLAVIC LANGUAGES: RUSSIAN

CONCENTRATION IN RUSSIAN STUDIES PROGRAM. Prerequisite: A reading knowledge of Russian to be demonstrated by passing Russian 4 with a grade of C or better or by demonstrating equivalent training by examination. The requirements for concentration are Russian 19, 41, 42, 131, 132; History 131, 132; plus one of the following: Economics 107, Political Science 101 or 106.

HONORS IN RUSSIAN STUDIES. The program, involving four academic disciplines and allowing the student to emphasize either literature or the social sciences, provides an integrated study of Russian history, economics, government, and literature. All courses require some use of the Russian language.

The program consists of four courses in Russian literature: Russian 41, 42, 131, 132; one course in advanced language study: Russian 19 or 51; three courses from the following: History 131, 132, Economics 107, Political Science 101, 106; two semester courses of work in preparation of a thesis (Russian 198, repeated). The thesis may involve one or more of the disciplines studied.

OTHER INTERDEPARTMENTAL CONCENTRATION AND HONORS PROGRAMS. See pages 66, 79.

RELATED COURSES. Students in Slavic 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.

RUSSIAN

1-2. *Elementary Russian*

A course for beginners; fundamentals of grammar and basic vocabulary. Lectures three hours weekly; language laboratory one hour 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, but with written permission of the instructor a qualified student¹ may elect Russian 2. Miss TUMINS and STAFF.

1R-2R. *Beginning Russian*

Designed to develop reading facility in Russian. Open to juniors and seniors (and occasionally to sophomores with written permission of the instructor) who have met the language requirement in another foreign language. No credit is given for 1R alone, but with written permission of the instructor a qualified student¹ may elect Russian 2R. Four hours a week. Mrs. POWELL.

¹ See statement on Placement Tests, page 62.

SLAVIC LANGUAGES: RUSSIAN

3. *Intermediate Russian I*

Intensive reading of Russian prose, including selections from the works of Pushkin, Chekhov, and others. Grammar review, language laboratory, and oral practice. Four hours per week. Prerequisite: Russian 2 or placement.¹ Mrs. BANERJEE and STAFF.

4. *Intermediate Russian II*

Readings and discussion of a number of Russian texts related to significant aspects of Russian literature and culture. Training in oral and written expression and in aural and reading comprehension, including one period weekly in the language laboratory. Prerequisite: placement,¹ Russian 3, or Russian 2 with special written permission. Miss TUMINS and Mrs. BANERJEE.

19. *Writing and Speaking Russian I*

Practice in writing and speaking Russian. Four hours per week: two hours of discussion and analysis, one hour of language laboratory, one hour of oral practice. Prerequisite: placement¹ or fulfillment of the language requirement. Mrs. ROMAN.

29. *Russian Literature in English Translation I*

A survey of the most important work of Russian prose fiction in the 19th century, from Pushkin to Dostoevsky. All works will be read in English translation. Elective for juniors and seniors. May also be used for distribution credit in Literature under Humanities. Three hours a week of lecture and discussion. Messrs. FANGER and DRIVER.

30. *Russian Literature in English Translation II*

Selected works of Russian literature, chiefly but not exclusively fiction, from Tolstoy through the Soviet period. All works will be read in English translation. Elective for juniors and seniors. May also be used for distribution credit in Literature under Humanities. Three hours a week of lecture and discussion. Mr. BROWN.

41, 42. *Russian Literature: Introductory Course*

Open to students who have met the language requirement in Russian. Parallel with Russian 29, 30, except that designated portions of the assigned work will be read in Russian. Mr. FANGER and Mrs. BANERJEE.

51. *Writing and Speaking Russian II*

Intensive practice in speaking and writing Russian. Idiomatic use of the

¹ See statement on Placement Tests, page 62.

SLAVIC LANGUAGES: RUSSIAN

language will be stressed. Written and oral reports will be regularly assigned. Language laboratory. Four hours: two hours of discussion and analysis plus two hours of oral practice. Prerequisite: Russian 19 or written permission of the instructor. Mrs. ROMAN.

131. *Nineteenth Century Realism*

The development of realism as seen in the major figures from Gogol to Tolstoy. The interrelations of Russian realism with Western European developments in literature, philosophy, and social thought. Literary realism as an intellectual and social force in nineteenth-century Russia. Prerequisite: Russian 41, 42, or written permission of the instructor. Mr. FANGER.

132. *Soviet Literature*

Readings in the works of Gorky, Blok, Mayakovsky, Sholokhov, Pasternak, and others. Literary schools, movements, and personalities of the revolutionary period. The impact upon literature of the Soviet dictatorship. Prerequisite: Russian 41, 42, or written permission of the instructor. Mr. BROWN.

161. *Pushkin*

Critical analysis of *The Gypsies*, *Eugene Onegin*, *The Bronze Horsman*, and important prose works. The place of Pushkin in European literary history, and the relationship of his work to the romantic movement. Prerequisite: Russian 41, 42, or written permission of the instructor. Mr. BROWN.

162. *Russian Drama*

The Russian drama in the nineteenth and twentieth centuries. An analysis of the major dramatic works by Russian authors. The drama as a literary form in Russia. The relationship of the drama to other literary works by the same authors. Russian drama on the stage. Prerequisite: Russian 41, 42, or written permission of the instructor. Mr. DRIVER.

170. *Advanced Written and Oral Russian*

A course designed to develop skill and accuracy in oral expression and literary composition. Prerequisite: Russian 51, or written permission of the instructor. Miss TUMINS.

198. *Senior Conference*

Primarily for undergraduate students; open occasionally to graduate students. Reading programs will be arranged on individual authors or special topics. Mr. BROWN and STAFF.

SLAVIC LANGUAGES: SLAVIC

201. *Eighteenth Century Literature*

The most important literary currents from neo-classicism to sentimentalism. Study of style and diction with emphasis on the development of the literary language. Miss TUMINS.

202. *Russian Poetry*

An intensive study of selected works. From the metrical innovations of the eighteenth century to the present: development of lyric poetry in the work of Derzhavin, Pushkin, Lermontov, Tyutchev, Blok, and Pasternak. Mr. DRIVER.

203. *Studies in Russian Literary Criticism*

The main tendencies of literary criticism in the nineteenth and twentieth centuries. Literary criticism in Russia as an expression of aesthetic values and as a vehicle of social thought. Mr. BROWN.

232. *Old Russian Literature*

A survey of Russian literature from the Kievan period to the end of the seventeenth century. Readings of the *Tale of the Host of Igor*, selections from the *Primary Chronicle*, *Zadonshchina*, and other works. Prerequisite: Slavic 221 or an adequate knowledge of Old Church Slavonic. Miss TUMINS.

261, 262. *Seminar in Russian Literature*

Topic for 1962-63: I, Gogol. Miss TUMINS; II, Turgenev. Mr. BROWN.

291, 292. *Advanced Reading and Research*

Work with individual students in connection with special readings, problems of research, or preparation of theses. The STAFF.

SLAVIC

101. *The Slavic World*

The origins and expansion of the Slavic peoples and a survey of their languages and cultures, including those outside of Russia proper. Upperclassmen may be admitted to this course without a reading knowledge of Russian. Mrs. BANERJEE.

221. *Introduction to Slavic Linguistics and Old Church Slavonic*

A survey of the Slavic languages and an introduction to their comparative phonology and grammar on the basis of Old Church Slavonic. Structural analysis of Old Church Slavonic and readings of selections from translations of the Gospels. Mr. KUCERA.

SOCIOLOGY AND ANTHROPOLOGY

222. *Structure of Modern Russian*

Descriptive analysis of the phonology and morphology of modern standard Russian and a survey of Russian dialects. Mr. KUCERA.

223. *History of the Russian Language*

Outline of the historical development of Russian with special emphasis on the formation of the literary language. Some acquaintance with Old Church Slavonic is desirable. Mr. KUCERA.

224. *Introduction to West Slavic Linguistics*

A comparative outline of the structure of Czech, Slovak, and Polish with some attention to the Western Slavic dialectology. Mr. KUCERA.

225, 226. *The Structure of Czech*

Descriptive analysis of the phonology, morphology, and syntax of modern standard Czech with reading and analysis of selections from modern Czech literature. Mr. KUCERA.

291, 292. *Advanced Readings and Research*

Work with individual students in connection with special reading. Problems of research, or preparation of theses in comparative Slavic linguistics or in a Slavic language other than Russian. The STAFF.

Sociology and Anthropology

Professors MAYER (Chairman), GIDDINGS,¹ GOLDSTEIN, ZIMMER, BURNIGHT; Professor (Research) SAKODA; Associate Professors PFAUTZ, SCHULZE, FRIEDMANN; Assistant Professors HEATH, ROSENGREN, LEIS, ORGANIC; Visiting Assistant Professor RICCIARDELLI; Research Associate, Mr. POTTER; Interdisciplinary Fellow, Mr. WOLF; Research Assistants, Messrs. DORSE, FINNER, JESSEN, and OSBORN; Assistants, Messrs. COOK, GOERING, PRYOR, RONDEAU, and SIMONS, and Mrs. CARDOSO.

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 description. There is no general prerequisite for courses in anthropology.

¹ On leave of absence, 1962-63.

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DISTRIBUTION REQUIREMENT. See pages 72-75.

CONCENTRATION. There are three concentration patterns. Students may concentrate in Sociology, in Anthropology, or in Sociology-Anthropology. Except by permission of the Department, granted upon written application, a student must obtain a grade of *C* or better in Sociology D1, or IC 1, 2, in order to concentrate in Sociology, in Anthropology, or in Sociology-Anthropology. The introductory course must be completed by the end of the fourth semester.

The requirements for concentration in Sociology are eight semester courses, including Sociology 104 or 125, 111, 182, and 198. Sociology concentrators may include either Anthropology 105 or 129 as part of their concentration program, but Anthropology 105 cannot be taken in addition to Sociology 106.

The requirements for concentration in Anthropology are eight advanced courses, including Anthropology 101, 102 and one course in the Department dealing with a major world area. Anthropology concentrators may elect, with the approval of the department, to include as part of their concentration not more than two courses in closely related subjects, such as biology, Egyptology, geology, history, human biology, linguistics, psychology, sociology, and other fields.

The requirements for concentration in Sociology-Anthropology are ten semester courses. Required courses are: Sociology 104, 111, 182, 198; Anthropology 101, 102. In addition, students will elect two or three other semester courses in Anthropology and one or two other semester courses in Sociology, to a total of ten. Sociology 106 cannot be taken in addition to Anthropology 105.

HONORS. The Honors program in Sociology will comprise, in addition to the introductory course, at least ten semester courses, including, in addition to the concentration requirements, Sociology 196 in the sixth semester and 191, 192 in the seventh and eighth semesters. Sociology 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.

The Honors program in Anthropology will comprise at least ten semester courses, including, in addition to the concentration requirements, Anthropology 193, 194, and a second course in the Department dealing with a major world area. Anthropology 193, 194, which should be taken in the seventh and eighth semesters, 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.

The Honors program in Sociology-Anthropology will comprise, in addi-

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tion to the introductory Sociology course, at least twelve semester courses, including, in addition to the concentration requirements, Anthropology 193, 194 in the seventh and eighth semesters. Anthropology 193, 194 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.

SOCIOLOGY

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. Mr. ROSENGREN.

IC 1,2. *Man and Society*

An analysis of the major trends in the development of Western societies and value systems. Changes in 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 Max Weber, Thorstein Veblen, Lewis Mumford, and David Riesman. Messrs. SCHULZE, ROSENGREN, ORGANIC, and WOLF.

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. BURNIGHT.

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. FRIEDMANN.

109. *The Community*

For students in the Master of Arts in Teaching program. Not open to undergraduates. Mr. ZIMMER.

SOCIOLOGY AND ANTHROPOLOGY

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 prerequisite 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.

121. *Population and Migration*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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 prerequisite for students in Semesters VI, VII, and VIII. Mr. ZIMMER.

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. No prerequisite for students in Semesters VI, VII, and VIII. Mr. PFAUTZ.

133. *The Social Order*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

137. *Social Organization*

The social order as viewed by sociologists and their intellectual ancestors. The nature of the social bond, the instruments of social control, and the sources of social change will be examined for folk and modern societies. Special attention will be given to the structure and ideology of contemporary mass society. Mr. FRIEDMANN.

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.

147. *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.

156. *Race and Class in American Life*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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 prerequisite 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. Mr. ZIMMER.

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.

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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 investigated by each student. Open to graduate students and to students who have completed Sociology 111 or its equivalent. Mr. ZIMMER.

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*

A detailed consideration of the nature of social structure, types of social relationships, and the problem of social order. Offered in 1963-64.

202. *Sociology of Personality*

A detailed examination of the theoretical and empirical literature in selected areas: language and communication, socialization, desocialization, and re-socialization; social types of personality; the sociology of motivation; national character; social psychiatry. Offered in 1962-63. Mr. PFAUTZ.

203. *Stratification and Social Mobility*

A systematic examination of theory and research on stratification patterns and problems of social mobility in various parts of the world. Offered in 1964-65. Mr. MAYER.

205. *Systematic Sociological Theory*

An approach to the construction and unification of sociological theory. General and special theory are examined in light of recent sociological systems and current methodological and substantive issues in sociological theory. Offered in 1962-63, Mr. WOLF.

207. *Sociological Aspects of Economic Behavior*

An appraisal of sociological contributions to the understanding of economic behavior and economic organization. Offered in 1962-63. Mr. MAYER.

209. *The Structure of Power in American Society*

Theories of power structure and examination of the current organization of power relationships in American society. Offered in 1963-64. Mr. MAYER.

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212. *Sociological Aspects of Aging and Family Research*

An analysis of current patterns of family organization with special reference to generational relationships and the position of the aged. An evaluation of concepts in aging and family research. Offered in 1963-64. Mr. FRIEDMANN.

214. *The Metropolitan Community*

An inquiry into the structure of the modern metropolis and its functional relationship to the larger region. Offered in 1963-64. Mr. ZIMMER.

218. *Population Factors in Economic Development*

The relation between population growth, natural resources, and economic change both in developed and in underdeveloped countries with special emphasis on labor force analysis. Offered in 1963-64.

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. Offered in 1962-63. Mr. SAKODA.

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. Offered in 1962-63. Mr. GOLDSTEIN.

232. *Migration*

An analysis of the historical pattern of international population movements and of internal migration, with particular emphasis on social and economic differentials. Offered in 1963-64. Mr. BURNIGHT.

236. *Fertility*

Analysis of changing trends in fertility processes with special emphasis on social and economic differentials. Offered in 1962-63. Mr. GOLDSTEIN.

238. *Mortality and Morbidity*

Analysis of levels and trends of mortality and morbidity with special emphasis on socio-demographic and economic differentials. Offered in 1962-63. Mr. BURNIGHT.

240. *Ecological Study of the Community*

An evaluation of the concepts of human ecology and their application to the

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interrelationships of population, environment, technology, and organization in the community setting. Offered in 1962-63. Mr. ZIMMER.

246. *The Impact of Metropolitanization on Population Processes and Structure*

An evaluation of the effects of increasing metropolitanization on population distribution and composition. A synthesis of demographic and metropolitan area research and theory.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, research, and preparation of dissertation. The STAFF.

ANTHROPOLOGY

101. *Human Origins*

An introduction to human paleontology and archaeology with attention to the emergence of races and the beginning of culture. No prerequisite. Mr. RICCIARDELLI.

102. *Cultural Anthropology*

An examination of the principles and techniques used in the comparative study of culture, illustrated by the detailed discussion of the cultures and societies of selected peoples. No prerequisite. Mr. HEATH.

105. *Kinship and Social Structure*

A comparative approach to the study of social institutions, with special attention to kinship, economic, political, and social class structure in primitive and peasant societies. Open only to juniors and seniors except by written permission. Mr. HEATH.

129. *Cultural Change*

An analysis of the processes of cultural change, both internal and intrusive. Implications for the individual, society, and culture are considered. Open only to juniors and seniors except by written permission. Mr. HEATH.

130. *Religion of Non-Literate Peoples*

An examination of the religious systems of selected non-literate peoples around the world; their philosophical premises and their integration with other aspects of culture. This is done in conjunction with a systematic analysis of the theories regarding the origins and functions of religious beliefs. No prerequisite for students in Semesters V-VIII. Mr. LEIS.

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131. *The Economic Life of Non-Western Peoples*

A cross-cultural approach to the study of systems of production and exchange. The relationships of ecology, technology, social structure, and economic institutions are examined. Attention is given to the different theories current in economic anthropology and to the utility of Western economic concepts in the analysis of non-Western societies. No prerequisite for students in Semesters V-VIII. Offered in alternate years. Mr. LEIS.

135. *The Ethnology of Inner Asia*

An examination of the indigenous societies of Western China, Tibet, Central Asia, and Southern Siberia. Attention will be given to the development of settled and nomadic societies over time, their prehistoric roots, migrations, the influences of Chinese, Indian, Islamic, and Russian cultures, fundamental cultural similarities and continuities as well as variations in time and space. No prerequisite for students in Semesters V-VIII. Offered in alternate years.

141. *The Peoples of Sub-Saharan Africa*

A survey of the past and present of indigenous societies of South and East Africa, Congo, Guinea Coast, and the Sudan. African prehistory, linguistic and racial classifications, special studies of each of the culture areas, with selected representative societies used to reveal the social, political, economic, and religious institutions characterizing these areas. Some problems of Islamic and European contacts. No prerequisite for students in Semesters V-VIII. Mr. LEIS.

142. *Ethnology of Latin America*

A survey of contemporary societies and cultures in Middle America and South America. No prerequisite for students in Semesters V-VIII. Offered in alternate years. Mr. HEATH.

144. *Ethnology of Oceania*

A survey of the cultures and societies of the islands of the southern Pacific: Melanesia, Micronesia, and Polynesia. Prehistory, migrations, history, and problems of contact with Western culture. Intensive analysis of representative societies, illustrating the cultural variations in the area. No prerequisite for students in Semesters V-VIII. Offered in alternate years. Mr. LEIS.

150. *The American Indian*

A survey of the archaeological background and ethnology of the Indians of

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North and South America. Open only to juniors and seniors except by written permission. Offered in alternate years. Mr. RICCIARDELLI.

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.

193, 194. *Individual Research Project*

Intensive supervised reading, ordinarily involving 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 anthropology and sociology-anthropology; open to others only by written consent of the chairman of the department. The STAFF.

PRIMARILY FOR GRADUATE STUDENTS

201, 202. *Circumpolar Anthropology*

An appraisal of the languages, physical traits, and cultures of the ancient and more recent peoples of the Arctic and Sub-Arctic regions. I, Tribes of the Old World; II, Americans, and the Old Circumpolar Trade. Offered in alternate years. Mr. GIDDINGS.

203. *Ethnohistory*

A research seminar on anthropological interpretation of historical sources. Methods for collecting, evaluating, and analyzing historical evidence as it relates to problems in ethnography and archaeology. Original research is emphasized. Offered in alternate years. Mr. LEIS or Mr. HEATH and the STAFF.

204. *History of Ethnological Theory*

A critical and systematic examination of the development of theory in cultural and social anthropology. Classical and modern contributions, their historical context, changing emphases in theory, and the relationship of theory to method. Offered every year. Mr. HEATH or Mr. LEIS.

206. *Problems of Archaeology*

A seminar on archaeological method and theory, with emphasis on the development of American archaeology. Offered in alternate years. Mr. RICCIARDELLI.

293, 294. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. Offered every year. The STAFF.

Spanish and Italian

Professors LÓPEZ-MORILLAS (Chairman), GORDON; Associate Professors SCHNERR, TRUEBLOOD, KOSOFF, AMOR; Assistant Professor DURAND; Instructor, Mr. RODRÍGUEZ-LUIS; Assistants, Mr. TRUESDELL, and Mesdames ALEGI, AZPEITIA, and BOUTIN.

DISTRIBUTION REQUIREMENT. See pages 72-75.

LANGUAGE REQUIREMENTS. See pages 62, 72, 80-83.

PLACEMENT. See page 62.

CONCENTRATION IN SPANISH. Prerequisite: Spanish D11, D12. The requirements for concentration are Spanish 118 and 140; plus two from the following: Spanish 19, 51, 170; plus four additional courses from the following, including two from each group: Group I: Spanish 111, 113, 114, 131; Group II: Spanish 123, 125, 127, 128. Either Linguistics 156 or 161 may be substituted for one of the courses to be selected from Groups I and II.

CONCENTRATION IN ITALIAN. The requirements for concentration are Italian D107, D108, 161, 162, plus four courses from the following: Italian 51, 133, 134, 155, 156, 198, Linguistics 156.

INTERDEPARTMENTAL CONCENTRATION AND HONORS PROGRAMS. See pages 66, 79.

