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GRADUATE STUDY
IN UNIVERSITIES AND COLLEGES
IN THE UNITED STATES

By

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FOREWORD

In recent decades graduate study in the United States has had an unprecedented development. The multiplication of graduate schools and departments in institutions of higher learning has been very rapid. In many cases graduate programs have been superimposed on undergraduate curricula with little regard for the true needs of institutions or of society. Considerable variation in standards and practices has come to prevail among graduate schools. This to some extent has been a hindrance to their articulation with one another as well as with the large group of undergraduate colleges with which they have relations.

There is also considerable lack of understanding both in this country and abroad as to the ways in which graduate schools have developed in the United States and how standards and practices have evolved. The increasing diversification among curricula leading either to the master's degree or to the doctor's degree is one cause of this lack of understanding.

It is, therefore, the purpose of this bulletin to contribute such information as may aid in bringing graduate schools into closer and more effective relationships. It is also hoped that it may lead to a further consideration of the more economical and efficient development of graduate study through appropriate national, regional, or State planning in order that educational standards may be protected at both the graduate and undergraduate levels.

BESS GOODYKOONTZ,
Assistant Commissioner of Education.

PREFACE

This study aims to give essential facts regarding the development, general control, and administration of graduate work, including the principal standards, requirements, and practices that relate to the granting of degrees on the graduate level. In recent years, along with the expansion of graduate work in many of the older universities, a great many smaller institutions, mainly colleges, have added graduate programs leading to higher degrees. Many of these schools have been feeders to the older and better-equipped universities. Consequently, a more complete understanding of the standards and practices relating to the master's and doctor's degrees as represented by a strong group of universities should prove helpful.

With some of these objectives in mind the Office of Education was requested to undertake a study of graduate work as early as 1925 by Dean W. H. Boccock, of the graduate school of the University of Georgia, who represented a conference of deans of graduate schools of the Association of Colleges and Secondary Schools of the Southern States, held at Atlanta, Ga., in that year. The Office of Education favored the proposal, but because of the pressure of a series of Nation-wide surveys was obliged to postpone the project.

As the result of an increasing number of requests from different sources, it was decided in 1931 to undertake a study of graduate work on a broader basis than had been planned originally.

METHODS AND SOURCES USED IN THIS STUDY

In order to avoid the use of questionnaires, the principal basic data relating to standards, requirements, and practices have been largely obtained from abstracts of university and college catalogs. These abstracts were sent for criticism

and approval to the deans of graduate schools or other appropriate university or college officials.

The writer wishes to acknowledge the valuable assistance of Miss Ruth Eckhart in the preparation of the abstracts.

In chapters I and II the writer has drawn historical and statistical data largely from the annual reports of the United States Commissioner of Education and the later biennial reports. Much help has been received from the reports and bulletins of the Carnegie Foundation for the Advancement of Teaching, the bulletins of the American Association of University Professors, the transactions and proceedings of the National Association of State Universities, the Survey of Land-Grant Colleges and Universities, and the handbooks of graduate courses published by the Federation of Graduate Clubs. Valuable assistance has been received from the unpublished studies prepared in cooperation with the United States Office of Education: Standards for the Master's Degree, by David T. Blose, and An Analysis of the Educational Activities of the Association of American Universities from 1900 to 1931, by Dr. Arthur Lee Maiden.

In chapter III the writer, with permission, has drawn considerably from certain portions of an unpublished study entitled "The Aims of Graduate Instruction in the Preparation of College Teachers", prepared in cooperation with the United States Office of Education by Dr. Charles H. Thompson, professor of education at Howard University. Because of the fundamental nature of the matter used in this study and the wide cooperation of university and college officials in its preparation, this part of the chapter should be of special interest and value.

In chapter IV the list includes 160 institutions, practically every university or college in this country that makes any pretension of granting the master's degree, as well as those that grant the Ph. D. degree or equivalent. This list does not include separate teachers colleges.

The lists of institutions used in chapters V, VI, and VII comprise those that granted one or more Ph. D. degrees in each of the 3 years—1926, 1928, and 1930. As reported in the biennial surveys of education of the Office of Education

for those years, these lists include 78 institutions. To these have been added a few teachers colleges that grant the master's degree.