HONORS IN SPANISH. Students will normally take Spanish 118, 140, and 198. Seven additional courses will be selected as follows: two from Spanish 19, 51, 170; plus five additional courses from the following, including at least two from each group: Group I: Spanish 111, 113, 114, 131; Group II: Spanish 123, 125, 127, 128. Either Linguistics 156 or 161 may be substituted for one of the courses to be selected from Groups I and II.

HONORS IN ITALIAN. Candidates for Honors will arrange a program which will (a) acquaint them with the main writers and movements in Italian literature 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 or eighth semester they will prepare a thesis for which they will receive credit.

RELATED COURSES. Students in Spanish or Italian should consider the election of one or more courses in the principal periods of other literatures,

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in comparative literature, in linguistics, and in related fields such as philosophy, art, history, and political science.

SPANISH

1-2. *Basic Spanish*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; language laboratory for one hour weekly; intensive oral drill and supervised reading practice in small sections three 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. DURAND and STAFF.

2. *Elementary Spanish II*

Grammar, oral practice, language laboratory, written exercises. Reading of simple texts. Four hours per week. Prerequisite: placement.¹ Mr. KOSSOFF and STAFF.

3. *Intermediate Spanish I*

Reading of modern prose: intensive drill in translation, extensive practice in reading for comprehension. Oral practice, language laboratory. Four hours per week. Prerequisite: Spanish 2 or placement.¹ Mr. KOSSOFF and STAFF.

4. *Intermediate Spanish II*

Readings and discussion of a number of Spanish texts related to a significant aspect of Spanish literature and culture. Training in oral and written expression and in aural and reading comprehension, including one period weekly in the language laboratory. Prerequisite: placement,¹ or Spanish 3 or Spanish 2 with special written permission. Mr. AMOR and STAFF.

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. Prerequisite: placement¹ or fulfillment of the language requirement. Mr. KOSSOFF and STAFF.

¹ See statement on Placement Tests, page 62.

19. *Spanish Composition and Conversation*

Practice in writing and speaking Spanish. Four hours per week: two hours of discussion and analysis, one hour of language laboratory, one hour of oral practice. Prerequisite: placement¹ or fulfillment of the language requirement. Mr. DURAND and STAFF.

M31-M32. *Representative Epochs of Hispanic Literature*

An introduction to selected major authors and works of the main creative periods of Hispanic Literature from the Renaissance to the present. Open to students in the Special Master's Degree Program who have met the language requirement in Spanish. Special permission of the instructor is required for students who are not in this program. Mr. AMOR.

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, one hour of language laboratory, one hour of oral practice. Prerequisite: Spanish 19 or placement.¹ Open also, with written permission of the instructor, to students who have completed Spanish D11, D12. Mr. AMOR and STAFF.

111. *Literature of the Spanish Middle Ages, Mio Cid to La Celestina*

An examination of characteristic aspects of the literary production of the Spanish medieval world: epic, ballad and lyric, allegorical and popular strains, Roman and oriental heritage, fusion of the medieval with the modern spirit in *La Celestina*. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. LÓPEZ-MORILLAS.

113. *Literature of the Spanish Renaissance, Garcilaso to Lope de Vega*

Transformation of the medieval heritage; the impact of humanism and Italian literature; the pastoral vogue in drama, verse, and fiction; the emergence of the picaresque; the continued popularity of balladry; the mystics; the new vision of the Moor. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. KOSOFF.

114. *Spanish Baroque Literature, Lope de Vega to Calderón*

Representative works of the masters of the classical Spanish theater, new forms of stylization and allegory in poetry and prose (Góngora, Quevedo, Gracián), varied responses to Spain in decline: retreat, analysis and critique, transcendence. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. KOSOFF.

118. *Cervantes*

A reading of *Don Quixote* and other selected works. Emphasis will be placed on the confluence in the *Quixote* of literary forms of the past and the crea-

¹ See statement on Placement Tests, page 62.

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tion of the characteristic form of the future—the modern novel, on Cervantes' expression of a permanent myth of the modern world, on the comic and ironic vision of life. Cervantes' creative originality in the short story and drama will also be considered. Prerequisite: Spanish D11, D12. Offered every year. Mr. KOSSOFF.

123. *Literature of Ideas in Spain from Feijoo to Ortega y Gasset*

The record of the Spaniard's concern with "the problem of Spain" since the eighteenth century: Spain and the Spaniard in themselves, in relation to Europe and to mankind. Among figures treated will be: Cadalso, Jovellanos, Larra, Giner de los Ríos, Ganivet, and Unamuno. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. LÓPEZ-MORILLAS.

125. *The Development of the Novel from Galdós to Cela*

Representative works of major novelists of the nineteenth and twentieth centuries (Pardo Bazán, Clarín, Valle-Inclán, Baroja, Pérez de Ayala) from *costumbrismo* through the masters of realism, naturalism, and symbolism to the most recent trends. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. AMOR.

127. *Modern Poetry of the Hispanic World, Bécquer to Juan Ramón Jiménez*

The resurgence of lyric poetry in the last one hundred years: Bécquer as predecessor, Rubén Darío and the *modernistas* as initiators, Machado, Lorca, Neruda, Jiménez, and others as culminating figures of a movement embracing the whole Hispanic world. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. TRUEBLOOD.

128. *The Literary Image of the Hispanic New World*

Some literary themes and trends arising from the transplantation of a European culture to a new setting and its fusion with a native heritage: man against nature, the *gaucho* and the frontier, changing views of the Indian, revolution and social ferment, the role of the artist and the intellectual, the search for a distinctive cultural identity. Attention will be given to parallel concerns in the literature of the United States. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. TRUEBLOOD.

131. *Major Themes and Myths in Hispanic Literature*

An examination of a number of persistent archetypal figures and patterns such as El Cid, Don Juan, the *pícaro*, the interplay of appearance and reality, and the concept of honor. Prerequisite: Spanish D11, D12. Offered in alternate years. Mr. TRUEBLOOD.

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140. *The Hispanic World*

The cultural unity and diversity of the Hispanic World, past and present: an examination of characteristic aspects of the social, ideological, and historical context of its literature and art, with attention to typical attitudes and values reflected in them. Prerequisite: two semesters of Spanish literature beyond D11, D12. Open to seniors only, except by written permission of the instructor. Offered every year. Mr. AMOR.

170. *Advanced Written and Oral Spanish*

Designed to develop skill and accuracy in literary composition and oral expression. Offered in alternate years. Mr. AMOR.

181. *Studies in Spanish Thought and Institutions*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

184. *Studies in the Spanish Language*

For students in the Master of Arts in Teaching program. Not open to undergraduates.

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 others with written permission. Mr. TRUEBLOOD and STAFF.

202. *History of the Spanish Language*

Outline of historical phonology and morphology. This course should be preceded by General Romance 201. Offered in alternate years. Mr. SCHNERR.

203. *Studies in Spanish Literature of the Middle Ages*

Offered in alternate years. Mr. LÓPEZ-MORILLAS.

211. *Cervantes' Works, Exclusive of Don Quijote*

Offered in alternate years. Mr. TRUEBLOOD.

212. *Cervantes' Don Quijote*

Offered in alternate years. Mr. TRUEBLOOD.

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215. *Studies in Spanish Literature of the Golden Age*

Topic for 1962-63: Obras no dramáticas de Lope de Vega. Mr. TRUEBLOOD.

225. *Studies in Modern and Contemporary Spanish Literature*

Topic for 1962-63: Uramuno y Ortega. Mr. LÓPEZ-MORILLAS.

235. *Studies in the Literature of Spanish America*

Topic for 1962-63: Rubén Darío.

262. *Seminar in Spanish and Spanish American Literature*

Topic for 1962-63: Poetas del siglo xv: Marqués de Santillana, Juan de Mena, Jorge Manrique.

291, 292. *Reading and Research*

Work with individual students in connection with special reading, problems of research, or preparation of theses. Offered every year. The STAFF.

GENERAL ROMANCE

201. *Introduction to Romance Linguistics*

Elements of the historical and comparative grammar of the Romance languages with special attention to the late Latin period. This course should precede Spanish 202. Mr. SCHNERR.

240. *Problems in Romance Linguistics*

Studies in the history of the Romance languages. Offered upon demand. Mr. SCHNERR.

ITALIAN

1-2. *Basic Italian*

A course for beginners: fundamentals of grammar and basic vocabulary. Lectures two hours weekly; language laboratory one hour weekly; intensive oral drill and supervised reading practice in small sections three hours weekly. Elective for students who have not presented Italian for admission. No credit is given for the first semester alone, but with written permission of the instructor a qualified student may elect the latter half of the sequence. Mr. SCHNERR and STAFF.

3. *Intermediate Italian I*

Reading of modern prose. Intensive drill in translation, extensive practice in reading for comprehension. Oral practice, language laboratory. Four hours per week. Prerequisite: Italian 2 or placement.¹ Mr. GORDON.

¹ See statement on Placement Tests, page 62.

4. *Intermediate Italian II*

Readings in modern authors: reading for comprehension and practice in translation techniques. Four hours per week. Prerequisite: Italian 3 or placement.¹ Mr. SCHNERR.

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 the 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 concentrators 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*

¹ See statement on Placement Tests, page 62.

University Courses¹

1-2. *Modes of Experience: Science, History, Philosophy, and the Arts*

Sharp separation of disciplines and the individual's commitment to a single approach to experience are characteristic of our time. Even when a person has interest in several realms, these are generally kept in mutual isolation, their illuminating and revealing common elements unrecognized, and their harmful discords ignored. The student is rarely helped with the crucial task of seeking integration and conciliation of the manifold forms of experience. To initiate or further this task is the purpose of this course. It seeks to help the student toward a synoptic understanding of four major forms of order and meaning and toward a balanced development of the corresponding human faculties. It attempts to see these forms and these faculties as distinctive but interlocking themes of the polyphony of man's encounter with the world. Its plan is to provide actual experience with selected instances from the various areas and, on this basis, to consider the nature of these experiences, the attitudes they involve, their relation to the totality of experience, their similarities, differences and conflicts, and their complementary roles in life. It seeks to illuminate such questions as the functions of art and science within the context of man's culture; the kinds of knowledge sought by science, history and philosophy; the different and often conflicting uses of language in science, philosophy, and poetry, and the reasons for these differences. It examines the disparate approaches to experience appropriate to the various realms, the tensions they engender, and the possibilities of holding them in balance. The integration it looks to is not the articulation of a tight system. Rather it is one that consists of a balance of understanding and a concord of attitudes toward which the person may strive as he becomes aware of the richness and variety of experience and overcomes the first, often fatal, obstacles blocking a wider and juster view of things—a view which recognizes the common ground as well as the distinct characters of various areas of human life. Original sources in each of the areas, including poetry, music and painting, will be used. The following names indicate the kind and range of material: Galilei, Newton, Millikan, R. Redfield, Schrödinger; Burckhardt, Collingwood, Huizinga, Mommsen; Cassirer, Ducasse, T. M. Greene, L. Mumford, Ortega y Gasset, Whitehead; Keats, Shakespeare; Beethoven, Mozart; Michelangelo, Vermeer. The course will be conducted in the form of discussion. Open to sophomores, juniors, and seniors with permission of the instructor. High academic achievement is considered an important indicator of qualifica-

¹ See *University Courses in Interdisciplinary Studies* on page 68.

tion; other factors, however, such as unusual interest or promise, or special abilities can gain admission. Mr. MORGAN.

3-4. *The American Accent*

A study of the life and work of representative Americans, including Walt Whitman, Theodore Roosevelt, Frank Lloyd Wright, John Dewey, John Marin, and Aaron Copland. The central problem of the course will be to identify common characteristics in the expression of these men, isolate those that may be distinctively American, and thus try to discover, define, and evaluate a characteristically American habit of mind and manner. In connection with each major figure one or two additional men will be examined both as illuminating contrasts to the major figure and as spokesmen who in their own right may reveal significant aspects of the American character. Primary emphasis will be on critical analysis of appropriate books, paintings, buildings, and recordings. Lectures and class discussions. Elective for sophomores, juniors, and seniors. Mr. MARKS.

5. *Public Policy*

Two or three representative public policy problems such as the censorship of artistic activity, current trends in agriculture, or the industrial use of atomic energy will be examined in their broadest settings in an effort to identify: the points of tangency or conflict between a given economic or technical or cultural activity and the goals of other groups, the various beliefs and motives involved, and the process whereby these problems are being dealt with in the context of American democracy. The course will be conducted largely on a seminar basis. Limited enrollment. Open to juniors and seniors with the permission of the instructor. Mr. CORNWELL.

7-8. *Voices of Romanticism*

Although Romanticism is a many-sided, complex, and sometimes contradictory state of mind, there are several clearly distinguishable features which found expression as a result of man's dealing with the too narrow construing of human experience in terms of reason alone. These "voices" or qualities are reflected in the Romanticist's preoccupation with the mystery of the universe, the fascination with the remote in time and in space, the emotional and imaginative aspects of man's nature, a subjective, individual approach to life, the interpretation of nature in personal terms, opposition to academic rules and tradition, and an emphasis on faith as a support to religion. The central aim of the course is a consideration of representative works in several areas which exemplify the various types of thought listed above. Close reading, listening, study of paintings, written reports, and critical discussion will be done on the following works:

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Semester I: Goethe, *Faust*; Mozart, *Piano Concerto in D minor*; Beethoven, *Eroica Symphony*; Sterne, *Tristram Shandy*; selected paintings of Goya, Ingres, and David; Cooper, *Inquiry Concerning Virtue or Merit*; Rousseau, *Confessions*; Macpherson, *Fingal, An Ancient Epic Poem*; Blake, *Songs of Innocence*; Coleridge, *The Ancient Mariner*; Burke, *Reflections on the Revolution in France*; Godwin, *Political Justice*.

Semester II: Weber, *Konzertstück for Piano and Orchestra*; Schubert, *Die Schöne Müllerin*; selected piano works of Chopin; Scott, *The Talisman*; Hugo, *Hernani*; selected paintings of Constable, Turner, and Delacroix; Kant, *Critique of Pure Reason*; Hegel, *Philosophy of History*; Keats, *Endymion*; Shelley, *Prometheus Unbound and Queen Mab*; Byron, *Don Juan*; Fichte, *Addresses to the German Nation*; selected writings of Faraday; Davy, *Consolations in Travel*; Darwin, *Origin of the Species*.

Additional reading will be required dealing with the primary aspects of the course. Enrollment will be limited. Open to juniors and seniors with the permission of the instructor. Mr. LAURENT.

101, 102. *The Role of Science in Civilization*

The role of science in civilization will be discussed from the broad point of view. Science will be treated as a method of creating, describing, and understanding human experience, and emphasis will be placed on both the cultural and technological aspects of its impact on society. The relation between science and the arts will be fully explored, and the significance of the cultural lag in contemporary civilization will be examined. The general approach will be both historical and philosophical. Wide reading and report writing will be encouraged. Lectures and class discussions. Bachelor of Arts students who take this course will be required to complete only ten distribution credits, provided that at least three credits are earned in each area and the specific requirements in each of the three areas are satisfied. The course may be counted toward the non-science elective requirements for Bachelor of Science students. Elective for juniors and seniors. Mr. LINDSAY.

105-106. *Of Human Bondage*

The primary concern of this course is to study by way of certain great landmarks in the history of thought the answers to this question: What is it in the individual or in society, in nature or above nature that gets in the way of man's self-fulfillment? What is the bondage from which he must free himself, if he can, in order to become what he aspires to be? Because varying answers to this question are presented concretely and dramatically in a number of masterpieces of world literature, analysis and discussion of the answers will begin with close reading in the first semester of the *Oedipus Rex* trilogy (Sophocles), the *Book of Job* (the Old Testament), the *Inferno*

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(Dante), *Don Quixote* (Cervantes), *King Lear* (Shakespeare), and *Don Juan* (Byron). The works read in the second semester will be drawn from modern Western literature (the 19th and 20th centuries). At least six of the following will be studied: Zola's *Nana*; Camus's *The Stranger*; Mann's *The Magic Mountain*; Kafka's *The Trial*; Silone's *Bread and Wine*; Dostoevski's *Brothers Karamazov*; Eliot's *The Wasteland*; Joyce's *Ulysses*; Steinbeck's *Grapes of Wrath*; Dreiser's *An American Tragedy*. Each of these literary works will be regarded, however, only as a dramatic opening of the door, so to speak, upon the answer it represents. For in addition to reading the literary work, students will be required, in order to extend the range of their discussion of the answer, to read in such other areas of the humanities as philosophy and theology as well as in the social, physical, and biological sciences. For example, by way of reading Sophocles' *Oedipus* trilogy, the course will come to a consideration of fate as the controller of human destiny and will pursue discussion of man's bondage to fate in such philosophical works as Marcus Aurelius' *Meditations*, Hobbes' *Leviathan* and Kant's *Practical Reason*, and in such theological works as St. Augustine's *City of God* and Calvin's *Institutes of the Christian Religion*. The working of fate in human society and history will be considered in readings from such works as Plato's *Republic*, Montaigne's *Essays*, Hegel's *Philosophy of Right*, and Marx's *Capital*. Finally, that secularization of fate known as scientific determinism will be discussed as it is expounded in Lucretius's *Nature of Things*, Newton's *Optics*, Freud's *Origin and Development of Psychoanalysis* and Jean's *Physics and Philosophy*. A similar range of reading will be required in consideration of other answers to the prime question of the course. Enrollment in the course will be limited to 20 juniors and seniors from Brown and Pembroke. Discussion will be based upon papers written by students and read in the classroom. Mr. KAPSTEIN.

109-110. *Conceptions of Man; Diversity and Coherence*

Current beliefs concerning the nature of man are multifarious and incompatible. For example, almost everyone believes that man can and should act rationally, but at the same time it is a platitude that he is irrational and that reason is only rationalization. We angrily reject the often voiced charge that modern man is bereft of dignity, but we hold that the difference between man and animal or man and machine is but a matter of degree. We say that discrimination of values and dedication to ideals are essential to being human, but the assertion runs head on into the doctrine that values are "purely relative" and merely manifestations of "personal prejudice." We stake the existence of humanity on the defense of man's freedom, but much of our thought insists and much social action takes for granted that freedom has no reality. To many, perhaps most modern intellectuals, the "subjective," the "emotional," and the "personal" are primarily sources of

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interference with man's serious and most important pursuits, but to others they are the core of being human. It is the purpose of this course to explore some of the outstanding characteristics of man and the divergent views of them emerging from different human interests; to compare and contrast these views, to examine some of the reasons for their inconsistency, and to discover whether in this process there may not be found the seeds and sometimes the fruits of more adequate and coherent understanding. The following aspects will be considered: the realms of the objective and the subjective; the life of the mind as manifested in language, science, and art; the estate of values and value judgment; freedom and scientific determinism; education versus adjustment; the individual, and the relation of the individual with others. The following names indicate the kind and range of material to be used: Berenson, Buber, Cassirer, M. Cohen, G. H. Mead, L. Mumford, Nietzsche, Ortega y Gasset, Reichenbach, Russell, Tillich, Whitehead; Freud, Fromm, J. Huxley, Kroeber, Malinowski, Sapir, Wiener; Camus, Dostoevsky, Keats, Rilke; Bach, Beethoven; Rembrandt, Van Gogh. Two hours lecture with some discussion, and one hour discussion. The course is planned for students with considerably greater than average interest and ability. Therefore, while there are no specific admission requirements, anyone who wishes to take it but is doubtful of his or her qualifications is urged to consult the instructor. Open to juniors and seniors and, in special cases, sophomores. Limited enrollment. Designed as year-course, but in special cases one semester may be taken. Mr. MORGAN.

III-III2. *Religious Dimensions of Culture*

This course will examine recent thought about the nature of reality, the meaning of human existence, and the interpretation of human history. Considerations raised by contemporary science, analytical philosophy, existentialism and recent theology will be discussed. Human nature and the problem of freedom will be explored in the light of various psycho-analytic and religious perspectives. There will be readings in literature expressing man's search for the meaning of his existence. The question of whether or not meaning is to be discerned in the historical process will be discussed. Biblical views of a meaningful history will be compared with the cyclical view of classical culture. Modern progressive interpretations from Marx to Toynbee will be examined, and attention will be given to the insights of philosophers like Collingwood and theologians like Niebuhr and Bultmann. Lectures and class discussions. Open to juniors and seniors with the permission of the instructor. Mr. CARY.

The University Libraries



University Library

The UNIVERSITY LIBRARY, containing 1,042,000 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 129,000 bound volumes, 20,000 broadsides, leaflets, etc., 68,000 pieces of sheet music, 7,000 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*.

Archives of the University, dating from 1763, consisting of manuscript and printed official documents, writings of faculty and alumni, records and publications of student organizations, papers of Presidents Manning, Messer, Wayland, and Faunce, and of many alumni. Material for the early history of the University is supplemented by the Brown Family Papers in the John Carter Brown Library.

Gardner Collection, 30,000 volumes, the majority in Chinese. Given in 1961 by Dr. Charles Sidney Gardner, noted Harvard University Sinologist, the collection reflects his interest in Chinese history—cultural, economic, literary, political, and social, especially in the Ch'ing Dynasty (1644-1911).

Chambers Dante Collection, 1,700 volumes, formed by a specialist on Dante,

THE UNIVERSITY LIBRARIES

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 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, formerly the library of Hammond Lamont, Professor of Rhetoric at Brown University, 1895-1900.

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, gathered by William E. Foster, Class of 1873 and Librarian of the Providence Public Library, 1877-1930.

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.

Legend of the Wandering Jew, 1,500 volumes, collected and given by W. Easton Louttit, Jr., Class of 1925.

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 11,000 bound books, pamphlets, and newspapers, 4,700 broadsides, leaflets, etc., 8,200 prints, photostats, etc., 2,000 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.).

Manuscript Collections, some sixty collections of manuscripts (autograph letters, documents, papers, etc.) of political, literary, medical, and scientific importance. In addition to the Archives of the University and the collections of Lincoln and Hay, there are papers of Thomas Wilson Dorr, Charles Warren Lippitt and family, William Sprague, Jonathan Russell, Henry Wheaton, Dr. Charles V. Chapin, Dr. Solomon Drowne, Dr. Usher Parsons, Mrs. Maude Howe Elliott, Edgar Lee Masters, John B. Wheelwright, and Howard P. Lovecraft; also microfilms of the Robert Todd Lincoln Papers and the Adams Family Papers. There are seven collections of letters written by soldiers during the Civil War, and almost five thousand manuscript sheets by American poets.

Bullard and Hoffman Napoleon Collections. The *Bullard Collection*, presented by Paul Revere Bullard, class of 1897, consists of 185 Napoleon caricatures representing the work of the great English, French, German, Russian, and Spanish cartoonists who lampooned Napoleon and his campaigns throughout his career. The *William Henry Hoffman Collection*, presented by Mrs. Hoffman in 1921, constitutes a museum collection of 500 items—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, the major portion of which were presented by Judge Theron Metcalf, Class of 1805, in the years 1842-1875.

Rider Collection of Rhode Island History, 5,000 volumes and 10,000 pamphlets formed by Sidney S. Rider and acquired for the University in 1904 by Marsden J. Perry.

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, received in 1938 as the bequest of Colonel Webster Knight, Class of 1876, together with funds for current issues, and a collection of United States special delivery stamps, the gift of W. L. L. Peltz, of Albany, in 1946.

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 inter-

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ests in the fields of paleontology and sociology, while voluminous scrap-books, card indexes, etc., show his methods of work.

Morse Whaling Collection, 1,100 books, periodicals, and manuscripts relating to the whaling industry, collected by Carleton D. Morse, Class of 1913, and given in 1958 in his memory by his widow and daughter.

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 LIBRARY, 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, and physics, and the Corthell Library of Engineering, given in 1912 by Elmer S. Corthell, Class of 1867, together with an endowment for the purchase of books in the field 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, one of the University's most prized possessions, is a steadily growing collection of primary source books on the Early History of the Americas. Restricting itself to books and related materials issued before 1801, the Library has, since its founder began collecting in 1846, grown to over thirty thousand volumes including some of the most coveted individual treasures in the literature of American history. Through the will of John Nicholas Brown, the founder's son who carried on his father's collecting, the books became a part of the University and in 1904 were established as a separate library in their own building on the College Green. Today it is internationally recognized as a center for study

and research in those three exciting centuries during which the western hemisphere was discovered, explored, and settled. Public exhibitions are always on display through which visitors are introduced to various segments of the story that constitutes the early history of North and South America. The resources of the Library are available for research by anyone who has a need of them. Students usually carry out work in the Library under faculty guidance, but the John Carter Brown Library is open at all times to all members of the Brown University Community.

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 collections of books named below comprise, with the University Libraries, over 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 use of more than 536,000 volumes. The following departments and collections are available: *Art and Music Department* is especially strong in Architecture and Jewelry, sheet music, 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 an important collection on Textiles; *Reference Department* with Providence newspapers on microfilm back to 1820, R. I. city directories and telephone directories for 1,000 American cities and towns, U. S. Government Documents depository collection, The Rhode Island

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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 George W. Potter and Alfred M. Williams Memorial on Irish Culture* containing, in addition to 3,000 books and periodicals, reproductions of the “Book of Kells” and “Lindisfarne Gospels”—Celtic hand-illuminated manuscripts about the 7th Century A.D., Charles James Fox Collection of 450 pamphlets covering Irish history, religion, and education from 1740–1890, and about 1,500 Irish street ballads; *The Harris Collection on Civil War and Slavery* containing over 12,000 general works, regimental histories, naval and military tactics, biographies of Lincoln, slavery and anti-slavery society publications, Confederate and Union ballads, Confederate imprints and editions of “Uncle Tom’s Cabin” in over 30 languages; *The Nicholson Whaling Collection* comprising over 10,000 items chiefly in manuscript, including nearly 700 logbooks, journals and account books, crew lists, outfitting lists, insurance papers, economic records and letters; *The Updike Printing Collection*, one of the fine typographic collections in the United States containing 6,000 volumes representing examples of fine printing from older European and modern presses, early printers manuals, type specimen books, and an unusual collection of the imprints of Giambattista Bodoni, Bruce Rogers, and the Merrymount Press; *The Edith Wetmore Collection of Books for Children* containing 1,850 volumes spanning five centuries in over twenty languages. Also available are representative Rhode Island imprints before 1800 and files of 1,000 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. There is a yearly registration fee of \$3 for non-resident students.

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 to members of the University.

The Library of the Rhode Island Medical Society contains approximately

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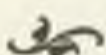
43,000 volumes on medical science and receives current medical periodicals. It has the James H. Davenport Collection of the extra-professional writings of physicians and surgeons and books about them. The Library is open to any person for consultation; circulation is restricted to members and to inter-library loan.

The State Law Library is a collection of 80,000 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 26,000 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.

The University Museums



Gardner House

Gardner House, located at 106 George Street, is the guest house of the University and an historic house museum, furnished with period pieces by Dr. and Mrs. George Warren Gardner during their occupancy and deeded to the University in 1932. The house was built between 1802 and 1806 by Joseph Haile. The various rooms contain period furniture of the late 17th century, Georgian, Empire, and Queen Anne styles, and pieces by Chippendale, Hepplewhite, and Sheraton. A curator lives on the premises and will guide visitors through by appointment.

Haffenreffer Museum

The Haffenreffer Museum on Mount Hope Grant is located seventeen miles south of Providence, in Bristol, Rhode Island. The museum building and over 500 acres of land overlooking historic Mount Hope Bay were a gift to Brown University in 1956 from the Rudolph F. Haffenreffer family and foundation. The museum building was originally erected to house the personal collection of Indian artifacts owned by Mr. Haffenreffer. Since its acquisition by the University, it has been gradually turned into a museum of anthropology, with an ever-expanding program.

The large main room of the building is devoted to objects pertaining to Indians of North America. Adjacent to this is an Alaskan Room displaying both recent Eskimo objects and the archeological leavings of their predecessors, dating back some 6,000 years, which have been collected by museum expeditions to Alaska. The prehistoric part of the Arctic collection of the museum is now one of the outstanding ones of the world.

Another room displays objects from the Equatorial forests of South America and contains a sales desk where art reproductions may be purchased. The large Tribal Arts Room exhibits items made and used by primitive people from all over the world, and the most recent display is in a new room which shows objects currently used by the Kamba tribe of East Africa.

Unseen by public visitors are large storerooms, workrooms, and laboratories used by students of anthropology for doing research and pursuing special studies. The museum is open free to the public on weekends the school year and daily, except Mondays, during the summer. In addition, groups of school children and others are given guided tours during the school year by Brown and Pembroke students.

THE UNIVERSITY MUSEUMS

The woodlands and fields surrounding the museum are of interest to students of zoology, botany, and geology as well as to anthropologists, who have located Indian campsites on this home ground of the Wampanoag Indians of Colonial times. Within a few hundred yards of the museum is the spot where Metacomet, or King Philip, was killed at the end of King Philip's War. A little farther along is a small beach which may be reserved for picnics by Brown students and personnel.

See also the *Annmary Brown Memorial* on page 293.

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 fifty-two 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 Grant 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, Applied Mathematics Building, Arnold Biological Laboratory, Art Building, Art Studio, Barus Hall, The Cabinet, Computing Laboratory, the Engineering Building and Laboratories, Horace Mann House, Howell House, Hunter Psychology Laboratory, Judson House, Ladd Astronomical Observatory, Lyman Hall, Manning Hall, Marston Hall, Maxcy Hall, Metcalf Chemical Laboratory, Metcalf Research Laboratory, Music Building, Nuclear Physics Laboratories, Partidge Hall, Photographic Laboratory, Prince Engineering Laboratory, Prospect House, Rhode Island Hall, Richardson Hall, Robinson Hall, Rogers Hall, Sayles Hall, Sharpe House, Walter Hall, Waterman House, Whitehall, Wilbour Hall, Wilson Hall, and the J. Walter Wilson Biology Laboratory.

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

BUILDINGS AND GROUNDS

used for experimentation, laboratory, and classroom work by the Botany Department.

The language laboratory in Marston Hall has thirty booths for individual listening and recording, visual teaching equipment, and an adjacent seminar room with special equipment for teacher training in the use of language laboratories.

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 308.

The Colgate Hoyt Swimming Pool is located on Lincoln Field, and Marvel Gymnasium, erected in 1928, is located near the Brown Stadium on Elmgrove Avenue. The Thayer Street Tennis Courts are adjacent to the campus. Brown Field with its football stadium is located on Elmgrove Avenue approximately a mile and a half from the campus; the George V. Meehan Auditorium with its hockey rink, and Aldrich-Dexter Field with its baseball diamonds, tennis courts, soccer, and other playing fields are located on Hope Street, less than a quarter of a mile from the campus.

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 Grant, 502 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 Grant are the Haffenreffer Museum of the American Indian, and the Supervisor's 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.

BUILDINGS AND GROUNDS

PEMBROKE COLLEGE

Pembroke College, in addition to having the use of the various classrooms, libraries, laboratories, and the observatory of the University, has on its campus of about seven acres an administration and classroom building, dormitories, a center for non-resident students, a health center, a gymnasium, and athletic field and field house, and tennis courts at Aldrich-Dexter Field.

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, classrooms, the Pembroke College Library, and the Pembroke Bookstore. Alumnae Hall, the student building, contains a large auditorium, a snack lounge, a private dining room, 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, the Placement Office, and the Alumnae Office. 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 369.

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 Pembroke Health Center in Pembroke College 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 20.

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. Tetanus toxoid and poliomyelitis vaccine immunization are strongly recommended.

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.

UNIVERSITY HEALTH SERVICE

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, a private home, or an office.

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 the Pembroke Health Center 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. Charges at cost are made for special medicines.

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 \$26 per year. This insurance will pay expenses up to \$500 plus supplementary expenses up to \$5,000 on an 80% participating basis. Further information is available upon request from the Controller's Office.

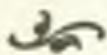
Students Participating in Intercollegiate Athletics

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



Worship

Manning Chapel, on the second floor of Manning Hall, was completed in 1959 and dedicated as a place of worship for all religious groups. Under the direction of the Chaplain of the University, regular services of worship are held in the chapel each week. The present schedule of services is as follows:

University Worship (Protestant), 11:30 a.m. Sundays; 8:30-8:50 a.m., daily, Monday through Friday, during the academic year.

Catholic Mass, Sunday at 10:00 a.m., Holy Days, first Fridays, and days of Lent at 5:15 p.m.

Jewish Sabbath Services, Friday at 7:30 p.m.

Episcopal Communion, Thursday at 7:30 a.m.

The Chapel is also available for use by other religious groups on the campuses.

At special times each year University Vesper Services are held to mark religious holidays or particular events in the life of the University.

The Office of the Chaplain

The Chaplain of the University, Charles A. Baldwin, is available regularly for personal conferences. His office is on the second floor of Faunce House.

Other chaplains assigned to work with students at Brown and Pembroke by their respective religious bodies are as follows: Monsignor Arthur T. Geoghegan, Father Edward W. K. Mullen, Rabbi Nathan Rosen, Canon John Crocker, and the Reverend Hellmut Cramm. They may also be contacted through the Office of the Chaplain.

STUDENT LIFE AND ORGANIZATIONS

College Convocations

Convocations of The College are held regularly at twelve noon in Sayles Hall on Wednesday and Thursday, and of Pembroke College in Alumnae Hall on alternate Tuesdays. The programs, directed by the Committee on Convocations of which the President of the University is Chairman, recognize the need for the student body to meet together regularly and further attempt to deal with the deepest and most significant questions in man's life. Some of these are directly concerned with religion. Others are concerned with the nature of society, the nature of law and government, questions of internal and external policy, responsibilities of the individual, and other such subjects. Speakers are members of the faculty and the administration as well as invited guests, scholars, clergymen, artists, and statesmen.

Music is provided by the Convocation Choir made up of eighty Brown and Pembroke students under the direction of the Director of Convocation Music.

Students in The College are required to attend once every other week, normally with their class. Students in Pembroke College are required to attend on alternate weeks with the entire college.

At Pembroke College, on the Tuesdays when Convocations are not held, there is an All-College Assembly in Alumnae Hall, at which attendance is required.

Convocation Fellows

During each academic year six persons of note from the academic community, or the fields of politics, religion, or national and international affairs, are appointed "Convocation Fellows" in the University. They visit the campus for two or three days, speak at Convocations, and are available to talk with and meet informally with students and faculty.

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 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

STUDENT LIFE AND ORGANIZATIONS

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. An extra charge may be made for a special diet. 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, Littlefield Hall, Slater Hall, and Stites House, all of which are on or very near the campus, and in the Wriston Quadrangle, which includes nine dormitories (Buxton, Chapin, Diman, Goddard, Harkness, Marcy, Olney, Sears, and Wayland House) and seventeen national fraternities. The fraternities are: Alpha Delta Phi, Beta Theta Pi, Delta Kappa Epsilon, Delta Phi, Delta Tau

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Delta, Delta Upsilon, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Psi, 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 (20 Benevolent Street) serves as a day-center for non-resident men who are not married 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 1962-63 are named below:

RESIDENT FELLOWS

West Quadrangle

Archibald House
Bronson House
Everett House
Everett House

Jameson House
Mead House
Poland House

K. P. LAWLEY
JOSÉ AMOR Y VÁSQUEZ
FRANK DURAND
WALTER J. SCHNERR, *Associate to Head
Resident Fellow*
ELMER BLISTEIN
BIRGER STOLAN
ANTHONY WOHL

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Wriston Quadrangle

Buxton House
Chapin House
Diman House
Goddard House
Harkness House
Marcy House
Olney House
Sears House
Wayland House

LEONARD FLETCHER
CHARLES WRONG
PETER LOVE
JAMES O. BARNHILL
WERNER HOFFMEISTER
JEFFREY L. SAMMONS
HOWARD A. SNYDER
HAROLD MILLIE
HENRY KUCERA, *Head Resident Fellow*

Other Dormitory Units

Ames House
North Caswell Hall
South Caswell Hall
Hope College
Littlefield Hall
Plantations House

BRUCE R. POWERS
JAMES L. FARMER
JOHN J. MACISCO
CARLOS M. ANGULO
EDGAR L. CHAPMAN
JOHN HEAD

(Day-center for non-resident students)

ASSOCIATE FELLOWS

Dormitories

Hegeman Hall
Slater Hall

CHARLES A. ROBINSON, JR.
DAVID KOSSOFF

Student Residences—Pembroke College

Resident students at Pembroke College live in a quadrangle consisting of East Andrews, West Andrews, Metcalf, and Miller Halls; in Champlin and Morriss Halls; and in: 87 Prospect Street; Bates House, 34 Olive Street; Mary Woolley House, 99 Brown Street; Snow House, 156 Meeting Street; Stanton House, 85 Brown Street; and Whittier House, 171 Meeting Street.

It is a University rule that all students who do not live with their parents or guardians must live in college dormitories.

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 supplied and laundered by the University. Blankets, towels, lamps, and curtains are not provided by the University. Each student is responsible for damages to her room and furnishings beyond ordinary wear.

The University is not responsible for loss of students' personal property. Adequate insurance coverage is advised for each individual.

West House, 91 Brown Street, the campus residence for non-resident

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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, and the Assistant Dean of Pembroke College, with the assistance of a resident Head in each dormitory.

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.

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, darkrooms, 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 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.

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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 nine 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, hockey, 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 Athletics and the Brown University Athletic Advisory Council. A student on probation or on college discipline is not eligible to participate in intercollegiate 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,

STUDENT LIFE AND ORGANIZATIONS

track, football, hockey, soccer, swimming, tennis, and wrestling. A varsity team is maintained in golf. In addition, there are active, although informal, squads in rugby, lacrosse, skiing, rifle, sailing, squash, and fencing. The colleges and universities with which Brown is associated in Ivy League intercollegiate athletic agreements are Columbia, Cornell, Dartmouth, Harvard, Pennsylvania, Princeton, and Yale.

Physical Education—Pembroke College

The Department of Physical Education coöperates 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 369.

Student Organizations—The College

Fraternities, dormitories, class organizations, and extra-curricular student activities are under the general supervision of the Office of the Assistant Dean of The College: Student Affairs.

The Committee on Student Organizations determines minimum eligibility requirements for membership in the more than one hundred student organizations. 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 "Bear Facts."

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, of which all undergraduate students are members, is headed by a representative 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.

"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, Assistant Dean of The College: Student Affairs, Director of Dramatics, Technical Director of Dramatics, Chairman of the Department of English, Assistant Director of Dramatics, a member of the staff of the 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, New York.

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

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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 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), the Rhode Island Civic Chorale, the Artist Series at Temple Beth-El, and other musical events. Special student rates are offered for many of these concerts.

An annual schedule of musical programs at the University is arranged by the Department of Music. The performing groups are the Brown Glee Club, the Pembroke Glee Club (and these two combined as a Mixed Chorus), the Brown University Orchestra, and the Brown University Band.

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 Director of Convocation Music, Professor William Dinneen, and by other recitalists in cooperation 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 Convocation Choir sings at University assemblies; and the Manning Chapel Choir assists in the services held in Manning Chapel.

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 cooperates 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. The courses must be approved by the

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chairman of the Education Department of the University. 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.

A program of internships is offered under the same auspices for a limited number of candidates for the degree of Master of Arts in Teaching in co-operation with local school systems.

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 and film strips, news and commercial photographs, 16 mm. motion pictures, sound recording, projector rental, photofinishing, photo murals, art work, displays, lettering, and dry mounting, portraits, application and passport pictures, diazo prints, photolithography, picture frames, and photo supplies. 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 1961-62 included the following lectures on *American Images: Ferment in the Western Hemisphere*:

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Professor HERMINIO PORTELL VILÁ, University of Florida: *Cuba*

Professor LEWIS HANKE, Columbia University: *Mexico*

Dr. CLEANTHO DE PAIVA LEITE, Executive Director of the Inter-American Development Bank: *Brazil*

Professor ROBERT J. ALEXANDER, Rutgers University: *The Andean Countries*

Dr. JAMES EAYRS, University of Toronto: *Canadian Views on the United States*

Professor ADOLF A. BERLE, JR., Columbia University Law School: *The United States Looks at Its Neighbors*

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 given in alternate years. Many of them have subsequently been published by the University.

In November, 1961, three Colver Lectures were presented on *The Mycenaean World* by Professor GEORGE E. MYLONAS, Washington University, St. Louis.

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. An Appleton Lecture was given in 1961-62 by Dr. KENNETH PITZER, President of Rice Institute, on *Marginally Metallic Systems*.

THE MOLLIE B. MANDEVILLE LECTURESHIP was established in 1924 by Frank N. Mandeville of the Class of 1905, in memory of his wife. Three Mandeville Lectures were given in 1961-62:

Professor ABRAHAM J. HESCHEL, Jewish Theological Seminary of America: *The Prophets of Israel*

Professor REINHOLD NIEBUHR, Union Theological Seminary: *The Moral Norms and the Moral Ambiguities of the Political Order: The Perspective of a Nuclear Age on an Ancient Dilemma*

Professor CARROLL L. WILSON, Massachusetts Institute of Technology: *Technology and Sociology in African Economic Development*

THE EDGAR JOHN LOWNES MEMORY DAY FUND, established in 1924 by Mrs. Therese K. Lownes in memory of her husband, provides an income to be used annually for an organ recital by some distinguished artist. The recital in 1961-62 was given by Piet Key of the Netherlands.