In view of the fact that the questionnaire method was not used in this study, it has not been possible to give equivalent treatment to all of the topics under consideration. Nevertheless, in view of the excellent cooperation of the deans of the graduate schools and others in revising the abstracts, it is hoped that the findings are sufficiently full and accurate to be of service to those interested in the administration of graduate study. The writer also wishes to express his great appreciation for special information furnished by a number of deans and others whose names appear elsewhere regarding certain historical aspects of the study. Acknowledgment must be made to Dr. G. Carl Huber of the Graduate School of the University of Michigan for obtaining early data from the Regent's Proceedings of that institution. He is also grateful for the suggestions of Dr. Roy J. Deferrari, Dean of the Graduate School of the Catholic University of America, who read the manuscript. The writer is very much indebted to Albert Mathews, of Boston, an authority on the records of Harvard University, for his valuable service in checking the essential codes of laws of Harvard University from 1642 to 1866, which are basic to the early history of the master's degree at Harvard. In this connection he cannot fail to express his thanks to Dean George H. Chase and Assistant Dean Lawrence S. Mayo of the Graduate School of Arts and Sciences of Harvard University. The writer also wishes to thank Dr. Fred J. Kelly, Chief of the Division of Higher Education, as well as other members of the Office staff for their valuable criticisms.

GRADUATE STUDY IN UNIVERSITIES AND COLLEGES IN THE UNITED STATES

CHAPTER I

DEVELOPMENT OF GRADUATE STUDY IN THE UNITED STATES

1. THE BEGINNINGS OF GRADUATE STUDY IN THE UNITED STATES

In the modern sense, American universities and colleges carried on relatively little graduate study and research until after the Civil War. Nevertheless, a number of institutions during the early period of our history offered opportunities for gaining the master's degree. At Harvard College, as far back as 1642, we find the following requirements for the master's or second degree:

Every Schollar that giveth up in writing a *System*, or Synopsis, or summe of *Logick*, Naturall and Morall *Phylosophy*, *Arithmetick*, *Geometry*, and *Astronomy*: and is ready to defend his *Theses* or position: withall skilled in the *originalls* as abovesaid: (Refers to the requirements for the bachelor's degree) and of godly life and conversation: and so approved by the Overseers and Master of the Colledge, and at any publique *Act*, is fit to be dignified with his 2d Degree.¹

According to the plan at that time the candidaté was required to study an additional year beyond the baccalaureate or until such time as he "giveth up in writing a synopsis or summary of Logic, Natural and Moral Philosophy, Arithmetic, Geometry, and Astronomy, and is ready to defend his

¹ Quincy, Josiah. *The History of Harvard University*, vol. I, p. 517. Published by John Owen, Boston, 1840. See also *Harvard Graduates magazine*, December 1903, p. 210.

theses or positions, withal skilled in the originals as aforesaid, and still continues honest and studious, at any public act after trial he shall be capable of the second degree."²

In 1650, 8 years later, the overseers set up a 3-weeks period of visitation between June 10 and the commencement when prospective bachelors were to be examined by all comers, and those that were planning to obtain the master of arts were required "to exhibit their synopses of acts (arts)³ required by the law of the college."²

In 1734 the following regulation was put in force:

What Bachelor soever shall make a common place or synopsis of any of the arts or sciences, and publicly read the same in the College hall, in the third year after his first degree, and be ready to defend his thesis, and is skilled in the original tongues, and continueth blameless, shall after approbation at a public act, be capable of a second degree, viz., of Master of Arts. And no other degree shall be given beside the above named, but in such cases and upon such conditions as the corporation shall judge fit, the Overseers consenting thereunto.

Each candidate for his first or second degree shall pay 20 shillings to the President, and 20 shillings towards defraying the charge of the Commencement dinner; and each candidate for his second degree shall pay 20 shillings to the Steward for the use of the college.⁴

The requirement that a candidate for the master's degree should first hold the bachelor's degree was challenged very early in the history of Harvard. In June 1736 a student by the name of Hartshorn applied for the master's degree. As he had never received the bachelor's degree the Corporation refused him the degree. However, the Overseers reversed the decision in spite of the law of the college that "no academic degree shall be given but by the corporation with the consent of the Overseers." After considerable discussion and delay the Overseers finally won and Hartshorn received his master's degree, according to Thayer. (See footnote 9, page 5.)

The program of disputations for 1743 is indicative of the scope and character of the intellectual program of the

² Ibid., p. 518.

³ The word "acts" should read "arts". According to Albert Mathews, of Boston, Mass., the copyist employed by Quincy misread the original. From letter of Albert Mathews to Dr. Lawrence S. Mayo, assistant dean of the Graduate School of Arts and Sciences, Harvard University, Nov. 9, 1934.

⁴ Peirce, Benjamin. A History of Harvard University. Appendix, p. 136. In Body of Laws for Harvard College for 1734. Chapter vi, on Academical Degrees. Boston, Brown, Shattuck & Co., 1833.

master of arts in those days. There were 19 questions affirmed or denied as shown herewith.

QUESTIONS FOR THE CLASS OF 1743

Questions to be methodically discussed by candidates for the degree of master of arts in public assembly under the Rev. Mr. Edward Holyoke, president of Harvard College, by divine Providence, at Cambridge in New England, on the 6th of July A. D. 1743.

- I. Whether a Confession of Faith may be declared in words merely humane?
Affirmed by Thomas Prince.
- II. Whether every Dissimulation be a Vice?
Deny'd by Benjamin Stevens.
- III. Whether the Dissolution of Solids in Corrosive Liquors be performed by Attraction?
Affirmed by Samuel Gay.
- IV. Whether Private Profit ought to be the chief End of Moral Actions?
Deny'd by George Bethune.
- V. Whether it be lawful to resist the Supream Majistrate, if the Common Wealth cannot be otherwise preserved?
Affirmed by Samuel Adams.
- VI. Whether all Animal Motion and Sensation be performed by the Motion of the Nerves?
Affirmed by John Gibbins.
- VII. Whether Civil Government ariseth out of Contract?
Affirmed by Samuel Downe.
- VIII. Whether Justification be best discovered by Works attending Sanctification?
Affirmed by Samuel White.
- IX. Whether the Obligation to Virtue be founded in the Abstract Relations of Things?
Affirmed by Samuel Orne.
- X. Whether every Form of Divine Worship, may be universally tolerated, in no manner incommoding the public good?
Affirmed by John Newman.
- XI. Whether this Rule [What thou doubtest do not] may be admitted in Morality?
Affirmed by Samuel Hendley.
- XII. Whether the Humane Intellect be the Measure of Divine Faith?
Deny'd by Jonathan Hoar.
- XIII. Whether the will of God be the only and adequate Rule of moral Actions?
Affirmed by Samuel Hale.

XIV. Whether a Conscience invincibly erroneous may be blameless?

Affirmed by Nathaniel Snell.

XV. Whether the Scripture be the perfect and only Rule of Believing and Acting?

Affirmed by Samuel Langden.

XVI. Whether the Christian Religion may be propagated by Force and Arms?

Deny'd by James Hovey.

XVII. Whether the Law of Nation be distinct from the Law of Nature?

Affirmed by Joseph Davis.

XVIII. Whether Past and Future Sins are forgiven at the same time?

Deny'd by Amariah Frost.

XIX. Whether the Operations of the Holy Spirit in the Mind may be the improper Cause of Natural Errors?

Affirmed by Sylvanus Conant.*

There were no marked changes in the requirements for the master's degree until 1825, when anyone who had taken the Harvard bachelor's degree was entitled to the master's degree 3 years after graduation on the payment of the usual fee. The candidate must also sustain a good moral character.⁶

In 1847 a scientific school was established at Harvard under the administration of President Everett. This school had for one of its principal objects the instruction of the most advanced students. In addition to the scientific courses offered we also find courses in philology.⁷

As early as 1860, President Felton, of the same institution, had provided a system of university lectures. Under President Hill, these lectures were strengthened, and the corporation of the university ordered that "the president with the professors in all departments of the university, be authorized to meet and associate themselves in one body for the consideration of its educational interests, and for the arrangement of such courses of lectures as may be thought ex-

*Quoted by Benjamin Peirce. *A History of Harvard University*. Appendix p. iii. From the *American Magazine and Historical Chronicle*, 1743, 1744. Boston, 1744.

⁶From *Codes of Laws of Harvard College, 1825*, 143-144, pp. 38-39, from letter dated Nov. 9, 1934, from Albert Mathews to Lawrence S. Mayo, assistant dean, Graduate School of Arts and Sciences, Harvard University.

⁷Quotation from James Mill Peirce. In *Annual Reports of President and Treasurer of Harvard University, 1879-80*, pp. 73-74. Cambridge University Press; John Wilson & Son.

pedient for the benefit of the members of the professional schools, graduates of this or other colleges, teachers of the public schools of the Commonwealth, and other persons."⁷

President, Felton in his inaugural discourse before the Harvard alumni on his installation as president, July 26, 1860, made the following remarks: "I have said that the object of a university was partly to educate the young—the picked and chosen youth of the country, but it is also in part the duty of professors to add to the literature and science of their respective departments. The university that fails to do this fails in an essential portion of its proper business."⁸ Similar opinions were voiced by leading educators at this time particularly urging the establishment of a typical high-grade university.