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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 1961-62:

Mr. ROGER VERCORS: *La Morale et l'Action*

Professor ELIAS L. RIVERS, Dartmouth College: *The Invention of the Novel*

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 1961-62 by Mr. SAUL BELLOW, novelist: *The Next Necessary Thing*.

THE BROWN UNIVERSITY FACULTY 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 following Faculty Lectures in the field of Sociology and Anthropology were delivered in 1961-62 on the subject *Reinterpreting the Past: New Perspectives in Anthropological Research*:

Dr. JAMES L. GIDDINGS: *The Arctic, and Indian Origins*

Dr. DWIGHT B. HEATH: *Possible Trans-Pacific Contacts in Pre-Columbian America*

Dr. IGOR KOPYTOFF: *The Emerging African Past*

UNIVERSITY LECTURES, as certain lectures are designated, included in 1961-62 the following:

Professor RICHARD STILLWELL, Princeton University: *The Princeton Excavations at Morgantina, Sicily*

Professor A. F. BUDDINGTON, Princeton University: *Minerals, Magnetism, and Continental Migrations*

Dr. GABRIEL MARCEL, Visiting Professor, Harvard University: *The Philosophy of Existence and Religion*

Professor JOHN RODGERS, Yale University: *Geologic Comparison of New England and the Southern Appalachian Piedmont*

Professor NORMAN D. NEWELL, Columbia University: *The Coral Reef Problem in the Tropical Western Atlantic*

Sir JOHN WHEELER-BENNETT, British Historian: *Anglo-American Relations—Some Stresses and Strains*

Dr. KURT FORSTER, Yale University: *Nature in Mannerist Art*

Professor MIHAILO MERKOVIĆ, Vice-Rector of University of Belgrade: *The Present State of Philosophy in Yugoslavia*

OTHER UNIVERSITY ACTIVITIES

Professor ROBERT L. McMASTER, University of Rhode Island: *Sediments of Narragansett Bay and Block Island Sound, Rhode Island*

Professor SEYMOUR SLIVE, Harvard University: *Rembrandt and the Classical Tradition*

Sir BERNARD LOVELL, British Astronomer: *Jodrell Bank and its Astronomical Programme*

Mlle. NADIA BOULANGER, Musician and Lecturer: *How Does Music Speak to Us*

Miss PEGGY WOOD, President of American National Theater and Academy: *A Reading from Poems of John Weaver*

Professor JAMES B. GRIFFIN, University of Michigan: *Prehistoric Connections Between Siberia and North America*

Professor PATRICK M. HURLEY, Massachusetts Institute of Technology: *Use of Strontium 78 Variations in Geology*

Professor AUGUST CLOSS, University of Bristol, England: *Is Tragedy Possible on the Twentieth Century Stage*

Mr. WINSLOW AMES, collector and critic: *Victorian Art: Prince Albert as a Taste-Maker*

Professor R. W. B. LEWIS, Yale University: *Hart Crane: The Aspiring Clown*

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. Colloquia, with more informal addresses, are a regular part of the program of several departments, and are also open to the Brown community. Lectures and addresses delivered at the University during 1961-62 by other than members of the Brown University Faculty numbered 228.

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 class hours of instruction. *Double courses* comprise twelve weekly sessions and provide thirty class hours of 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

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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 Acting Director of University Extension, 130 Angell Street.

In the academic year 1961-62, seventy-three courses were given with a total registration of 1,497.

Institutes for Teachers of Science and Mathematics

Brown University is one of 55 colleges and universities offering academic year institutes for high school and college teachers of mathematics and science in 1962-63. As is the case with all of these institutes, the one at Brown has been made 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 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. Similar institutes have been conducted at Brown since 1959.

With funds supplied by the National Science Foundation, the University is offering in 1962, as it has in the four previous years, a summer institute which is designed for the same purpose. Courses are offered in biology, chemistry, mathematics, and physics. In addition, a summer science program for 60 academically able high school students is also being conducted.

The University is also offering in 1962-63 two in-service institutes in which 75 or more teachers are being recruited for 30-week courses in biology and geology.

The various institutes are being directed by Professor Elmer R. Smith, Director, Master of Arts in Teaching Program, assisted by Charles B. MacKay, Associate Director.

The Brown Plan of Teacher Education

The Brown Plan of Teacher Education is the name applied to the multiple efforts of the University to develop programs for the training of teachers and the improvement of instruction in the elementary and secondary schools. Initiated in 1957 with the generous assistance of the Fund for the Improvement of Education, the Brown Plan embraces, among others, these activities: (1) The Master of Arts in Teaching Program, (2) the Graduate

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Summer School for Teachers, (3) the various institutes, sponsored in conjunction with the National Science Foundation, (4) the special program designed for retiring military officers preparing to teach, (5) the Pembroke elementary-teacher training program, (6) the study of the coordination of school, public, and University libraries under the sponsorship of the Library Resources Council, Inc., (7) experimentation with educational television, (8) seminars, workshops, and conferences in conjunction with teachers and school officials. Director of the Brown Plan of Teacher Education is Professor Elmer R. Smith, Chairman, Education Department.

Institute for Health Sciences

The Institute for Health Sciences was established in 1957 to enable the University to encourage and develop research in the growing field of health and to participate cooperatively with Rhode Island health service institutions in research activities. In the absence of a medical college, or plans for such at Brown, this Institute was selected as a means to develop health science research resources at the University and within the community.

A current major activity of the Institute is the Collaborative Study of Perinatal Factors in Child Development conducted under the auspices of the National Institute of Neurological Diseases and Blindness. The Departments of Biology, Psychology, Sociology, and Applied Mathematics participate actively with the Institute in this program. In the community, the study involves active participation of the Providence Lying-In Hospital, Rhode Island Hospital, Miriam Hospital, Meeting Street School, Emma Pendleton Bradley Hospital, and the Providence District Nursing Association as well as cooperation from the State Department of Health and the Rhode Island Medical Society. In connection with this study, special investigations of thyroid activity in the perinatal period, genetics of cerebral palsy, and psychological aspects in the perinatal period are being conducted.

In cooperation with the Rhode Island Hospital, research is being done on the genetic aspects of certain allergic states. Individual projects concerned with medical or dental research in a variety of fields are also under way.

In 1961, a Center for Research on Aging was established within the Institute under a grant from the National Institute of Health. Initial emphasis is on social and economic aspects of aging and involves the participation of the Departments of Sociology and Economics.

Currently, the Institute and its Director serve as the focus for the development at Brown of a program of Medical Education. Planning and development of this undertaking is proceeding under a grant from the Commonwealth Fund.

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 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 any reason it deems valid. 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

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

College, a single prize is awarded in Greek; first and second prizes are awarded in Latin.

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 1961-62 the prize was awarded to

GERHARD HERMANN VELLENER

prepared at St. Peter's Preparatory School, Newark, New Jersey

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 1961-62 prizes for men were awarded as follows:

The first prize to NICHOLAS HANFORD CLAUDY

prepared at Western High School, Washington, D.C.

The second prize GERHARD HERMANN VELLENER

prepared at St. Peter's Preparatory School, Newark, New Jersey

Prizes for women were awarded as follows:

The first prize to ELIZABETH HADLEY HESSE

prepared at Mary Institute, St. Louis, Missouri

The second prize to CAROLYN ELIZABETH CUNNINGHAM SINCLAIR

prepared at Laurel Bank School, Glasgow, Scotland

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 1961-62 prizes were awarded as follows:

The first prize to JEFFREY PETER BUZEN

prepared at Great Neck South Senior High School, Great Neck, New York

The second prize to BRUCE EPHRAIM GOLDSTEIN

prepared at Shaker Heights High School, Shaker Heights, Ohio

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 1961-62 prizes were awarded as follows:

PRIZES, PREMIUMS, HONORS

The first prize to SUSAN NEIMAN

prepared at Hackensack High School, Hackensack, New Jersey

The second prize to JANE AUGUSTA MARANTZ

prepared at James Madison High School, Brooklyn, New York

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 1961-62 prizes were awarded as follows:

The first prize to CHARLES ALDEN BEST

prepared at Rye High School, Rye, New York

Prizes for women were awarded as follows:

The first prize to ELIZABETH HADLEY HESSE

prepared at Mary Institute, St. Louis, Missouri

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 1961-62 prizes were awarded as follows:

The first prize to NORMAN ARMAND COMET

prepared at Classical High School, Providence, Rhode Island

The second prize to JAY AUSTIN WILLIAMS

prepared at American Community School, Ada, Oklahoma

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 1961-62 prizes were awarded as follows:

The first prize to REBECCA HOWLAND KNOX

prepared at Mount Pleasant Senior High School, Wilmington, Delaware

The second prize to MARCIA ESTHER WEINSTEIN

prepared at Grant High School, Portland, Oregon

THE GABRIELA MISTRAL PRIZE IN SPANISH, established in 1962 by anonymous gift, is awarded to two members of the freshman class of Pembroke College who are found to excel in preparatory work in Spanish. The examination presupposes not less than two years' study in a secondary school or its equivalent.

PRIZES, PREMIUMS, HONORS

THE LOPE DE VEGA PRIZE IN SPANISH, established in 1962 by anonymous gift, is awarded to two members of the freshman class at The College who are found to excel in preparatory work in Spanish. The examination presupposes not less than two years' study in a secondary school or its equivalent.

Prizes and Premiums for Excellence in Undergraduate Studies¹

THE SENIOR ORATORS at Commencement in June, 1962, were:

ALFRED TURCO, JR.
MARION RUTH WELCH

THE SINCLAIR W. ARMSTRONG PREMIUM IN INTERNATIONAL RELATIONS is paid from an expendable fund, donated anonymously. A premium is awarded to an undergraduate concentrating in International Relations chosen by the Concentration Committee under conditions stipulated by the donor. In 1961-62 no premium was awarded.

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.

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 1961-62 no prize was awarded.

THE BRAND MUSICAL PREMIUM is derived from a fund established in 1960 by William C. H. Brand as a memorial to William and Mina R. Brand. The Premium is divided equally between a senior of Pembroke College and of Brown University, who in the judgment of the Department of Music best merit the award. In 1961-62 the premium was divided equally between

LOUISE BROWN CHATTERTON and HENRY GAWTHROP COE

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

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 1961-62 the premium was awarded to

ALLITHEA STEPHANIE CARY BLOCH

THE BUXTEHUDE PREMIUM FOR MUSICAL EXCELLENCE was established by a gift from an anonymous donor to provide annual premiums for a junior in The College or Pembroke College. In 1961-62 the premium was awarded to

JOEL ISRAEL COHEN

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 1961-62 no prizes were awarded.

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, character, and attainment." In 1961-62 the premiums were awarded respectively to

ALFRED TURCO, JR.

DONALD EARL HALL

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 1961-62 the prize was awarded to

VIRGINIA ANNETTE GRANT

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

PRIZES, PREMIUMS, HONORS

future promise. The premium consists of a year's membership in the American Chemical Society. In 1961-62 the premium was awarded to

MARY JANE BAKER

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 1961-62 the prizes were awarded as follows:

The first prize to FRANK DONALD STAUTS

The second prize to GEORGE WILLIAM OVIATT

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 1961-62 no premium was awarded.

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 1961-62 the premium was awarded to

HERBERT BLAINE LAWSON, 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 1961-62 no prize was awarded.

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 a senior, distinguished for outstanding work in French. In 1961-62 the premium was awarded to

JOHN FRANCIS HECKMAN

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. In 1961-62 no premium was awarded.

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

PRIZES, PREMIUMS, HONORS

"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 1961-62 the premium was awarded to

JEFFRY ORDOVER

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 1961-62 the premium was awarded to

JUDSON GARY DIMLING

THE FARBAND AWARD for excellence in the field of Hebrew studies has been established by the Farband Labor Zionist Order. In 1961-62 the award was made to

YALE HOWARD KABLOTSKY

THE WILLIAM LEOPOLD FICHTER PREMIUM IN SPANISH was established in 1962 by anonymous gift. The premium is awarded to a member of the junior class of either The College or Pembroke College who has the highest standing in courses in Spanish language and literature and who is a student of promise in the opinion of the department. In 1961-62 the premium was awarded to

JUSTIN VITIELLO

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 1961-62 no premium was awarded.

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 1961-62 the prize was awarded to

STEPHEN VICTOR TRACY

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 His-

PRIZES, PREMIUMS, HONORS

tory. The professor of American History and the Gaspee D.A.R. Prize Committee serve as the judges. In 1961-62 the prize was award to

JANICE CAROLE SHEFTTEL

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, L.L.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 1961-62 the premium was awarded to

ALFRED TURCO, JR.

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 1961-62 the prize was awarded to

WILLIAM LAURENCE WOOD, JR.

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 1961-62 the prizes were awarded to

The first prize to ALFRED TURCO, JR.

The second prize to LILLIAN SARA ROBINSON

THE MARION HASSENFELD PREMIUM IN MUSIC is paid from a fund bequeathed in 1960 by Marion Hassenfeld. It is an annual award to a student of Pembroke College who "excels in music or music appreciation." In 1961-62 the premium was awarded to

MARTHA ANNE WISE

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 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 1961-62 the premium was awarded to

LILLIAN SARA ROBINSON

PRIZES, PREMIUMS, HONORS

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, separately judged, are conducted concurrently. In 1961-62 prizes were awarded as follows:

The first prize to NATALIE SALTONSTALL

The second prize to MARY CATHERINE SNOWDEN

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 1961-62 the prize was awarded to

SHERRY KAY MILLER

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 1961-62 the prizes were awarded to

First prize to TONI HARRISON LEVIERO

Second prize to KIRSTEN ELIZABETH WILLIAMS

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 1961-62 the premium was awarded to

ALFRED TURCO, JR.

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 1961-62 no premiums were awarded.

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

PRIZES, PREMIUMS, HONORS

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 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 1961-62 no prizes were awarded.

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 1961-62 the premium was awarded to

JOEL ALAN SHAPIRO

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 1953-54, and in alternate years thereafter, two prizes in Economics and two in Sociology. In 1961-62 no prize was awarded in Economics and a second prize in Sociology was awarded to

CAROL ANN SCHARF

THE ROSAMOND WINSLOW LEMAIRE WOODWIND PRIZES established by Mr. and Mrs. Marcellus D. Lemaire and friends of Miss Rosamond W. Lemaire, Pembroke, 1961, is given on the basis of a public audition under conditions determined by the Department of Music. In 1961-62 the prize was awarded.

CAROL JEAN HUNT

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

PRIZES, PREMIUMS, HONORS

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 1961-62 prizes were awarded as follows:

The first prize to SUSAN MARYBETH JORDAN

The second prize to ANTHONY ROBERT VERNAGLIA

The third prize to JENNIFER STACEY HARCOURT BROWN

THE CHARLES A. MAGUIRE & ASSOCIATES PRIZE is established to encourage active participation in the Brown University Chapter of the American Society of Civil Engineers. The prize is awarded on the basis of a paper to be presented before The American Society of Civil Engineers Student Chapter. In 1961-62 the prize was awarded to

FREDERIC ARNOLD DUPUIS

THE MURIEL HASSENFELD MANN PREMIUM IN MUSIC is paid from a fund bequeathed to the University in 1960. An annual award is made to a student of Pembroke College who excels in music, music appreciation, or both. In 1961-62 the premium was awarded to

SARA HARKNESS

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 1961-62 the prizes were awarded to

HAROLD SPENCER SCHWENK, JR.

MARLENE ANN RICHTER

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 1961-62 prizes were awarded as follows:

The first prize to JEAN WIENER

The second prize to JENNIFER STACEY HARCOURT BROWN

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

PRIZES, PREMIUMS, HONORS

rest being added to the principal. In 1961-62 the premium was awarded to

DAVID ASBURY PETTY

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 1961-62 the prize was awarded to

ROCHELLE MILLER

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 1961-62 the premium was awarded to

WALTER JOHN CARLOS

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 1961-62 the prize was awarded to

ROLF MARSHALL

THE ROSE LOW ROME MEMORIAL PRIZE IN POETRY, established by annual gift of Miss Arlene B. Rome in 1961, is awarded for the best poem or poems submitted to the English Department.

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 1961-62 prizes from the income of this fund were offered in each of the following competitions open to all undergraduates:

I. In English: Awarded for the best work submitted under conditions designated by the English Department. In 1961-62 the prizes were awarded to

The first prize to SUSAN THORNTON CHIPMAN

The second prize to MAHLON STEWART HALE, JR.

II. In Sociology: Awarded for the best work submitted under conditions designated by the Sociology Department. In 1961-62 the prizes were awarded to

The first prize to STEPHEN SEWELL DASHEFF

Divided second prize to PHYLLIS ELAINE YOKEN and ROGER DAVID FELDMAN

PRIZES, PREMIUMS, HONORS

THE JOSHUA A. ROTHSTEIN PRIZE IN ECONOMICS was given in 1961 by Mr. Martin Kleinbard in honor of Mr. Rothstein's birthday. In 1961-62 the prize was awarded to

WILLIAM VAN ZANDT LAHR

THE MARIO DI SANDRO PREMIUM IN ITALIAN is paid from an expendable 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 1961-62 no premium was awarded.

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 1961-62 the premium was divided equally between:

JANE LEVIN

MARGARET ANNE STRUBLE

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 1961-62 the premium was awarded to

CHARLES HERBERT CAPWELL

THE BEATRICE H. STONE MEMORIAL PREMIUM IN AMERICAN CIVILIZATION established in 1961 for a period of five years, by annual gift of The Stone Foundation, Inc., is awarded to the most outstanding student of the senior class concentrating in American Civilization. The award is determined by the Committee on American Civilization on the basis of "past accomplishment and future promise." In 1961-62 the premium was awarded to

WILLIAM LAWRENCE FISHMAN

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, PREMIUMS, HONORS

Prizes in Art, awarded since 1951, to students of Pembroke College. The contests, separately judged, are conducted concurrently. In 1961-62 prizes were awarded as follows:

The first prize to ROBERT THEODORE LANDON

The second prize to PHILIP RUSH LIVINGSTON

THE OTTO VAN KOPPENHAGEN PREMIUM IN MUSIC established in 1960 by annual gift, donated anonymously, to encourage a promising undergraduate in the study of a stringed instrument of the violin family. Preference shall be given, musicianship being equal, to a student of the violoncello. In 1961-62 the premium was awarded to

DANIEL TRACY RODGERS

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 1961-62 the premium was awarded to

JOAN SARAH HARLOW

THE ELIZABETH NICHOLSON WHITE PREMIUM IN MUSIC inaugurated in 1961 by the Monday Morning Musical Club of Providence as a memorial to Mrs. Elizabeth Nicholson White, the first president of the Club, is awarded an undergraduate who, in the opinion of the Department of Music, is deserving of financial encouragement. In 1961-62 the premium was awarded to

ALFRED TURCO, JR.

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 1961-62 the premium was awarded to

JAMES LAWRENCE HAWES

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.

PRIZES, PREMIUMS, HONORS

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.

During the academic year 1961-62, Honor Scholars were announced as follows:

JAMES MANNING SCHOLARS

Seniors, at Commencement

ROGER DAVID FELDMAN
FARRELL BENTLEY FLEMING
DONALD RICHARD FRIARY
HAROLD GROVER JONES III

HOWARD JOSEPH KASHNER
VINCENT MARK LoLORDO
RAYMOND P. RHINEHART
JEFFREY ALLAN STRITAR

ALFRED TURCO, JR.

Seniors, at Honors Convocation

BRUCE EDWARD FOWLES

VINCENT MARK LoLORDO

ALFRED TURCO, JR.

Juniors, at Honors Convocation

ROLF KARL ADENSTEDT

HAROLD SPENCER SCHWENK, JR.

Sophomores, at Honors Convocation

CLIFFORD MICHAEL DETZ

ALLEN MASON WARD, JR.