By 1872 the reorganized academic council took charge of the candidates for the A. M., Ph. D., and S. D. The master's degree was restored to one of genuine value; that is, the candidate was required "to pass with high credit four full courses of instruction of advanced grade, pursued for one academic year."⁹ An examination was also required. The first earned master of arts degree under the new regulation was conferred in 1874.¹⁰

Yale College conferred its first master of arts degree of the unearned type in 1702.¹¹ "During the early years of the university the A. M. degree was granted almost automatically to graduates of the college who applied for it 3 years after graduation and paid a certain stated fee. This was the general practice of English universities at that time and, indeed, is still the practice of many of those universities."¹² We have record of graduate students at Yale Uni-

⁷ Quotation from James Mill Peirce. In Annual Reports of President and Treasurer of Harvard University, 1879-80, pp. 73-74. Cambridge University Press; John Wilson & Son.

⁸ American Journal of Education, vol. ix, p. 126. Edited by Henry Barnard.

⁹ Thayer, William Roscoe. History and Customs of Harvard University. In Universities and their Sons, Editor-in-Chief, General Joshua L. Chamberlain, Boston. R. Herndon Co., 1900. pp. 61, 108.

¹⁰ Taken from a letter to the author, dated Nov. 14, 1934, from Dr. George H. Chase, dean of the Graduate School of Arts and Sciences, Harvard University.

¹¹ This type of degree, granted almost automatically to bachelors of good standing 3 years after graduation, was known as the master's degree in course (humorously interpreted "of course"), referring to course of time rather than course or courses of study. For a more complete discussion see Annual Report of the Commissioner of Education, 1877, p. CVII.

¹² Taken from a letter to the author, dated Oct. 24, 1933, from Dr. E. S. Furness, dean of the graduate school, Yale University.

versity as early as 1836-37, although special provision was not made for their needs until about 1844. In 1847 a new unit called the "department of philosophy and art" was established. Systematic instruction of an advanced nature was offered in the mathematical and physical sciences, and their application to the arts, metaphysics, philosophy, literature, and history.¹³

In 1876 Yale conferred its first earned master of arts degree, and we find advertised in the catalog for 1877-78 the statement as to the new standard.

The degree of master of arts is conferred on bachelors of arts of 2 years' standing or upwards who have given to the academical faculty evidence of having made satisfactory progress in liberal studies after receiving their first degree. Such evidence may be furnished by 1 year's systematic study (not professional) in New Haven under the direction of the academical faculty, followed by an examination. Such bachelors of arts of the college as may not choose to reside at the college for the prosecution of study may show, at any time not less than three years after graduation, by their printed essays, or by submitting to a special examination, that they have spent a year in liberal (not professional) study and are worthy of recommendation for the degree.¹⁴

Princeton University granted its first A. M. degree in 1751. From that year until 1879 "the degree was either honorary or, as stated in the early catalogs, 'the degree of master of arts is conferred in course on every bachelor of arts of 3 years' standing who, in the interval, shall have sustained a good moral character and pursued professional or other studies, and who shall make application for the degree by letter, to the clerk of the faculty, at least 1 week previous to the annual commencement.'"

The first earned A. M. degree granted by Princeton was conferred in 1879. In this year the regulations regarding the master's degree were changed as follows:

Bachelors of arts devoting 1 year exclusively to study in the college under the care of the faculty, and passing rigid examinations in the studies pursued, shall be entitled to apply for the degree of A. M. 2 years after taking the first degree. Those taking at least one post-graduate course each year for 2 years, and passing examinations on the same, shall be entitled at the close of the 2 years to apply for

¹³ In Annual Report of the Commissioner of Education, 1889-90, vol. 2, p. 815.