PRIZES, PREMIUMS, HONORS

FRANCIS WAYLAND SCHOLARS

Seniors, at Commencement

BRUCE LEE BAKER
HENRY BURT BILLER
LAWRENCE ALAN CHASIN
ROBERT DOUGLAS CITY
RONALD DiPIPPA
MAHLON STEWART HALE, JR.
JOHN FRANCIS HECKMAN III

WINSTON EDGE HIMSWORTH
ALBERT THEODORE HOKE
JON JACOB LEIBOWITZ
ALAN HARVEY ROSENIUS
PETER ROBERT SCHAFER
JOEL ALAN SHAPIRO
EDWARD ALBERT STETTNER

Seniors, at Honors Convocation

ARA CHUTJIAN
DONALD EARL HALL
HOWARD J. KASHNER

JON JACOB LEIBOWITZ
DANIEL JOSEPH ORSINI
THOMAS LEE PAOLI

ALBION DENNIS TAYLOR

Juniors, at Honors Convocation

RICHARD MELLER BERNSTEIN
ROGER DAVID FELDMAN

HALE HOWARD KABLOTSKY
HERBERT BLAINE LAWSON

BARRY LOUIS SHEMA

Sophomores, at Honors Convocation

RAYMOND GEORGE AZRAK
ROBERT FRANCIS BERGERON, JR.
RICHARD WILLIAM DANIELS
JERRY STEPHEN DUBNOFF
HENRY JOSEPH FRIEDMAN
JOHN DAYTON GARBESON
RONALD MICHAEL GREEN
LAWRENCE ALAN KERSON

ROY MARTIN MALETZ
GERRY JOEL PATTERSON
ALAN MURRAY PERLMAN
DAVID ASBURY PETTY
DANIEL TRACY RODGERS
DAVID JOSEPH SHAW
PHILIP BROWNHILL SHELDON
CARL PHILIP SNYDER

ELISHA BENJAMIN ANDREWS SCHOLARS

Seniors, at Commencement

JOAN FERRIS BAKER
SANDRA LEE BUDNITZ
CATHLEEN MARIE CANNON
KAREN DREW CHAPMAN
SUSAN THORNTON CHIPMAN
JULIA EDITH HAIG

JANE ELLEN HALPERIN
MARTHA ANN MILLIKEN
SUSANNA OPPER
MARILYN ELIZABETH PRALLE
MARILYN SHEPARD
JUDITH ANN STAMBERG

Seniors, at Honors Convocation

SUSAN THORNTON CHIPMAN
JULIA EDITH HAIG
ANNE COLE JACOBSON
PRISCILLA JOY PARMAKIAN

LESLIE ST. JOHN PHILLIPS
LILLIAN SARA ROBINSON
CAROLINE DUNKLIN STREET
JUDITH ANNE WATSON

PRIZES, PREMIUMS, HONORS

Juniors, at Honors Convocation

HELEN CAROLE BAROWAY
KAREN STEERS EBBITT
ARLINE MICKLAS
JUDITH ANNE NEAL

ELAINE PATTERSON PILLER
SARA LEE SILBERMAN
ANNE LOUISE TIDABACK
BETTY MARIE WISMER

Sophomores, at Honors Convocation

NANCY MAE CLARK
BARBARA JEAN CUMMINS
DOYLE DARRAGH
LEONORE BROOK LOFT

ELVA GORDON REEVES
JOANNA BUNKER ROHRBAUGH
ELLEN RUTH SHAPIRO
JO-ELLEN WERNE

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.

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 1961 the plaques were awarded to

HOPE COLLEGE

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 1961 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 1961 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 1961 the plaques were awarded to

BUXTON HOUSE

PRIZES, PREMIUMS, HONORS

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 1961 the cup and the plaque were awarded to

KAPPA SIGMA

Honorary Societies

Phi Beta Kappa

OFFICERS, 1962-63

President: PROFESSOR ARLAN COOLIDGE, PH.B.

Vice-President: JAMES SAVILLE EASTHAM, A.B., 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 1961-62

Seniors

HENRY BURT BILLER
KENNETH ROBERT BLACKMAN
JOSEPH JOHN BRENCKLE, JR.
CHRISTOPHER VAN DYCK BROWN
LAWRENCE BRUCE CHASE
ROBERT DOUGLAS CITY
CLIVE DAVIS CONLEY
MATTHEW POLLACK FINK
WILLIAM LAWRENCE FISHMAN
MICHAEL DAVID GOLDFIELD
JOHN FRANCIS HECKMAN, III

CARL RAYMOND HIRSCH
HAROLD GROVER JONES, III
HOWARD JOSEPH KASHNER
JON JACOB LIEBOWITZ
VINCENT MARK LoLORDO
KNOWLTON JOHN O'REILLY
DANIEL JOSEPH ORSINI
STEPHEN MURRAY PIZER
RAYMOND P. RHINEHART
ALAN HENRY ROSENUUS
EDWARD ALBERT STETTNER
JAMES LOWRY THOMPSON

PRIZES, PREMIUMS, HONORS

Juniors

RICHARD MELLER BERNSTEIN
JOEL ISRAEL COHEN
AXEL KORNFUEHRER

STEPHEN VINCENT TRACY

Candidate for the Ph.D. Degree

RODNEY KENNETH DELASANTA

WOMEN ELECTED IN 1961-62

Seniors

BARBARA LESLIE ARMSTRONG
JOAN FERRIS BAKER
JENNIFER STACEY HARCOURT BROWN
SANDRA LEE BUDNITZ
CATHLEEN CANNON
JULIA EDITH HAIG
ANNE COLE JACOBSON
NANCY PENN MALAWISTA
LINDA HOWARD NEWMAN
SUSANNA OPPER
ELNA-MARIKA LUDIG PALANGO
LESLIE ST. JOHN PHILLIPS
MARILYN ELIZABETH PRALLE

VIRGINIA ELAINE REMLEY
LILLIAN SARA ROBINSON
HELENE ENID SCHWARTZ
MARILYN SHEPARD
JUDITH ANN STAMBERG
CAROLINE DUNKLIN STREET
MARION RUTH WELCH

Juniors

KAREN STEERS EBBITT
JUDITH ANNE NEAL
DONNA ELIZABETH PETERSON
ANNE LOUISE TIDABACK
BETTY MARIE WISMER

Sigma Xi

OFFICERS, 1962-63

President: LORIN ANDREW RIGGS

Vice-President: JULIUS WILLIAM KLING

Secretary: WALTER JAMES KENWORTHY

Treasurer: WALTER COLE QUEVEDO, JR.

Members-at-large of the Board of Governors: FRANK DONALD ECKELMANN, MELVIN STUART FULLER, RUSSELL ALLEN PECK, JR., LEALLYN BURR CLAPP, EDWARD THEODORE KORNHAUSER, and WILLIAM MONTAGNA

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.

PRIZES, PREMIUMS, HONORS

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.

(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, 1962, the following were initiated:

MEMBERS

By Promotion

RAHIM ABID AL-KITAL
FREDERICK JUSTIN ALMGREN, JR.
JOHN McDONELL AUGUSTINE
FREDERICK EDWARD BISSHOPP
DENYS PETER BOSHIER
BRUCE BRAGDEN CHICK
HARRY RANDALL CROUCH, JR.
HAROLD SEARL DUNN
DONALD BARRETT GALBRAITH
ARNOLD ELY GUSSIN
BARBARA ANN KATORSKI
RICHARD HOWARD LANCE
STEPHEN VAUGHAN LETCHER
JOSEPH THOMAS MASSIMO
YOICHI MATSUMIYA
THOMAS LEE MENTZER

PAUL KAZUO NAKANE
BRUCE OAKLEY
PAUL FABY PARAKKAL
JEAN-YVES PARLANGE
ALLEN COMPERE PIPKIN
MEI-CHANG SHEN
ROBERT FERGUSON SHEPARD, JR.
GEORGE KEEN SHORTESS
MAE WILLIAMSON SIMMONS
HOWARD ARTHUR SNYDER
WILLIAM CAPPuccio SPEARS
WILLIAM STREIFER
THOMAS CHI-TSAI TING
RICHARD E. WHALEN
THEODORE PATRICK WILLIAMS
EDWARD JOHN WITTERHOLT
MOHAMMAD ZAIN-UL-ABEDIN

Directly

FUJIO ANDO
JEAN ANDRE

BIJOY KUMAR BASU
PAUL RONALD CARON

PRIZES, PREMIUMS, HONORS

CARL RICHARD CAVONIUS
CARLO FERRARI
THOMAS MICHAEL FITZGERALD
ATLE GJELSVIK
ALAN CAMPBELL GREENE
RALPH LEO GUNTHER
CHARLES HENRY HOCKMAN

HIROJI IWASAKI
TATSUJI KAMBAYASHI
MYRNA PIKE LEE
SOOK LEE
PETER LOVE
ARTHUR GORDON LYNE
ROBERT MILTON OMAN

PAUL JOSEPH RING

ASSOCIATE MEMBERS

Graduates

GEORGE PHILIP ANDERSON
MARILYN GRETA ANDERSON
DOUGLAS CHARLES ARRINGTON
STEVEN CHARLES BATTERMAN
DAVID ALLEN BELL
JOHN EDWIN BROTHERS
ROBERT PAUL BURCHARD
MICHAEL MARY CARROLL
EDWIN LOWELL COOPER
ALAN BERCHARD COPPENS
GILLES HERVE COUSINEAU
DONALD JOE CROWLEY
PATRICK FRANCIS DELANEY, JR.
LAWRENCE CLIFTON ERWAY, JR.
ADRIAN KIN-CHIU FUNG
MARILYNN GOLDSMITH
CYNTHIA STONG GROAT
KURT HECHT
ALAN HOWARD
HERBERT KAYE

DAVID KLINE
HERBERT KLINE
JOSEPH MAILEN KOOTSEY
DAVID JOHN LAND
DAVID MAYNARD LINEKIN
LEWIS THOMAS LIPTON
DONALD HUSTON MCBURNEY
BRUCE DOUGLASS MCCOMBE
AHMED NOAMAN NASR
ROBERT LEE PARK
RAMON PINON
EDMUND BERKELEY RANBY
HENRY RUSSELL RICHARDSON, III
JOHN HARVEY SCHULTZ
LARRY STEVEN SHU
ERIC JAMES SOFTLEY
JOAN GLADYS STEVENSON
TING-WEI TANG
SEUNG SOO YUN

CLARENCE CHRISTIAN GOERTE MILLER, JR.

Seniors

CARMINE BEDOTTO
RONALD DIPIPPO
PETER ANTHONY FRANASZEK
WILLIAM EUGENE FRIEDEL
THOMAS NEWCOMBE GARDNER
DONALD EARL HALL
ELDON ALLEN HIEBERT
CYRUS MILLER HOFFMAN
ALBERT THEODORE HOKE
SALLIE ANN KAPPELMAN
LEWIS EARL LITTLE

VINCENT MARK LOLORDO
DAVID JORDAN MCLAUGHLIN
GERALDINE KAY NEELAND
ELNA-MARIKA LUDIG PALANGO
THOMAS LEE PAOLI
STEPHEN MURRAY PIZER
J. DAVID ROESSNER
DAVID MAURICE RUST
JOEL ALAN SHAPIRO
JAMES DUNGAN SMITH
JUDITH ANN STAMBERG
ALBION DENNIS TAYLOR

Junior

HERBERT BLAINE LAWSON, JR.

PRIZES, PREMIUMS, HONORS

Tau Beta Pi

OFFICERS, 1962-63

President: RALPH TABOR WOOD

Vice-President: SHERWOOD HENRY FUEHRER

Corresponding Secretary: RALPH TABOR WOOD

Recording Secretary: SHERWOOD HENRY FUEHRER

Treasurer: SHERWOOD HENRY FUEHRER

Cataloguer: RALPH TABOR WOOD

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 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 1961-62

Juniors

SHERWOOD HENRY FUEHRER

RALPH TABOR WOOD

Degrees Conferred



Degrees in Course Conferred by the University in 1962

The College

June 4, 1962

BACHELOR OF ARTS

A.B., summa cum laude

Judson Gary Dimling, Jr.
Roger David Feldman
Matthew Pollack Fink

Donald Earl Hall
Richard Ephraim Hillman
Vincent Mark LoLordo
Alfred Turco, Jr.

A.B., magna cum laude

Henry Burt Biller
Kenneth Robert Blackman
Richard Manning Blackwell
Lawrence Bruce Chase
Robert Douglas City
Clive Davis Conley
William Lawrence Fishman
Michael David Goldfield

John Francis Heckman, III
Harold Grover Jones, III
Howard Joseph Kashner
Jon Jacob Leibowitz
Daniel Joseph Orsini
Nelson Lionel Portnoy
Raymond P. Rhinehart
Edward Albert Stettner

James Lowry Thompson

A.B., cum laude

Allan Ashman
Bruce Lee Baker
Carmine Bedotto
Joseph John Brenckle, Jr.
Christopher van Dyck Brown
Normand Albert LaPorte Denis
John William Flattau
Farrell Bentley Fleming
Donald Richard Friary
William Eugene Friedel

Mahlon Stewart Hale, Jr.
Carl Raymond Hirsch
Albert Theodore Hoke
James Wilfred Howes
Stephen Gary Joseph
Kenneth Robert Kahn
David Berger Kauffman
William van Zandt Lahr
James John Leonard, Jr.
David Jordan McLaughlin

DEGREES CONFERRED

Raymond Bruce Merson
Paul Kevin Murphy
Henry Donald Peiter
John Preston Pooler
Alan Harvey Rosenus

Michael Saul Saper
Peter Robert Schaffer
Ronald David Skoblow
Dickran Levon Tashjian
Frederick David Trickey

David Frank Wood

A.B.

Shahrugh Akhavi
Philip Goodwin Allen
Richard Day Allen
Alfred Anthony Almonte, Jr.
Stuart Reid Alsop
Lauren Edward Andrews
Carlton Farquhar Andrus
Nicholas Justin Angell
Gerald Anthony Arcaro
Walter Jeffry Asp
Robert Benjamin Auchy
Charles Henry Aymond
David Emil Backman
Francis Balicki
Raymond Richard Balkus
Ian Traquair Ball
Charles Augustus Banks, III
John Peck Banning, Jr.
Ronald Thomas Barba
Michael Peter Barron
Raymond John Barry, Jr.
Norman Brooke Barstow
John Peter Bassler
Richard Michael Bedrosian
Joseph Berland
Arthur William Bertsch, Jr.
Aaron Theodore Billowitz
Richard Frank Bird
Frederick Goodrich Blakelock
Arnold Leo Blasbalg
Richard Allison Boardman
Theodore Nicholas Bosack
William Eugene Boutelle, Jr.
James Milton Bowen
Ralph Brayton Bowen, Jr.
Nelson Prentice Bowsher, II
David McKenna Brockway, Jr.

Burton Blair Brown, Jr.
James Lawrence Brown, III
John Raynal Seely Brown
James Donald Burke
Clyde Arnold Burkhardt
Kimberly Bush, Jr.
Ralph Walling Buxton
John Hamilton Cairns
John Alfred Calhoun, III
Richard Louis Canepa
Jeffrey Caplan
Richard Cappalli
Walter John Carlos
Michael Kerwin Carney
David Martin Carr
Thomas Martin Carson
David Barry Casey
Joel Aaron Cassel
Nathan Ward Chace
Leonard Jack Charney
Thomas John Chatsworth
Michael Robert Chmielewski
Harold Franklin Chorney
James Forrest Churbuck
Michael Peter Cingiser
Peter Brendon Clark
Charles Martin Coe
Henry Gawthrop Coe
Kenneth Samuel Cohen
Roger Braley Cole
Frank Butler Coleman
Leslie Stinson Coleman, Jr.
Melville Webster Collins, Jr.
Robert Allan Conklin
Joseph Head Cooper
Richard David Coopersmith
James John Corbett

DEGREES CONFERRED

John Rogers Craggs	Edward King Forbes
Saylor Longsdorf Creswell, Jr.	Paul Jeffrey Forrest
Donald Cole Croll, Jr.	Alan Moir Forster
Richard Evans Culver	George Edmund Foss, III
Bruce Newton Cummings	Bruce Edward Fowles
William Henry Cummings, Jr.	David Tausig Frank
James Michael Dacey	Harold Jonathan Frank
Leon Julian Dalva	Paul Michael Frank
Walter Edward Damian	Jacob Joseph Frankel
John Lloyd Dauer	Stanley Lewis Freedman
Wendell Rodney Davidson	Samuel Gregory Friedman, Jr.
Timothy Hawes Davies	Richard Dale Friend
Phillips Sherwood Davis	Archie Quarrier Frost
Andrew John Dean	Armando Garces
Carmine Vincent DeGennaro	John Strain Garrison
Ronald Albert DeLellis	Daniel Elliot Gelfman
Jay Raymond Louis de Sibour	Ralph William Giasi
Edward Johnson Deyrup	Lawrence Lee Gibson
James Stratton Dietz, Jr.	George Sanford Gladding
Lynn Jonathan DiPaola	Bruce Daniel Goettel
Donald Bartlett Doe, Jr.	Louis Nathan Goldring
Richard Henry Dollase	Michael Edward Golemba
Frank Torrance Donaldson	Walter Robert Gordon
John Joseph Danahy Donovan	Robert Edward Gorman
David Thacker Drury	Theodore Franklin Gottfried
Bruce Carl Dunham	Peter Henry Gould
Joseph Peter Dyer, Jr.	Alan Jerome Grace
Douglas Moore Dysart	Christopher Geoffrey Graham
Valentin Julius Dzelzitis	Arthur Robert Gralla, Jr.
Bradley Gay Easterson	Benjamin Thomas Greco
Robert Felix Ebin	Kenneth Fisher Green
Thomas Matthew Edwards	Robert Raymond Green
Gerald Hayes Efinger	Berge Gregian
Robert Edward Elson	Douglas Swan Gregory
Martin Bruce Epstein	Jon Edward Griffin
Dennis Christos Erinakes	Charles Robert Grigg
Stephen Arnold Ernst	George Gurney
George Espinosa	John Thomas Gwynne
Peter Douglas Evans	Carl William Hally
Theodore Evergates	Earle Robert Halsband
Herbert Blanchard Farnum	Harvey C. Hansen
Peter Sporborg Fishell	Peter Agnew Hansen
Denis Joseph FitzGerald	Richard Tenney Harris
Michael Thomas FitzGibbon	William Griggs Harriss
Theodore Adams Fleron	Joseph Steinmetz Hayden, Jr.
Steven Milbank Foote	Thomas William Henderson

DEGREES CONFERRED

Alden Chandler Hensel, Jr.
Albert Lee Henson
John Anthony Herrmann, Jr.
Steven Victor Hershenow
Robert David Herstoff
Charles Nelson Higgins, Jr.
James Henry Higgins, III
Anthony Hilton
Harvey DeForest Hinman
Richard Paul Hodges
Theodore Gentry Hoffman
John Day Holbrook
Richard Charles Albert Holbrooke
Richard Peyton Howard
Frank Harley Huber
Vincent Joseph Hudzikiewicz
Paul Phillippi Huffard, III
Bruce William Huffine
Peter Hayes Hurley
John Stiles Irving, Jr.
Jay Michael Jaffe
Paul Norman Jarvinen
Barry William Johnson
David Christopher Johnson
Edward Arthur Jones, Jr.
Louis I. Katzner
Charles Barromeo Keenan, Jr.
Kenneth Robert Keiser, Jr.
Anthony Macdonald Keith
Daniel Leo Kelly
Peter Clark Kenney
Edward Bruce Kirn
Stephen Avram Kniznick
John Alfred Knutson
David Robert Kobrin
Fordham Miller Korper
Richard Cory Kostelanetz
Neal Michael Kurk
Robert Pierre Lambert
Ernest William Lampe
Robert Theodore Landon
John Kerns Lane
Robert Hilary Lane
William John Lapinski
Thomas Frederick Lasko
Donald Alphonse Lavallee

John Joseph Lavino, Jr.
Thomas Latimer Lawson
Karl Gene Layer, Jr.
Robert Oliver Leaver
Raymond Arthur LeBlanc
David Walker Lee, Jr.
Jonathan Jun-Sing Lee
Roger Jackson Lee
Richard Callender Leete
Steven Harris Lesnik
Harvey Levin
John Michael Levy
Richard Gilbert Levy
Eugene William Lewis, III
Barton Ludlow Lilly
Gordon Inglis Lindsay, III
Edward Needles Lippincott, Jr.
Philip Liu
Ross Wilson Lochhead
Robert John Lodewick, Jr.
Robert William Lo Presti
Ralph Andrew Luken, Jr.
Richard Alan Lyden
Robert John Lyons
Neil MacInnis, Jr.
John Carlton MacKenzie
George Anthony Mairs
Jack Gilbert Mancuso
Frederick Lee Markella
Frederic Carver Marston
Hayes Senyi Martin
Kenneth William Martin
Neil Maurer
Luke Ferdinand Mayer, Jr.
William Gerald McCanne, III
Paul Lewis McCormick
Thomas Nolze McGrew
Douglas John McIntosh
Paul Dennis McLaughlin
Thomas Brooks McMullen
Lynn Laurent Messier
Walter Ralph Meyer
Kenneth Bruce Middleton
Gerald David Miller
Isaac Hyman Miller
James Benjamin Miller, III

DEGREES CONFERRED

Charles Edward Milmine
Julian Edward Minard
Jean Walden Missud, III
Brent Dale Moore
John Elliott Morris, Jr.
Martin Van Buren Morris
John Francis Morse, III
Barry Reiver Morton
Bart Harry Mosser
John Michael Muldoon
Warren Charles Munkasy
Robert Johnson Myles
Richard Anthony Nadolny
Michael Allen Naidoff
Charles Todd Newberry, III
Thomas Currie Noel, Jr.
Stephen Webster North
Robert David Nurenberg
Edward Conner Ochsner
Douglas Arnold O'Connell
William Newton Ohlson, Jr.
Samuel Herbert Okoshken
Kevin Vincent O'Leary
James Richard Olsen
Dennis Sean O'Malley
Timothy Parkhurst Orcutt
Albert Williams Overby, Jr.
George William Oviatt
William John Pailey, Jr.
Allen Montgomery Parkman
John Edward Payne
Gilbert Sterling Peirce
William Gardner Perrin, Jr.
Christopher Petty
Eugene Michael Pfeifer
Donald Robert Phillips
Charles Howard Pinkston
William Calvin Potter
Joseph Gerald Pouliot
Donald Boardman Poulson
Stephen David Poulten
Richard Lawrence Prout
Thomas Harry Quill, Jr.
Bruce Alan Rae
Charles Eben Reed, III
Philip Marvin Reed

Michael Thomas Reid
Anthony Carmine Renola
Jack Resnik
Donald Kimball Richardson
Stephen Joel Richman
Peter Clarke Ring
Robert Clarence Ripley
Bruce Alden Rogers
Nelson Johnstone Rohrbach, Jr.
Samuel Stephen Rosenfeld
Anthony James Rosenthal
Arthur Morton Roth
Thomas Minns Ware Rutherford
William James Ryan
William Bradford Ryland, Jr.
Peter Baird Salisbury
Stephen Perry Sandell
Stuart Sargisson
Kent Brian Savel
Palmer Kress Schreiber
Philip Anthony Schuster
Philip James Schwarz
Robert Blackbrook Schwarzenbach
Edward Barton Scott Vasquez
Michael David Shapiro
William Willoughby Sharp
Preston Tuckerman Shea
John Brooks Sherman
Michael Ashford Sheyne
Peter David Shumacker
Richard Bonnell Simms
Robert Lawton Simons
Kenneth Charles Skinner, Jr.
Michael Edward Slayton
Harry Joseph Smith
James Dungan Smith
Wellesley Jones Smith
Zvi Hershel Smith
John Ralph Snyder
John Rogers South
Charles Anthony Spacagna
John David Spiewak
Bruce Purinton Stark
Frank Donald Stauts
Lee Bernard Steele
Michael Lester Stein

DEGREES CONFERRED

Stephen Harold Steinberg
Randolph Paul Steinen
Paul Harlan Stern
Harry James Stevens, III
James Nelson Stewart
Norman Richard Stinson
Eugene Whitehorn Straus
Jeffrey Allan Stritar
William B. Swarts, III
Charles Stephen Switzer
John Paul Taddiken
Ira Lewis Tannenbaum
Allen Lamont Thomas
Anthony Richard Thompson
William James Tingué
Richard Neville Tinker
John Secondo Tomasini
Robert David Traub, Jr.
George Henry Troughton
Harry Burgum Tubman
Patrick Haywood Turley
Jerry Robert Turnbull
Winslow Johnson Tweed
James Russell Tyldesley
Lance Waychoff Ufema
Anthony Robert Vernaglia
Robert Catlin Wachter

William Gaertner Waldau
George Herrick Wales, Jr.
Kenneth Henry Walker
Arthur John Wall, Jr.
Robert Harrison Wallace
Eugene Wolfgang Walter
Ralph Evans Watson
Peter Morrell Watts
David Fairchild Weeks
Theodore Lee Whang
Charles J. White, III
Leonard Field Willems
David Watson Williams
Richard Houston Wills, Jr.
John Charles Wilson
Roger Maitland Wilson
Stephen Dennis Wolanske
Steven Joel Wolin
John Wong
William Laurence Wood, Jr.
Charles Lawrence Woodruff
Noah Irwin Zager
Michael Saul Zarett
Robert Harris Zeff
Frederick George Ziegler
Robert Lane Ziesmer
Paul Albert Zoschke

BACHELOR OF SCIENCE IN ENGINEERING

Sc.B., *magna cum laude*

Peter Anthony Franaszek

Sc.B., *cum laude*

Ronald DiPippo
Thomas Newcombe Gardner

Eldon Allen Hiebert
John David Roessner

Sc.B.

David Porter Baldwin
George Newell Baum
Kenneth Robert Bloomer
Carl Bradford
Roger Henry Clarke, III
William Reed Dealey
John Raymond D'Entremont
Robert Lane Dillmeier

George Newton Freeman
Joseph Golouski
Andrew Short Griffiths
Kenneth Herbert Johnson
Richard David Kniss
John James Lenahan
Richard Carl Myers, Jr.
Alan Jay Parker

DEGREES CONFERRED

Stephen Edgar Rice
Charles Frederick Rood
Richard Frank Santopietro

Arthur Bennett Shattuck
Paul Sessler Souder, Jr.
Harry Franson Whiton

BACHELOR OF SCIENCE IN CHEMISTRY

Sc.B., *magna cum laude*

Lawrence Allen Chasin

Ara Chutjian

Sc.B., *cum laude*

Walter Kevin Bratton

David Kabat

James Fry Stauffer

Sc.B.

Kenneth Edward Dobson

George Tibor Javor

Harold Milford Stanford

BACHELOR OF SCIENCE IN PHYSICS

Sc.B., *magna cum laude*

Cyrus Miller Hoffman

Lewis Earl Little

Sc.B., *cum laude*

David Maurice Rust

Sc.B.

Brian Kitfield Annis
Nathan Edward Clark
Felix Czech

John Louis Inglis, Jr.
Benjamin Franklin Kilgore
Gaetano Lombardo

Robert Steven Wilson

BACHELOR OF SCIENCE IN APPLIED MATHEMATICS

Sc.B., *summa cum laude*

Joel Alan Shapiro

Sc.B., *magna cum laude*

Winston Edge Himsworth, Jr.

Albion Dennis Taylor

Sc.B., *cum laude*

Robert Carl Boger

Robert Feldgarden

Sc.B.

John Garrison
Stephen Roy Rosenthal
John Sedgewick

Robley Justin Simpson, Jr.
George Matthew Vischak
Roger Charles Wade

DEGREES CONFERRED

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN ENGINEERING

A.B. AND SC.B., *magna cum laude*

Thomas Lee Paoli

A.B. AND SC.B.

Marshall Morris Bassick, Jr.

Jeffrey Whitman Casdin

Michael M Davis

Frederic Arnold Dupuis

Joseph Sanford Gillin, Jr.

Richard Charles Hendricks

John Yang Sollion Hsia

John Ambrose Reisert

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN CHEMISTRY

A.B. AND SC.B., *cum laude*

Knowlton John O'Reilly

A.B. AND SC.B.

Arthur Allan Anderson

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN PHYSICS

Ronald Michael Schnitzler

Pembroke College

June 4, 1962

BACHELOR OF ARTS

A.B., *summa cum laude*

Cathleen Marie Cannon

Susan Thornton Chipman

Julia Edith Haig

Marjorie Ellen Miller

A.B., *magna cum laude*

Leslie Armstrong

Joan Ferris Baker

Jennifer Stacey Harcourt Brown

Sandra Lee Budnitz

Joyce Marie Francoline

Anne Cole Jacobson

Nancy Penn Malawista

Susanna Oppen

Elna-Marika Lüdig Palango

Priscilla Joy Parmakian

Marilyn Elizabeth Pralle

Virginia Elaine Remley

Lillian Sara Robinson

Helene Enid Schwartz

Marilyn Shepard

Letha Brooks Smenton

Judith Ann Stamberg

Caroline Dunklin Street

A.B., *cum laude*

Margaret Ann Anderson

Alison Lucy Borton

Margaret Jean Brandt

Susan Bae Budnitz

Dale Ronda Burg

Nancy Jean Burge

DEGREES CONFERRED

Constance Kingman Waite Crouch
Susan Kamer Davis
Jane Ellen Halperin
Gail Marie Irvine
Andrea Gilmour Jacobson
Marilyn Jenkins
Susan Frances Katz
Carol Ann Markovitz
Joanna Matz
Martha Ann Milliken
Noreen Moore
Geraldine Kay Neeland
Linda Howard Newman

Leslie St. John Phillips
Elaine Cynthia Premack
Diana Joyce Rode
Carol Ann Scharf
Mary Catherine Snowden
Margaret Anne Struble
Margaret Webb Thompson
Charlotte Ann Tiedeman
Judith Anne Watson
Margaretta Carroll Webb
Marion Ruth Welch
Diana Lee Wilkoc
Mary Anne Wuskell

A.B.

Roberta Jean Adams
Barbara Cherrix Adkins
Ruth Stephanie Bailyn
Gertrude May Balaschak
Marion Faxon Otis Barnes
Carolyn Nash Bates
Ellin Louise Beatty
Lois Catherine Bellano
Harriet Elizabeth Bianchi
Anita Jean Bonney
Nancy Kathryn Born
Valerie Olga Brenhouse
Ramonda Kump Bridges
Barbara Jean Bromer
Patricia Eleanor Brown
Lucinda Lynne Bruner
Joan Burnham
Kathleen Tucker Burns
Gail Mayla Cantini
Dolores Teresa Capobianco
Carolyn Cardall
Carole Anne Caroselli
Katharine Taylor Carswell
Charlotte Ardoin Casgrain
Karen Drew Chapman
Louise Brown Chatterton
Mary Honoré Clark
Diane Phyllis Clive Cole
Emilia Marie D'Andrea
Diane Elizabeth Davies

Jane Alice DeCourcy
Linda Disston
Katharine Ann Doyle
Marie Anne Duranleau
Gerda Sanders Dymsha
Nancy Hutton Earle
Susan Deretha Elms
Mary Glenn Emery
Barbara Epstein
Carole Irene Faller
Judith Ann Feist
Barbara Gloria Feit
Susan Codman Fiske
Paula Ann Fitzpatrick
Jane Elizabeth French
Helen Clayton Garretson
Ruth Blanche Isabella Gedney
Sara Colvin Glock
Jane Willmott Goodwin
Julia Graves Graham
Anne Greenblatt
Nancy Irene Griffith
Mary-Anne Hahn
Judith Carol Halpern
Judith Irene Hexter
Rose Marie Hidu
Martha Clayton Hill
Cara Linda Lydia Carolyn Hoopes
Donna Lewis Hutchinson
Pamela Jean Jackson

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Rosalind Joyce Jacobs
Cynthia Lee Jenner
Judith Ann Johnson
Susan Marybeth Jordan
Sallie Ann Kappelman
Joyce Elaine Katz
Martha Barnes Kees
Karen Kennerly
Linda Rae Kiley
Prudence Bradstreet Kimball
Joyce Barbara Klaber
Anne Susan Klotz
Jacqueline Brenda Landry
Elizabeth Anne Lenz
Ann Ruth Leven
Jane Levin
Naomi Levinson
Helene Gar-Ling Lew
Virginia Lockhart
Marcia Lunt
Patricia Anne Lynch
Emily Mott-Smith MacKenzie
Marilyn Hope Magid
Deena Rosen Mazer
Judith Ellen Mederos
Louisa Charles Messner
Joyce Ann Michonski
Susan Gross Miller
Joan Elizabeth Morison
Julia Morse
Helen Sara Nathan
Elizabeth Nelson
Sandra Eleanore Nelson
Roberta Bramwell Olsen
Nancy Ellen Otto
Patricia Beth Percy

Dorothy Lula Pierce
Katharine Curtis Pierce
Claire Dunn Pliakas
Marten Ann Poole
Carolyn Sylvia Potts
Margret-Anne Price
Judith Mary Prior
Irene Radauskas
Martha Rose Reeves
Rosemary Lea Rice
Sally Robbins
Judith Bell Roberts
Mary-Ann Rose
Natalie Saltonstall
Carol Phyllis Sheinblatt
Jane Elizabeth Sjoman
Siddy Carten Smith
Margaret Ann Snyder
Janet Gabar Stollnitz
Carol Leslie Tarlin
Nancy Grace Tollefson
Eleanor Forsyth Vernon
Frances Margaret Vincentelli
Rosemary von Elling
Jocelyn Campbell Waggoner
Susann Wardwell
Ellen Burrows Webb
Susanna Mary Welchman
Pauline Jane Wershay
Judith Virginia Wessells
Linda Jean Wharton
Frances Susan Wheaton
Eugenia Ellen Wieschhoff
Carolyn Halliday Wilson
Mary Frances Winter
Susan Jane Wynn

BACHELOR OF SCIENCE IN CHEMISTRY

Reet Paju

Joanne Louise Steele

BACHELOR OF SCIENCE

*Conferred in connection with the granting of a diploma by
the Rhode Island Hospital School of Nursing*

Mary Ann Miga

DEGREES CONFERRED

Honors Program Awards in June, 1962

The College

HIGHEST HONORS

ALLAN ASHMAN

History

CHRISTOPHER VAN DYCK BROWN

History

ARA CHUTJIAN

Chemistry

ROGER DAVID FELDMAN

International Relations

LEWIS EARL LITTLE

Physics

JEFFREY ALLAN STRITAR

Chemistry

ALBION DENNIS TAYLOR

Applied Mathematics

ALFRED TURCO, JR.

English Literature

HIGH HONORS

BRUCE LEE BAKER

Psychology

KENNETH ROBERT BLACKMAN

Economics

WALTER KEVIN BRATTON

Chemistry

JOSEPH JOHN BRECKLE, JR.

Russian Language

LAWRENCE ALLEN CHASIN

Chemistry

CLIVE DAVIS CONLEY

Political Science

WILLIAM LAWRENCE FISHMAN

American Civilization

FARRELL BENTLEY FLEMING

Philosophy

DONALD RICHARD FRIARY

American Civilization

MAHLON STEWART HALE, JR.

English Literature

JOHN FRANCIS HECKMAN, III

French

ELDON ALLEN HIEBERT

Engineering

ALBERT THEODORE HOKE

Mathematics

HAROLD GROVER JONES, III

Spanish

HOWARD JOSEPH KASHNER

International Relations

KENNETH ROBERT KEISER, JR.

Political Science

JON JACOB LEIBOWITZ

History

VINCENT MARK LoLORDO

Psychology

THOMAS LEE PAOLI

Engineering

STEPHEN HAROLD STEINBERG

Sociology

RAYMOND P. RHINEHART

English Literature

PETER ROBERT SCHAFER

English Literature

Sociology

EDWARD ALBERT STETTNER

Political Science

ALFRED TURCO, JR.

Music

HONORS

CARMINE BEDOTTO

Biology

HENRY BURT BILLER

Psychology

RICHARD MANNING BLACKWELL

Economics

JAMES MILTON BOWEN

Philosophy

JEFFREY CAPLAN

Philosophy

ROBERT DOUGLAS CITY

Classics

DEGREES CONFERRED

RONALD ALBERT DELELLIS
Biology

BRADLEY GAY EASTERSON
Psychology

JOHN WILLIAM FLATTAU
English Literature

WILLIAM EUGENE FRIEDEL
Biology

RALPH WILLIAM GIASI
Psychology

DONALD EARL HALL
Mathematics

ANTHONY HILTON
Psychology

CARL RAYMOND HIRSCH
Art

CYRUS MILLER HOFFMAN
Physics

DAVID KABAT
Chemistry

LOUIS I. KATZNER
Philosophy

DAVID BERGER KAUFFMAN
Art

RICHARD CORY KOSTELANETZ
American Civilization

WILLIAM VAN ZANDT LAHR
International Relations

JOHN JAMES LENAHAH
Engineering

GAETANO LOMBARDO
Physics

PAUL KEVIN MURPHY
International Relations

DANIEL JOSEPH ORSINI
English Literature

ALAN HARVEY ROSENIUS
English Literature

RICHARD FRANK SANTOPIETRO
Engineering

MICHAEL PAUL SAPER
English Literature

PRESTON TUCKERMAN SHEA
Spanish

HAROLD MILFORD STANFORD
Chemistry

MICHAEL LESTER STEIN
Philosophy

DICKRAN LEVON TASHJIAN
American Literature

ANTHONY ROBERT VERNAGLIA
Classics

MICHAEL SAUL ZARETT
English Literature

Pembroke College

HIGHEST HONORS

SUSAN THORNTON CHIPMAN
English Literature

JULIA EDITH HAIG
Classics

LILLIAN SARA ROBINSON
English Literature

LESLIE ST. JOHN PHILLIPS
American Literature

HIGH HONORS

MARGARET ANN ANDERSON
English Expression

MARGARET JEAN BRANDT
American Literature

JENNIFER STACEY HARCOURT BROWN
Ancient and Medieval Culture

CATHLEEN MARIE CANNON
Latin

JANE ELLEN HALPERIN
International Relations

LINDA HOWARD NEWMAN
English Literature

ELAINE CYNTHIA PREMACK
Art

JUDITH ANN STAMBERG
Biology

MARGARET WEBB THOMPSON
International Relations

MARGARETTA CARROLL WEBB
Classics

DEGREES CONFERRED

HONORS

LESLIE ARMSTRONG

Art

JOAN FERRIS BAKER

English Literature and Linguistics

KAREN DREW CHAPMAN

Biology

JANE ALICE DECOURCY

Biology

JULIA GRAVES GRAHAM

International Relations

ANDREA GILMOUR JACOBSON

English Literature

SUSAN FRANCES KATZ

Chemistry

ELIZABETH ANNE LENZ

English Literature

CAROL ANN MARKOVITZ

International Relations

ELIZABETH NELSON

Art

SUSANNA OPPER

Philosophy

MARILYN ELIZABETH PRALLE

German

IRENE RADAUSKAS

French

CAROL ANN SCHARF

International Relations

MARILYN SHEPARD

French

MARY CATHERINE SNOWDEN

Art

CHARLOTTE ANN TIEDEMAN

Human Biology

JUDITH ANNE WATSON

French

MARY ANNE WUSKELL

American Civilization

Graduate School

June 4, 1962

MASTER OF ARTS IN TEACHING

Arthur Everett Allen, B.S.

Frances McKillop Ambrose, A.B.

Richard Alexander Ananian, A.B.

Jean Margaret Andrews, B.S.

Roxanne Karibian Arzoomanian, A.B.

Mary Kathryn Bevans, A.B.

Mary Dyer Bogan, B.S. in Art Ed.

Jean Crawford Brace, A.B.

Evelyn Nelson Chapman, A.B.

James Joseph Clancy, B.B.A.

Carolyn North Curtis, A.B.

Fred Francis Czarneck, Ed.B.

Nicholas Andrew Demetropoulos, A.B.

Lawrence John Foley, B.S.

Jeralyn Bass Friedli, A.B.

Carole Michele Gannon, A.B.

Kent Gardner, A.B.

James Wolcott Hanner, A.B.

Warren Neal Haynie, A.B.

Robert Gray Hindmarsh, Sc.B.

John Edward Hubbard, A.B.

Lloyd Saul Kaplan, B.S. in Music Ed.

Harry Charles Keenan, Sc.B.

Douglas Vincent Kinne, A.B.

John Blake Lett, B.S.

William Carl Lieneck, Jr., B.M.E.

James Duncan Linsley, A.B.

Ralph Hamilton Long, Jr., Sc.B.

Albert Anthony Manning, Ed.B.

Robert Wendelin Manthey, Sc.B.

Mary Mercedes Marinelli, A.B.

Albert Henry Marshall, A.B.

William Dean Minor, A.B.

Mary Kristin Nelson, A.B.

Margaret Ann Michele O'Brien, A.B.

James Elliott Owers, Sc.B.

Julia Cellemme Papandrea, A.B.

Lotte van Geldern Povar, A.B.

James Harrell Ramsey, B.S.

Ruth Price Reitman, A.B.

DEGREES CONFERRED

Marguerite Mary Rizzo, A.B.	Stephen David Shatkin, A.B.
Dorothy Mae Schlitt, B.S. in Ed.	Michael Walter Teitelman, A.B.
William Gerald Shade, A.B.	Edward Joseph Ward, Jr., Ph.B., S.T.B.
Irving Laurence Williams, Ed.B.	