¹⁴ Yale College Catalog, 1877-78, pp. 50-51.

the degree of A. M. Those pursuing the learned professions, including teaching, shall be entitled to apply for the degree of A. M. 3 years after graduation. Those not pursuing the learned professions (including teaching) shall be entitled to the degree of A. M. 3 years after graduation, provided they shall have submitted in manuscript or print, on or before May 1 of the year in which they shall seek the degree, a literary, philosophical, or scientific paper to a committee appointed by the board of trustees, who shall report thereon to the board.¹⁵

Columbia University, at that time King's College, granted its first master of arts degree in 1758. The statutes in 1755 provided for the award of this degree after 3 years of study beyond the bachelor's degree. This 3-year requirement is found in the statutes of 1811 and 1880.¹⁶

Brown University formally established graduate work in 1887, although as far back as 1859 some graduate work had been conducted. The first master of arts degrees at Brown were conferred in June 1888. One year of resident graduate study was required, or 2 years in absentia. Work in absentia was stopped in 1908. The M. S. degree was established in 1908.¹⁷

The University of Pennsylvania granted its first master of arts degree in 1891. (See footnote 27.)

Among the older State universities we find that the University of South Carolina conferred its first A. M. degrees in 1808. These were of the honorary type. The first earned A. M. degree was conferred by this institution in 1812. No honorary A. M. degrees were conferred after 1873.¹⁸

The master of arts degree was first granted by the University of Virginia in 1833 and was granted to students who completed the entire curriculum offered by the University. This degree has never been given to bachelors on the basis of 3 or more years of successful activity.¹⁹

¹⁵ Taken from a letter to the author, dated June 19, 1934, from the secretary of Princeton University.

¹⁶ Taken from a letter to the author, dated Oct. 30, 1933, from Dr. Howard Lee McBain, dean of the faculties of political science, philosophy, and pure science, Columbia University.

¹⁷ Brown University Bulletin, Catalog Number of the Graduate School, 1932-33, p. 6.

¹⁸ Taken from a letter to the author dated Jan. 9, 1934, from Dr. Reed Smith, dean of the graduate school, University of South Carolina.

¹⁹ Taken from a letter to the author, dated Jan. 5, 1934, from Dr. J. C. Metcalf, dean of the department of graduate studies, University of Virginia.

The University of Michigan granted its first unearned type of master of arts in 1849, and the first on the basis of course work and examination in 1859. The action indicating the changes in the requirements for the master's degree at the University of Michigan is given herewith from the Regents' Proceedings.²⁰

December, 1858

On motion of Regent Baxter:

Resolved: That the action of the President and Faculty of Literature, Science, and the Arts with reference to an advanced Literary and Scientific Course of Study for resident graduates and a change in the requisites for conferring the degree of Master of Arts and the adoption of the degree of Master of Science, be taken up for the consideration and requisite action of the Board of Regents thereon.

On motion of Regent Brown:

Resolved: That the Board of Regents do hereby inaugurate an advanced Course of Instruction to be given wholly by lectures according to the following scheme:

The higher degrees conferred in this Department are those of Master of Arts and Master of Science.

They are conferred respectively upon Bachelors of Arts and Bachelors of Science, according to the following conditions:

1st. The candidate may be a graduate either of this or of any Collegiate Institution empowered to confer degrees.

2nd. He must pursue at least two of the Courses in each semester, designated in the following programme.

3rd. He must sustain an examination before the Faculty in at least three of the studies so attended, the studies to be elected by the candidate.

4th. He must present a thesis to the Faculty on one of the subjects chosen for examination.

The second degree may thus be obtained on examination one year after the first degree.

The Master's degree will also continue to be conferred as hitherto, upon graduates of three years standing who shall have engaged during that period in professional or in literary and scientific studies.

The above described higher courses will not be restricted to graduates and candidates for the second degree, but will be open to all who shall give satisfactory evidence of ability to profit by them. (Quoted from letter of June 28, 1934.)

The University of North Carolina laid plans for its first A. M. degree in 1854, as announced in the catalog of that

²⁰ Taken from letters to the author, dated Nov. 20, 1933, and June 28, 1934, from Dr. G. Carl Huber, dean of the graduate school, University of Michigan.

year. The first earned degree with thesis submitted was granted in 1856. However, earlier in the century the master's degree was granted as a reward for successful professional activity. It would appear that this practice ceased between 1850 and 1860.²¹

The University of Georgia made provision for resident candidates for the master's degree as well as the bachelor's degree in 1803. The first master's degrees granted were of the 3-year unearned type. This practice was continued until 1868 when a course of study was required for this degree. In 1871, the first earned A. M. degree was conferred by the university.²²

Considering the country as a whole the general custom in American colleges was to give the A. M. degree (*in course*); that is, 3 years after graduation to those who were engaged in literary activities or who had continued their studies. However, quite a number of colleges conferred the A. M. purely as an honorary degree. Prof. Charles Foster Smith²³ reports the number of honorary A. M. degrees between 1880 and 1885 as follows:

Year	Number honorary A. M. degrees	Year	Number honorary A. M. degrees
1880.....	119	1883.....	149
1881.....	180	1884.....	178
1882.....	138	1885.....	140

In the United States the first degree of doctor of philosophy was granted by Yale University in 1861.²⁴ This was not of the honorary type. Candidates for the Ph. D. degree at that time were required to devote at least 2 years to a course of study in the department of philosophy and arts.²⁵ In 1870 the University of Pennsylvania granted its first Ph. D. degree. Harvard followed with its first Ph. D. and

²¹ Taken from a letter to the author, dated Jan. 5, 1934, from Dr. W. W. Pierson, Jr., dean of the graduate school, University of North Carolina.

²² University of Georgia, catalog of the graduate school, 1933, p. 1.

²³ In National Education Association Proceedings for 1889. Address on honorary degrees, by the professor of Greek, Vanderbilt University.

²⁴ Taken from a letter to the author, dated Oct. 24, 1933, from Dr. Edgar S. Furness, dean of the graduate school, Yale University.

²⁵ Yale College Catalog, 1860-61, p. 54. See ch. II p. 45.)

first S. D. in 1873. As before mentioned, in 1872 the Harvard academic council was given the responsibility of suggesting candidates for higher degrees. A specific amount of graduate work was required, thus giving a real value to these degrees. The degree of Ph. D. was conferred on the basis of long study in a special branch of learning. The candidate for the S. D. degree specialized in two fields of study selected from the mathematical, physical, and natural sciences. The candidates for either degree were carefully examined in their special subjects and a thesis was also required which was a contribution to the field of interest. Although no fixed period of study or residence was required, yet in practice 3 years was generally required to obtain the doctor's degree. Figures show that between 1873 and 1896, only 18 out of 140 were able to reduce the time to 2 years.²⁶

The University of Pennsylvania conferred its first Ph. D. degree in 1870 on an honorary basis, the trustees having voted to establish this degree in 1869. "In 1870, the auxiliary department of medicine was authorized to confer this degree on its graduates which was done up to 1882. In 1881 there was elected a faculty of philosophy to grant such degrees; in this department it was first awarded in 1889."²⁷

At Columbia University the first Ph. D. degree was granted under the school of mines in 1875. This school continued granting this degree until the faculty of pure science was established in 1892. The school of political science conferred its first Ph. D. degree in 1883.²⁸

Princeton University conferred its first Ph. D. degree and first Sc. D. degree in 1879.²⁹

The University of Michigan conferred its first Ph. D. degree in 1876,³⁰ the University of North Carolina in 1883,³¹

²⁶ Thayer, William Roscoe, op. cit., pp. 108-109. Also *Quinquennial Catalog of the Officers and Graduates of Harvard University, 1639-1910*. Cambridge, Mass., published by the university, 1910, p. 433.

²⁷ Taken from a letter to the author, dated Oct. 23, 1933, from the office of the dean of the graduate school, University of Pennsylvania.

²⁸ Taken from a letter to the author, dated Oct. 30, 1933, from Dr. Howard Lee McBain, dean of the faculties of political science, philosophy, and pure science, Columbia University.

²⁹ Taken from a letter to the author, dated June 19, 1934, from the secretary of Princeton University.

³⁰ Taken from a letter to the author, dated Nov. 20, 1933, from Dr. G. Carl Huber, dean of the graduate school, University of Michigan.

³¹ Taken from a letter to the author, dated Jan. 5, 1934, from Dr. W. W. Pierson, Jr., dean of the graduate school, University of North Carolina.

the University of Virginia in 1885,²² Brown University in 1889,²³ and the University of South Carolina in 1891.²⁴

2. NEW INFLUENCES ON GRADUATE STUDY

Reference now will be made to the period immediately following the Civil War when graduate work in the modern sense began to develop rapidly throughout the country. By 1870 graduate study and research began to be stimulated by a number of important influences. It was about this time that the land-grant colleges and universities, established under the Morrill Act, were rapidly laying their foundations as scientific research institutions. The establishment of Johns Hopkins University in 1876 under the leadership of Gilman gave extraordinary impetus to the true concept of a university and became a rapidly working leaven in a number of State as well as privately controlled universities. Men such as Eliot of Harvard, Harper of Chicago, Jordan of Stanford, Angell of Michigan, Wheeler of California, White and Schurman of Cornell, Hall of Clark, Van Hise of Wisconsin, MacLean of Iowa, Alderman of Virginia, Wilson of Princeton, Thompson of Ohio State, Folwell of Minnesota, Hadley of Yale, James of Illinois, Kirkland of Vanderbilt, and Butler of Columbia, should be included among the principal stars in the growing galaxy of university presidents who with the generous support of State legislatures or private philanthropy laid the foundations for the present scope and quality of university education in the United States.