MASTER OF ARTS

Wagiha Abdel-Gawad, B.Com.	Kenneth Angus MacIver, A.B.
Adele Adams, A.B.	Calvert Magruder, Jr., A.B.
Douglas Dorland Anderson, A.B.	Teresa Gagnon Mellone, A.B.
Arthur Robinson Boone, III, A.B.	Daniel Messinger, A.B.
Alma Schirru Boutin, <i>University of Cagliari, 1939-1943</i>	Robert Bernard Modee, A.B.
Betty Sanders Buchsbaum, A.B., A.M.	Charles Moran, III, A.B.
Susan Harbottle Campbell, A.B.	Marie O'Donahoe, A.B.
Charles Eugene Dyke, A.B.	William Everett Petty, A.B.
John Edward Fischer, A.B.	Elizabeth Woodruff Pratt, A.B.
Theodore Paul Fraser, A.B.	William Crapo Prescott, Jr., A.B.
Paul Edward Gauthier, Ed.B.	Patricia Ann Reid, A.B.
Cynthia Stong Groat, A.B.	Jerome Joseph Rinkus, A.B.
Walter Paul Hagenau, A.B.	Lillian Sara Robinson, A.B.
John Featherston Hilliker, B.A. (Hons.)	Alvin Rosenfeld, A.B.
Elizabeth Gregory Roberts Hughes, A.B.	Harvey Selib, A.B.
Kwon Ho Kim, B.A., M.A.	Marion Faggen Simon, A.B.
Larry James Kirkpatrick, A.B.	Peter Siviglia, A.B.
Michael Burt Kline, A.B.	Thomas Joseph Wallace, A.B.
Arthur Louis Levin, A.B.	Robert Clarkson Webb, A.B.
Constantine Liebholz, A.B.	Wanni Wibulswasdi, B.A.
	Anne Tedford Youngdahl, B.S. in English.

MASTER OF SCIENCE

Said Mehsin Al-Khozaie, License in Math.	Allister Francis Fraser, III, Sc.B. in Engineering
Arthur Ian Alterman, A.B.	Luigi Giacometti, <i>University of Perugia, 1945-1947; University of Rome, 1947-1949</i>
Peter Karl Bertsch, Sc.B.	Jack Glazier, Sc.B.
Robert Paul Burchard, A.B.	Clarence Christian Goertemiller, Jr., Ed.B.
John Louis Butler, Jr., Sc.B.	Alfred Philip Hallstrom, Sc.B.
Zung-Sing Chang, B.Aero.E.	Kurt Hecht, Diploma, <i>Technical University of Stuttgart</i>
William Tze-You Chen, B.Sc.	Herbert Kaye, Sc.B.
Etsuyo Itokawa Choi, Sc.B.	Eugene Tsung Yuan Lee, B.Sc.
Alan Berchard Coppens, Sc.B. in Engin. Physics	Shien-shien Lee, B.Sc. in Engineering
William Brooks Crawford, A.B.	Donald Frances Mathews, Sc.B.
Donald Joe Crowley, Sc.B.	Peng-Siu Mei, A.B.
Halil Halit Demir, M.Sc., M.Sc. in Math.	Gordon William Neff, B.E.E.
Leland Carlyle Ernest, A.B.	
Raymond Charles Fletcher, Sc.B.	
John Robert Folchetti, Sc.B.	

DEGREES CONFERRED

Henry Russell Richardson, III, Sc.B.	Ara Arthur Shiragian, B.A. in Medicine
Tyrrell Richard Schein, A.B.	John Barton Siegfried, A.B.
John Harvey Schultz, B.S. in Ed.	Sanford Frederick Smith, A.B.
Daniel George Schweikert, B.E.	Walter Glen Speirs, B.Sc.
Brother Anthony Loreto Scotto, F.S.C., A.B.	Joan Gladys Stevenson, A.B.
	David Trutt, Sc.B. in Applied Mathe- matics

DOCTOR OF PHILOSOPHY

Rahim Abid Al-Kital, License in Physics

Thesis: "The mechanism of the $C^{12}(n, \alpha) Be^9$ reaction induced by 14 Mev neutrons."

Frederick Justin Almgren, Jr., Sc.B. in Engineering

Thesis: "The homotopy groups of the integral cycle groups."

John William Ambrose, Jr., A.B., A.M.

Thesis: "Irony in Book IV of Horace's *Odes*."

Alexander Robinson Anderson, B.A.

Thesis: "Spielhagen's problematical heroes."

Gordon Francis Anderson, Sc.B. in Engineering, Sc.M.

Thesis: "An experimental method for measuring the electrical conductivity of high temperature gases."

Jane Jaspersen Anderson, A.B.

Thesis: "Political necessity in the literature of the French Enlightenment: Diderot and the *Encyclopedie*."

Roger Jerome Araujo, Sc.B.

Thesis: "A study of the dissociation of HBr."

Roswell Parkhurst Barnes, Jr., A.B.

Thesis: "Measurements of ultrasonic absorption in water at finite amplitudes for frequencies from 5 to 13 Mc by a radiation-pressure method."

Charles Joseph Battaglia, A.B.

Thesis: "I. The aqueous chemistry of preoxomonophosphoric acid. II. The ultra-violet absorption spectra of several peroxides."

William John Beckett, A.B., A.M.

Thesis: "Probability, reasonable behavior, and reasonable belief."

John George Blair, A.B., A.M.

Thesis: "W. H. Auden: His characteristic poetic mode."

Emily Kuempel Brady, A.B., A.M.

Thesis: "The literary Faulkner: His indebtedness to Conrad, Lawrence, Hemingway, and other modern novelists."

John Vincent Canfield, A.B., A.M.

Thesis: "The compatibility of free will and determinism."

Jessie Douglas Caston, A.B., A.M.

Thesis: "The appearance and accumulation of catecholamines during embryogenesis in *Rana pipiens*."

Carl Richard Cavonius, A.B., Sc.M.

Thesis: "The effects of chromatic adaptation upon the human electroretinogram."

David Almon Collins, A.B., A.M.

Thesis: "Thomas Corneille: Protean dramatist."

DEGREES CONFERRED

Richard Herrick Condon, A.B., A.M.

Thesis: "The reform of English prisons, 1773-1816."

Rodney Kenneth Delasanta, A.B., A.M.

Thesis: "The epic voice."

Harold Searl Dunn, Sc.B., Sc.M. in Engineering

Thesis: "Small amplitude waves in a two-component fully ionized gas."

Ronald Lee Duty, Sc.B.

Thesis: "On the stability of viscous flow between rotating cylinders."

Rosalind Ekman, A.B., A.M.

Thesis: "The problem of Akrasia: A test of the adequacy of metaethical theories."

George Patrick Flynn, Sc.B.

Thesis: "The viscosity of nitrogen and argon as a function of density and temperature."

Anthony Fratiello, Sc.B.

Thesis: "Transference number measurements of leading and following ions by a new technique."

Yahei Fujii, *Osaka University, 1943-1945; University of Tokyo, 1945-1948*

Thesis: "Ultrasonic absorption and relaxation times in nitrogen, oxygen, and water vapor."

Donald Barrett Galbraith, Sc.B., Sc.M.

Thesis: "A quantitative and experimental study of the agouti pigment pattern in the house mouse."

Donald Bernard Gibson, A.B., A.M.

Thesis: "The fiction of Stephen Crane."

Atle Gjelsvik, B.Sc., Sc.M.

Thesis: "An investigation of the energy criterion in snap buckling problems with application to clamped arches and clamped spherical caps."

Harry Theodore Groat, A.B., A.M.

Thesis: "College student migration: 1887 to 1958."

Charles Frank Hauser, A.B.

Thesis: "I. Steric effects upon the lactonization of 'ortho' substituted o-hydroxy-methylbenzoic acids. II. A study of the dissociation of acridans."

James Lawrence Hawes, Sc.B. in Chemistry

Thesis: "Ionic association in the alkali halides: The conductance of potassium chloride and cesium chloride in ethanol-water mixtures at 25° C."

Michael Alphonsus Hayes, B.Sc., M.Sc.

Thesis: "The propagation of elastic waves in deformed isotropic media."

Mary Catherine Henry, Sc.B., Sc.M.

Thesis: "Observations on the development of insulin tolerance in the KL strains of mice."

Ismael Herrera, *National University of Mexico, 1953-1957*

Thesis: "On the wave-front approximation in three-dimensional gas dynamics."

Dar-Veig Ho, B.Sc., Sc.M.

Thesis: "On problems of non-uniform bore and shock propagation."

Werner Georg Hoffmeister, Staatsexamen Diploma, A.M.

Thesis: "Studien zur erlebten Rede, insbesondere bei Thomas Mann und Robert Musil."

Edward Morris Holmes, A.B., Ed.M., A.M.

Thesis: "Faulkner's twice-told tales: His re-use of his material."

DEGREES CONFERRED

Roy Hunter, Jr., Sc.B., Sc.M.

Thesis: "The development of the notochordal sheath in frog embryos and larvae:
A chemical and ultrastructural analysis."

Rudolph Chia-Chao Hwa, Sc.B., Sc.M., Ph.D.

Thesis: "Study of pion-hyperon resonances by dispersion relations in the unphysical sheet."

Kalkunte Vedanthachar Krishna Iyengar, B.Sc., M.Sc.

Thesis: "Polarization produced in the elastic scattering of 2.8 Mev neutrons by nuclei."

Barbara Ann Katorski, B.S., in Home Econ., Sc.M.

Thesis: "The influence of growth hormone on fat and protein metabolism."

Henry Curtis Kelly, Sc.B.

Thesis: "Reactions of diborane with difunctional reagents."

Charles Dwaine Knutson, Sc.B. in Physics

Thesis: "Nuclear magnetic resonance studies of neutron-irradiated fluorides, especially
lithium fluoride."

Richard Howard Lance, Sc.B., Sc.M.

Thesis: "Analysis of plastic conical shells."

Jack Richard Leibowitz, A.B., Sc.M.

Thesis: "Ultrasonic shear wave attenuation in superconducting tin."

Normand Arthur Lemaire, Sc.B. in Chemistry

Thesis: "The viscosity of helium and neon as a function of density and temperature."

Wolfgang Eberhard Löwe, *Heidelberg University, 1950-1952; Copenhagen University, 1952-1953; Mainz University, 1953-1954; Göttingen University, 1954-1956*

Thesis: "The first American foreign missionaries: 'The Students,' 1810-1820.
An inquiry into their theological motives."

William Trumbull Moynihan, A.B., A.M.

Thesis: "The poetry of Dylan Thomas: A study of its meaning and unity."

Mary-Elizabeth Murdock, A.B., A.M.

Thesis: "Charles William Eliot, crusader for the 'New Education.'"

Bruce Oakley, A.B., Sc.M.

Thesis: "Microelectrode analysis of second order gustatory neurons in the albino rat."

Paul Faby Parakkal, B.Sc., M.Sc.

Thesis: "The fine structure of the guinea pig hair follicle."

Jean-Yves Parlange, Ing. Civ. Aero.

Thesis: "On the stability of a laminar flame."

Earl Aurel Pope, A.B., A.M., B.D.

Thesis: "New England Calvinism and the disruption of the Presbyterian Church."

Ethel Elise Rasmusson, A.B., A.M.

Thesis: "Capital on the Delaware: The Philadelphia upper class in transition, 1789-1801."

Richard Herbert Reis, A.B., A.M.

Thesis: "George MacDonald's fiction: A study in the nature of realism and symbolism."

George Keen Shortess, A.B., A.M.

Thesis: "Binocular interaction in the frog retina."

Mae Williamson Simmons, A.B., Ed.M.

Thesis: "Operant discrimination in infants."

DEGREES CONFERRED

Joseph Anthony Skorcz, Sc.B., Sc.M.

Thesis: "Homocyclic ring closures via benzyne intermediates."

William Cappuccio Spears, A.B., Sc.M.

Thesis: "The assessment of visual discrimination and preferences in the human infant."

Richard Martin Stavseth, A.B.

Thesis: "Ultrasonic absorption in He-A and N₂-O₂ mixtures."

Victor Hugo Strandberg, A.B., A.M.

Thesis: "Robert Penn Warren as poet: A close analysis of *Selected Poems, Brother to Dragons, Promises and You, Emperors, and Others*."

William Streifer, B.E.E., Sc.M.

Thesis: "Scattering of electromagnetic waves by a dielectric cylinder."

Thomas Chi-Tsai Ting, B.Sc. in Engineering

Thesis: "Plastic deformations of a cantilever beam with strain rate sensitivity."

Michael Voichick, A.B.

Thesis: "Closed ideals and closed invariant subspaces of analytic functions."

Frank Algernon Warren, III, A.B., A.M.

Thesis: "American liberalism in the 1930's: Its relation to Communism."

Carroll Thomas White, Sc.B. in E.E., A.B., Sc.M.

Thesis: "Temporal numerosity and the psychological unit of duration."

Mohammed Zain-ul-Abedin, B.Sc., M.Sc.

Thesis: "Studies on the effects of ACTH and growth hormone on corticosteroids in two inbred strains of mice."

Michael Raymond Zatzick, A.B., A.M.

Thesis: "Angular distributions of (n, d) pickup reactions in N¹⁴, P³¹, and S³² at 14 Mev."

Honorary Degrees Conferred by the University during the Academic Year 1961-62

NOVEMBER 15, 1961

SYDNEY CASTLE ROBERTS, *Doctor of Humane Letters*

COMMENCEMENT, JUNE 4, 1962

DORIS BROWN REED, *Doctor of Laws*

HERMON CAREY BUMPUS, JR., *Doctor of Science*

DANIEL LUCIUS BROWN, *Doctor of Laws*

CLIFFORD PHELPS MOREHOUSE, *Doctor of Laws*

ANNE S. KINSOLVING BROWN, *Doctor of Humane Letters*

PHILIP MAY HAMER, *Doctor of Humane Letters*

ROSEMARY PARK, *Doctor of Laws*

ARTHUR HOBSON DEAN, *Doctor of Laws*

ARTHUR RUBINSTEIN, *Doctor of Music*

HERBERT ELISHA HARRIS, *Doctor of Science*

JUNE 11, 1962

LARS ONSAGER, *Doctor of Science*

DEGREES CONFERRED

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	ALEXANDER MEIKLEJOHN	1959

Summary of Degrees

At the close of 1961-62, there were enrolled the names of 32,044 graduates, both men and women. Of this number 21,685 men and 6,559 women had received the Bachelor's degree; 2,872 had received advanced degrees; 69 had received the degree of Doctor of Medicine, 1,065 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 Arts in Teaching, Master of Engineering, 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 Provost, the Dean of the Graduate School, the Associate Dean of the Graduate School, *ex-officiis*, and eight elected members.

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.

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 and are also offered during a summer session.

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.

Students seeking admission should make application at as early a date as possible and in general not later than February 15 of the year in which they expect to enter. 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 \$1,500 for a full year of work. For part-time work the charge is in proportion. See the Catalogue of the Graduate School for details.

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 one modern foreign language 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 full-time graduate study. 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 of the field of study and is ordinarily held not earlier than toward the close of the second year of work. The Catalogue of the Graduate School must be consulted for detailed information about the time. 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

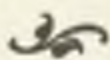
Fellowships are designed for those who have already demonstrated capacity of a high order for graduate study and for first-year students whose undergraduate records, particularly in the major subject, are outstanding. Preference is given to those who plan to proceed to the doctorate. Fellowships and 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 \$1,000 up. Scholarships cover the tuition fee and sometimes carry an additional stipend.

In most departments appointments as research assistants, teaching assistants, or teaching associates, which enable the holders to study three-quarter time, are available. Appointees teach part time, assist in instructional and research laboratories, read papers, or help in the departmental libraries, the remuneration depending upon the amounts 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
Henry Merritt Wriston
Barnaby Conrad Keeney

Providence, R. I.
New York, N. Y.
Providence, R. I.

Officers, 1962-63

President: Stanley F. Mathes '39
President-Elect: Earl W. Harrington, Jr. '41
Treasurer: Richmond H. Sweet '25

Providence, R. I.
Cranston, R. I.
Barrington, R. I.

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New England Region: Lewis A. Shaw '48
Rhode Island Region: Richard B. Pretat '45
North Atlantic-Midland: Douglas S. Widnall '37
South Atlantic-Midland: Albert J. Pereira '38
North Central Region: Robert W. Buckley '27
South Central Region: John M. Records '40
Western Region: Benjamin W. McKendall Jr. '52

Wilbraham, Mass.
Rumford, R. I.
Saddle River, N. J.
Miami, Fla.
Libertyville, Ill.
Kansas City, Mo.
Los Angeles, Calif.

Alumni Secretary: Paul F. Mackesey '32

Riverside, R.I.

Associate Alumni Secretary: James R. Gorham '54

Barrington, R.I.

Directors

John B. Andrews '42
Fred H. Barrows, III '55
John H. Bateman '46
Frederick Bloom '40
Charles W. Colson '53
Robert H. Cowgill '50
Roger J. Cromwell '54
Ralph R. Crosby, Jr. '52
Charles B. David '36
Foster B. Davis, Jr. '39
Alexander A. DiMartino '29
Alexander J. Dimeo '50
Daniel Fairchild '45
Joseph H. Farnham, Jr. '49
Jay W. Fidler '43
Ralph L. Fletcher '39
Alan P. Fort '27

Russell C. Gower '52
William A. Graham '16
Lester L. Halpern '52
Albert A. Hooper '49
James A. Hutchinson '51
Herbert B. Johnson '32
Israel J. Kapstein '26
Elwood E. Leonard, Jr. '51
Joseph F. Lockett, Jr. '42
Stephen A. McClellan '23
Roger D. McIntyre '37
James L. McLay '51
Thomas M. Moore '49
Robert W. Radway '43
Paul L. Stannard '29
Martin L. Tarpy '37
W. Chesley Worthington '23

THE ASSOCIATED ALUMNI

Association of Class Secretaries

Advisory Board, 1962-63

Chairman: Richard J. Tracy '46
Vice-Chairman: Robert W. Kenyon '36
Secretary: Rolland H. Jones '49
Treasurer: Clinton N. Williams '31
Ex-Officio: Stanley F. Mathes '39
Ex-Officio: Paul F. Mackesey '32

Brown Alumni Monthly

Board of Editors, 1962-63

C. Arthur Braitsch '23, <i>Chairman</i>	Stanley F. Mathes '39
George R. Ashbey '21, <i>Vice-Chairman</i>	Carleton Goff '24
Garrett D. Byrnes '26	Israel J. Kapstein '26
Warren L. Carleen '48	Stuart C. Sherman '39

Managing Editor: W. Chesley Worthington '23
Assistant Editor: John F. Barry, Jr. '50

Trustees of the Brown University Fund

National Chairman, 1962-63

Richard L. Walsh '37

Term Expires June 30, 1963

Earl H. Bradley '28	Elwood E. Leonard, Jr. '51
Harry A. Burnett, Jr. '33	John E. Liebmann '41
Robert J. Connell '38	Joseph F. Lockett, Jr. '42
George R. Decker '23	Thomas A. Magee '27
Harry B. Henshel '40	Edmond A. Neal '36
Elmer S. Horton '10	

Term Expires June 30, 1964

Ralph A. Armstrong '17	John W. Haley '19
John S. Chafee '18	Patrick J. James '32
Ralph R. Crosby '26	John Montgomery, Jr. '38
Robert P. Fisler '43	Owen F. Walker '33

Term Expires June 30, 1965

Joel Davis '56	J. Angus Thurrott '31
H. Calvin Coolidge '49	Dudley A. Zinke '39
William A. Graham '16	

Ex-Officio: Barnaby C. Keeney, Stanley F. Mathes '39, Richmond H. Sweet '25, Earl W. Harrington, Jr. '41

The Alumnae Association of Pembroke College



THE ALUMNAE ASSOCIATION of Pembroke College in Brown University is organized for promoting the interests of Pembroke College in Brown University and fostering a spirit of fellowship and loyalty among its members. Any woman who attends Pembroke College is considered *ipso facto* a member of the Association.

OFFICERS, 1962-63

<i>President:</i> MRS. ROBERT W. KENYON	Warwick, R. I.
<i>First Vice-President:</i> MRS. ALFRED B. SUNDQUIST	Manchester, Conn.
<i>Second Vice-President:</i> MRS. WALTER D. KELLY, JR.	Wellesley Hills, Mass.
<i>Recording Secretary:</i> MRS. WILLIAM C. GILES, JR.	Longmeadow, Mass.
<i>Corresponding Secretary:</i> MRS. HENRY J. ADAMS	East Windsor Hill, Conn.
<i>Executive Secretary:</i> MRS. BYRON J. STAPELTON	Cranston, R. I.
<i>Pembroke College Fund:</i> MRS. WALTER N. CARLSON	Riverside, R. I.
<i>Editor, Pembroke Alumna:</i> MRS. ROGER W. KAUFMAN	Lexington, Mass.
<i>Admission-Alumnae Liaison Officer:</i> MISS DOROTHY RUYAK	Providence, R. I.

TRUSTEES OF BROWN UNIVERSITY

MRS. BLEIKE SHELDON REED	Ardsley-on-Hudson, N. Y.
MRS. J. MURRAY BEARDSLEY	Providence, R. I.
MRS. WILLIAM NEWTON HUGHES	Providence, R. I.

ALUMNAE REPRESENTATIVES OF THE ADVISORY COMMITTEE OF PEMBROKE COLLEGE

MRS. RALPH A. ARMSTRONG	Springfield, Mass.
MRS. FREDERICK L. JACKSON	Warwick, R. I.
MRS. DAVID R. TILLINGHAST	New York, N. Y.
MRS. HOWARD E. THUNBERG	Washington, D.C.