3. ENROLLMENTS OF GRADUATE STUDENTS SINCE 1870

At this point it may be of interest to review certain figures showing the growth in the number of graduate students since 1870.

²² Taken from a letter to the author, dated Jan. 5, 1934, from Dr. J. C. Metcalf, dean of the department of graduate studies, University of Virginia.

²³ Brown University Bulletin, catalog number of graduate school, 1932-33, p. 6.

²⁴ Taken from a letter to the author, dated Jan. 9, 1934, from Dr. Reed Smith, dean of the graduate school, University of South Carolina.

In 1870-71,³⁵ the following institutions reported graduate students as follows:

Harvard University.....	8
Yale University.....	24
Princeton University.....	3
University of Michigan.....	6
Lafayette College.....	3

This is a total of 44 for that year, although doubtless a number of institutions failed to report. Beginning with the year 1871-72 we are able to show approximately the growth of the graduate student body by years or decades until the present time.

TABLE 1.—Growth of graduate student enrollments from 1871-72 to 1888-89¹

Year	Number of graduate students	Year	Number of graduate students
1871-72.....	198	1880-81.....	460
1872-73.....	219	1882-83.....	522
1873-74.....	283	1883-84.....	778
1874-75.....	369	1884-85.....	869
1875-76.....	399	1885-86.....	935
1876-77.....	389	1886-87.....	1,237
1877-78.....	414	1887-88.....	1,290
1878-79.....	465	1888-89.....	1,343
1879-80.....	411		

¹ United States Commissioner of Education, Annual Report, 1889-90, vol. II, p. 819.

According to the data given in table 1, graduate student enrollments more than doubled between 1871 and 1879, and more than tripled between 1880 and 1889. Attention is called to the fact that the figures given in this table are not quite as complete, as in the table following owing to the failure of certain institutions to report. However, they are fairly indicative of the growth of graduate enrollments.

Since 1890, the growth in the number of graduate students and in the number receiving advanced degrees has been very great as shown in the accompanying tables 2 and 3. In 1890 there were 2,382 graduate students enrolled;³⁶ in 1930, there were 47,255.

³⁵ United States Commissioner of Education, Annual Report, 1889-90, vol. II, p. 819.

³⁶ United States Commissioner of Education, Annual Report, 1889-90, p. 1,582.

TABLE 2.—Growth of graduate-student enrollments from 1889-90 to 1929-30¹

Year	Number of graduate students		
	Men	Women	Total
1890.....	1,973	409	2,382
1900.....	4,112	1,179	5,831
1910.....	6,504	2,866	9,370
1920.....	9,837	5,775	15,612
1926.....	20,159	12,341	32,500
1928.....	26,540	17,625	44,165
1930.....	29,070	18,185	47,255

¹U. S. Office of Education, Biennial Survey of Education, 1928-30, p. 339.

Attention is called to the fact that since 1890 there has been essentially a doubling of graduate enrollments each decade until the last, in which they more than trebled. The percentage of men and women graduate students in 1890 was 82 percent men and 18 percent women; in 1900, 70 percent men and 30 percent women; in 1910, 69 percent men and 31 percent women; in 1920, 63 percent men and 37 percent women; in 1930, 61 percent men and 39 percent women. These figures show a large increase in the number as well as percentage of women who have entered the ranks of graduate students during the 30 years under consideration.

4. INCREASE IN ADVANCED DEGREES GRANTED SINCE 1890

The following table likewise shows the great increase in the number of advanced or graduate degrees granted since 1890. In that year 1,135 advanced degrees were granted; in 1930 they reached 16,832.²⁷

TABLE 3.—Increase in advanced degrees granted since 1890

Year	Number of advanced degrees		
	Men	Women	Total
1890.....			1,135
1900.....	1,628	324	1,952
1910.....	1,939	602	2,541
1920.....	3,457	1,396	4,853
1926.....	7,700	3,751	11,451
1928.....	8,973	4,858	13,834
1930.....	10,693	6,139	16,832

²⁷In reports of United States Commissioner of Education for these years.