CHAIRMEN OF BOARDS AND COMMITTEES

MRS. HELENA HOGAN SHEA	Pembroke College Fund
MISS JEAN ABBOTT	Editorial Board
MRS. PHILIP J. WILLIS	Academic Committee
MRS. GIOVANNI FOLCARELLI	Alumnae Weekend
MRS. CHARLES C. HORTON	Scholarships
MRS. ROBERT E. GRANT	Student Relations

Summary of Enrollment



UNDERGRADUATE ENROLLMENT

	THE COLLEGE		PEMBROKE COLLEGE	
	1961-62	1962-63	1961-62	1962-63
	Semester II	Semester I	Semester II	Semester I
Seniors.....	562	549	198	188
Juniors.....	512	575	198	245
Sophomores.....	592	621	247	227
Freshmen.....	633	659	223	227
Special Students.....	13	16	21	25
Sc.B. Student at R. I. Hospital.....	—	—	1	1
	—	—	—	—
Total.....	2312	2420	888	913

GENERAL SUMMARY

	1961-62 Semester II	1962-63 Semester I
The College.....	2312	2420
Pembroke College.....	888	913
Graduate School.....	873	950
	—	—
Total.....	4073	4283

REGISTRATION IN EXTENSION COURSES

Semester II, 1961-62.....	581
Semester I, 1962-63.....	1020

Geographical Distribution

of Home Addresses as of September, 1962

UNITED STATES	THE COLLEGE	PEMBROKE COLLEGE
Alabama.....	2	1
Arizona.....	—	1
California.....	22	12
Colorado.....	6	4
Connecticut.....	179	75
Delaware.....	14	5
District of Columbia.....	19	18
Florida.....	25	4
Georgia.....	11	1
Hawaii.....	1	2
Idaho.....	1	1
Illinois.....	88	30
Indiana.....	23	3
Iowa.....	5	1
Kansas.....	2	2
Kentucky.....	1	1
Louisiana.....	3	2
Maine.....	13	16
Maryland.....	39	29
Massachusetts.....	431	112
Michigan.....	23	13
Minnesota.....	16	7
Mississippi.....	2	—
Missouri.....	13	8
Nebraska.....	4	1
Nevada.....	1	—
New Hampshire.....	18	9
New Jersey.....	286	77
New Mexico.....	1	—
New York.....	523	170
North Carolina.....	8	2
Ohio.....	54	14
Oklahoma.....	7	1
Oregon.....	3	2
Pennsylvania.....	157	63
Rhode Island.....	294	176
South Carolina.....	1	2
Tennessee.....	3	3
Texas.....	10	6
Utah.....	1	2
Vermont.....	7	5
Virginia.....	42	11
Washington.....	1	2
West Virginia.....	6	5
Wisconsin.....	9	2
FOREIGN.....	45	12
	2420	913

APPENDIX A—PEMBROKE COLLEGE

Department of Physical Education

Assistant Professor GORTON (Chairman); Instructors, Misses GEBELEIN, LUTZ, PHILLIPS, and SCHILTZ; Teaching Associate, Mrs. QUATTROCCHI.

REQUIREMENTS. Physical Education at Pembroke College is required of every student throughout her first three years. Classes meet twice weekly except for one half semester freshman year when classes meet three times a week for a fundamentals course. The health rating, based on the medical examinations given by the Medical Staff, determines the type of activity for each student. Those who have a low rating because of temporary or permanent disability take adapted exercises, modified activities, or prescribed periods of rest.

Freshmen take a term of Fundamentals of Body Movement. This course includes body mechanics, basic movement skills, relaxation techniques, and health education. Also, unless restricted, every student during her college course shall have one half semester (one term) of modern dance, one half semester (one term) of an individual sport, and one half semester (one term) of a group activity. She must also 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: an autumn term, two winter terms, and a spring term. Grading is done on a semester basis with each semester consisting of two terms. No academic credit is granted for any of the courses.

1. *Adapted Exercises* (for those not able to take the required work and for those needing additional assistance). Miss SCHILTZ.

2. *Apparatus and Tumbling*. Miss PHILLIPS.

3. *Archery*. Miss LUTZ.

4. *Badminton*. Misses GORTON and LUTZ.

5. *Basketball*. Misses PHILLIPS and SCHILTZ.

6. *Bowling*. Miss GORTON.

DEPARTMENT OF PHYSICAL EDUCATION

7. *Camp Counselor Leadership Course*. Misses GORTON and PHILLIPS.

8. *Modern Dance*. Miss GEBELEIN.

9. *Dance Club and the Apprentice Dance Group*

Prerequisite: Course 8 or its equivalent. Elective for a limited number of qualified students. Miss GEBELEIN.

10. *Dance Composition*. Miss GEBELEIN.

11. *Country, Folk, and Square Dancing*. Miss GEBELEIN.

12. *Fencing*. Miss LUTZ.

13. *Field Hockey*. Miss PHILLIPS.

14. *Fistball*. Miss PHILLIPS.

15. *Freshman Course* (see page 369). Miss SCHILTZ and staff.

16. *Fundamental Movement*

Basic movement to music. Miss GEBELEIN.

17. *First Aid* (American Red Cross courses). Misses GORTON and SCHILTZ.

18. *Golf*. Miss GORTON.

19. *Gymnastics and Conditioning Exercises*. Misses GORTON and SCHILTZ.

20. *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.

21. *Lacrosse*. Miss PHILLIPS.

22. *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 GORTON, PHILLIPS, and SCHILTZ.

DEPARTMENT OF PHYSICAL EDUCATION

23. *Recreational Games and Playground Activities*

Training in recreational leadership for social work, Girl Scouts, camping, etc. Miss LUTZ.

24. *Restricted Activities* (for those debarred either temporarily or permanently from strenuous activity)

25. *Riflery*. Miss PHILLIPS.

26. *Sailing*

Offered in conjunction with the Brown Yacht Club upon the payment of dues. A proficiency 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. Miss LUTZ.

27. *Skating* (elementary). Miss PHILLIPS.

Instruction in figure skating is also available. Mrs. QUATTROCCHI.

28. *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.

29. *Slim-nastics*. Miss SCHILTZ.

30. *Soccer-Speedball*. Miss LUTZ.

31. *Softball*. Miss PHILLIPS.

32. *Squash*. Miss LUTZ.

33. *Swimming*. Misses GORTON, LUTZ, and PHILLIPS.

34. *Synchronized Swimming*. Miss GORTON.

35. *Life Saving and Water Safety* (American Red Cross courses). Misses GORTON and LUTZ.

36. *Tennis*. Miss SCHILTZ and staff.

37. *Track*. Miss PHILLIPS.

38. *Volley Ball*. Misses GORTON and PHILLIPS.

APPENDIX B

Assistants, Associates in Research, Research Assistants, and Teaching Associates

The following is a list up to September, 1962, of Assistants, Associates in Research, Research Assistants, and Teaching Associates holding appointment under the Corporation of Brown University.

MUSTAFA AGAH AKCOGLU, M.S. in E.E., *Research Assistant in Engineering*

NICOLETTA BARBARITO ALEGI, (UNIV. OF ROME), *Assistant in Italian*

EARL GLYNN ALEXANDER, Sc.B., *Research Assistant in Chemistry*

¹ SAID MEHSIN AL-KHOZAIE, Sc.M., *Research Assistant in Applied Mathematics*

RICHARD STANLEY ALLEN, A.B., *Assistant in English*

ROBERT DUFF ALLENDOERFER, A.B., *Assistant in Chemistry*

RICHARD WALTER ALSFELD, A.B., *Assistant in Political Science*

RALPH LEONARD AMEY, A.B., *Research Assistant in Chemistry*

EDWIN JOSEPH ANDERSON, A.B., *Assistant in Geology*

KENNETH VERL ANDERSON, A.B., *Assistant in Psychology*

PETER SLOBIN ANDERSON, A.B., *Teaching Associate in English*

FUJIO ANDO, M.S., *Research Assistant in Physics*

²GINETTE REGAUDIE ANDRE, *Research Assistant in Biology*

¹BRIAN KITFIELD ANNIS, Sc.B., *Research Assistant in Chemistry*

FRANK JOHN ROBERT ANREP, Sc.B., *Research Assistant in Engineering*

¹LESLIE KINGSLAND ARNOLD, A.B., *Assistant in Mathematics*

DOUGLAS CHARLES ARRINGTON, Sc.M., *Research Assistant in Physics*

CLAUDETTE THERESA ARSENAULT, *Associate in Research in Biology*

³DAVID AVISON, Sc.B., *Assistant in Physics*

MARIA-CARMEN GIL AZPEITIA, A.M., *Assistant in Spanish*

ERNA MARY BABER, A.B., *Assistant in German*

PHILIP HINDS BAILEY, A.B., *Teaching Associate in English*

JEFFREY BAKER, A.B., *Assistant in Philosophy*

JUDITH POLSKY BAKER, A.B., *Assistant in Philosophy*

RICHARD EDWIN BALL, A.B., *Assistant in Chemistry; Research Assistant¹*

ELIZABETH ELLIOTT BALLANTINE, A.B., *Assistant in Biology*

WON BONG BANG, M.S., *Research Assistant in Chemistry*

KENNETH D. BARKIN, A.B., *Assistant in History*

¹ Summer, 1962.

² Began January 15, 1962.

³ Began Semester II, 1961-62.

ASSISTANTS AND ASSOCIATES

- FRANCIS H. BARRON, Sc.B., *Assistant in Mathematics*
 TERENCE EDWARD BASE, B.Sc., *Research Assistant in Engineering*
 BIJOY KUMAR BASU, M.Sc., *Research Assistant in Applied Mathematics*
¹JOHN HAMPDEN BEALE, Sc.M., *Assistant in Chemistry*
²DAVID ALLEN BELL, Sc.B., *Research Assistant in Mathematics*
²JOSEPH MICHAEL BERMAN, Sc.B., *Assistant in Mathematics*
 MARTIN BERMAN, Sc.B. IN ENGIN. PHYS., *Research Assistant in Physics*
 THERESA CHRISTINE BIENIEKI, *Associate in Research in Biology*
 STEPHEN GRAY BISHOP, A.B., *Research Assistant in Physics*
 JOSEPH JOHN BLASS, B.M.E., *Research Assistant in Engineering*
 JOSEPH SHELDON BLINICK, Sc.B., *Assistant in Physics*
 KERMIT MARK BONAR, Sc.B., *Research Assistant in Geology*
 ROBERT JOSEPH BOUCHARD, Sc.B., *Assistant in Chemistry*
 ALMA SCHIRRU BOUTIN, A.M., *Assistant in Italian*
 JOHN RUSSELL BRANDENBERGER, A.B., *Assistant in Physics*
 ALFRED GEORGE BRANDSTEIN, Sc.B., *Research Assistant in Mathematics*
 SHLOMO BREUER, Sc.M., *Research Assistant in Applied Mathematics*
 JOEL I. BREST, A.B., *Teaching Associate in Economics*
³HELEN BEETRICE BREWER, Ed.M., *Associate in Research in Physics*
 SUSAN FISSEL BRITCHER, A.B., *Research Assistant in Chemistry*
 ANNE CALVERT BROOKE, A.M., *Assistant in Classics*
 ANN JANICE BROTHERS, *Associate in Research in Biology*
 JOHN EDWIN BROTHERS, Sc.M., *Research Assistant in Mathematics*
 WILLIAM HAROLD BUCKLER, Sc.B., *Research Assistant in Physics*
 JOHN MICHAEL BUMSTED, A.B., *Research Assistant in History*
 MILTON RAYMOND BUYCE, Sc.B., *Assistant in Geology*
 WENDY JOAN BAKER CAMMER, A.B., *Assistant in Biology*
 DAVID SUMNER CAMP, A.M., *Assistant in Psychology*
 JOHN BASIL CAMPBELL, B.Sc., *Research Assistant in Applied Mathematics*
 ULUG CAPAR, M.S., *Research Assistant in Engineering*
 BARBARA CHASE CARDOSO, A.B., *Assistant in Anthropology*
 DONALD EARLE CARLSON, Sc.M., *Research Assistant in Applied Mathematics*
 JANNE AXEL CARLSSON, (ROYAL INST. OF TECH., SWEDEN), *Research Assistant in Engineering*
 JAMES GILBERT CARNATHAN, Sc.M., *Research Assistant in Psychology*
 PAUL RONALD CARON, Sc.M., *Research Assistant in Engineering*
 MICHAEL MARY CARROLL, M.A., *Research Assistant in Applied Mathematics*
 CHIH-PING CHANG, B.A., *Assistant in Linguistics*
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¹ Semester II.

² Summer, 1962.

³ Semester II, 1961-62.

⁴ May 1-August 31, 1962.

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² Semester II.

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² Summer, 1962.

³ Began April 1, 1962.

⁴ Began January 1, 1962.

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² 1961-62.

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² Began 1961-62.

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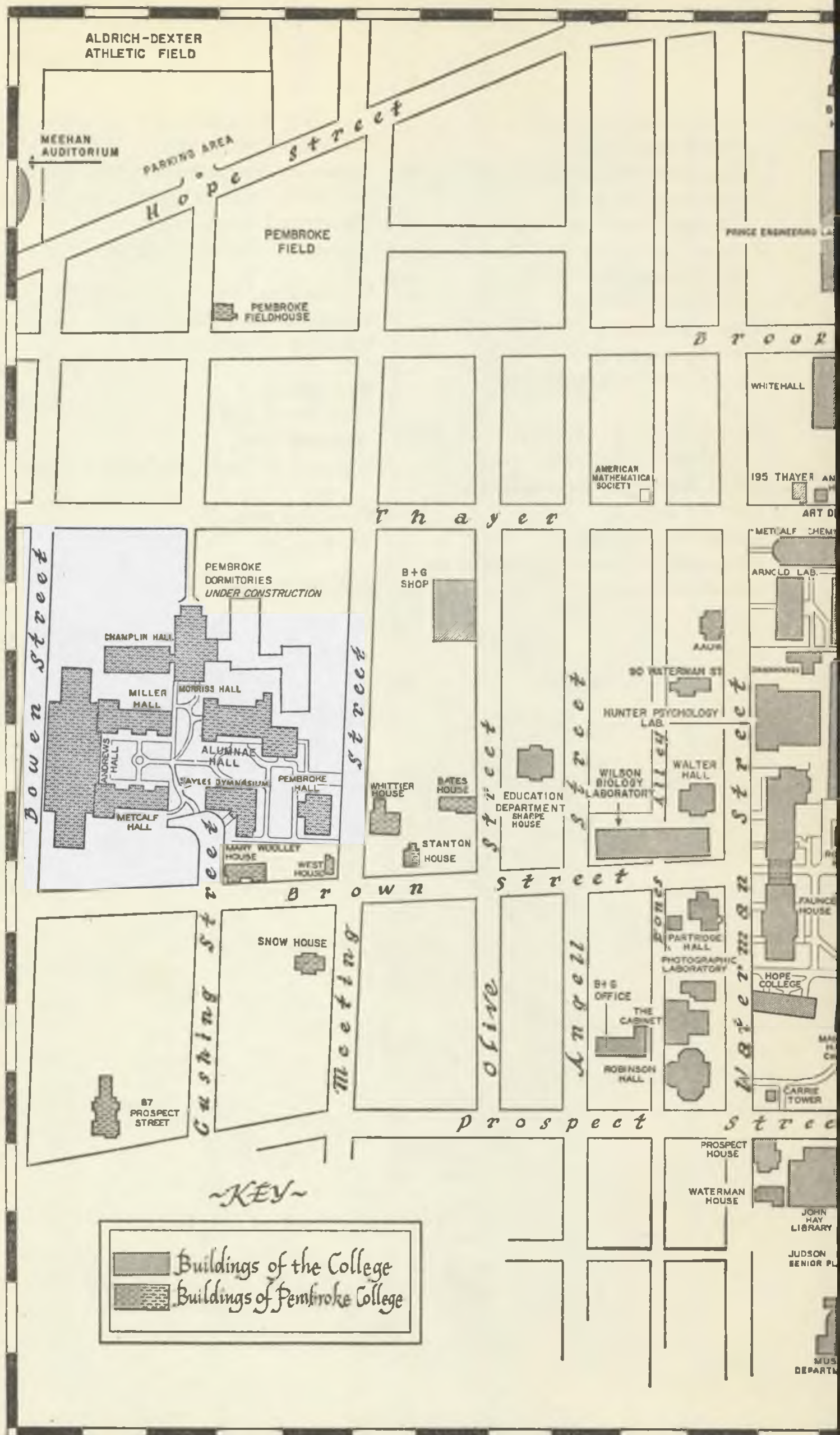
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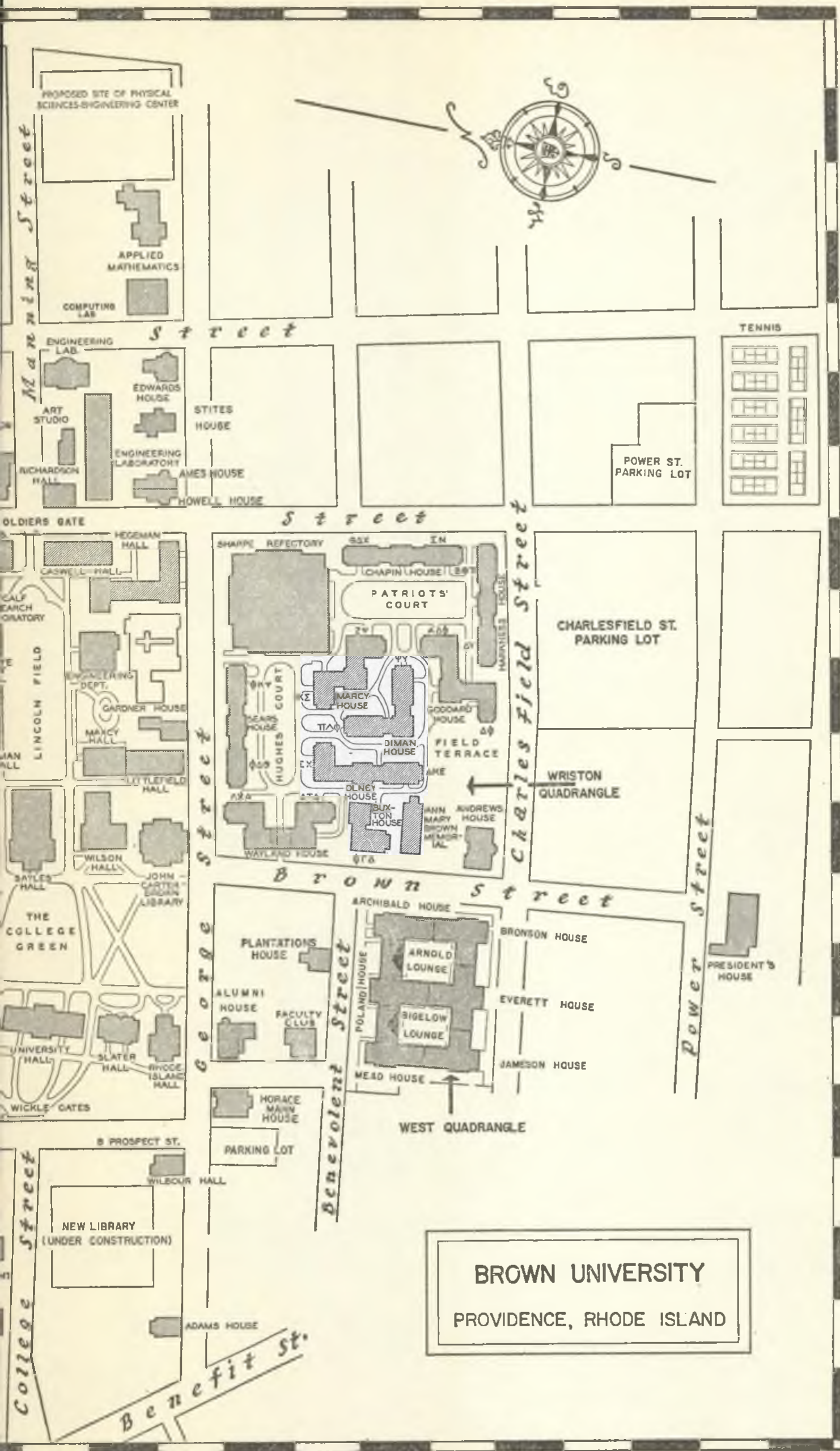
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SCHEDULE OF RECITATION GROUPS

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	

Brown University

THE COLLEGE. An undergraduate college for men, with courses leading to the degrees of A.B., Sc.B. in Applied Mathematics, Sc.B. in Biology, Sc.B. in Chemistry, Sc.B. in Engineering, and Sc.B. in Physics.

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