The number of graduates practically doubled between 1910 and 1920, and more than trebled between 1920 and 1930. The percentage of men and women who received advanced degrees in 1890 could not be estimated, but in 1900, the percentages were: Men 83, women 17; in 1910, men 76, women 24; in 1920, men 71, women 29; in 1926, men 67, women 33; in 1928, men 65, women 35; and in 1930, men 63, women 37.

5. INCREASE IN MASTER'S DEGREES GRANTED SINCE 1890

In the following table we find an extraordinary increase in the number of master's degrees granted since 1890. The figures showing the number of men and women receiving the master degree were not readily available for the years 1890, 1920, and 1926. However, comparison may readily be made of the percentages of men and women who received master degrees between 1900, 1910, 1928, and 1930. In 1900, there were 80 percent men and 20 percent women; in 1910, 75 percent men and 25 percent women; in 1928, 61 percent men and 39 percent women; in 1930, 60 percent men and 40 percent women. This increase in the number and percentage of women who received this type of degree is one of the most interesting developments in the field of higher education in recent times.

TABLE 4.—Increase in master's degrees since 1890

Year	Number of master's degrees		
	Men	Women	Total
1890.....			¹ 70
1900.....	1,405	339	² 1,744
1910.....	1,821	619	³ 2,440
1920.....			⁴ 3,873
1926.....			⁵ 7,005
1928.....	7,204	4,582	⁶ 11,786
1930.....	8,766	5,729	⁷ 14,495
1932.....			⁸ 19,339

¹ United States Commissioner of Education, Annual Report, 1890-91, pp. 829-830, 835.

² United States Commissioner of Education, Annual Report, 1900-1901, p. 1613.

³ United States Commissioner of Education, Annual Report, 1911, p. 886.

⁴ United States Office of Education, Biennial Survey of Education, 1920-22, pp. 305-315.

⁵ United States Office of Education, Biennial Survey of Education, 1926-28, p. 699.

⁶ United States Office of Education, Biennial Survey of Education, 1928-30, pp. 358-360.

⁷ United States Office of Education, from unpublished tabulation, 1930.

⁸ United States Office of Education, from unpublished tabulation, 1932.

For a more detailed study of the increase in the number of master's degrees granted between 1880 and 1930 by dec-

ades, attention is called to the comparison of 26 universities and colleges, 14 publicly controlled and 12 privately controlled. These institutions are as follows: Publicly controlled: University of Michigan, University of Wisconsin, University of Illinois, Ohio State University, State University of Iowa, University of California, University of Missouri, University of Texas, University of Minnesota, University of Kansas, University of Nebraska, Indiana University, University of Washington, Iowa State College of Agriculture and the Mechanic Arts. Privately controlled: Columbia University, Harvard University, University of Chicago, New York University, University of Pennsylvania, University of Southern California, Boston University, Northwestern University, University of Pittsburgh, Stanford University, Massachusetts Institute of Technology, Cornell University. The figures for 1928 are given also.

TABLE 5.—Increase in masters' degrees in 26 universities

Year	In 14 publicly controlled universities	In 12 privately controlled universities	Total
1880.....	18	44	62
1890.....	44	177	321
1900.....	174	399	573
1910.....	547	854	1,401
1920.....	1,037	1,886	2,923
1928.....	2,874	5,198	8,072
1930.....	3,422	5,979	9,401

If we begin with 1920 and compare that year with 1930 we find an increase in the number who received the master's degree to be 2,385, or 230 percent, in the publicly controlled schools, and in the privately controlled schools, 4,093, or 217 percent, and for the entire group of 26 institutions we have an increase of 6,478, or 221 percent.

During the 2-year period between 1928 and 1930 there was an increase of 1,329 who received masters' degrees in the entire group of institutions, or an increase of 16.4 percent. For the same period the publicly controlled universities and colleges gained 19.1 percent in the number of masters' degrees granted, while privately controlled universities and colleges gained only 15 percent. The State University of Iowa had the greatest percentage of increase, with 38.1 percent; the University of Illinois second, with 36.5

percent; and the University of Washington third, with 33.3 percent. The University of Kansas had the least increase, with 2.7 percent, and Iowa State Agricultural College was next lowest, with 3-percent increase. Of the privately controlled institutions, New York University, with 60.7 percent increase, and the University of Pittsburgh, with 47.3, showed the greatest increases in percentage.

6. NUMBER AND DISTRIBUTION OF MASTERS' DEGREES GRANTED IN 1927-28

In the following table is presented the number and distribution of masters' degrees according to type of degree in the 270 colleges and universities included in our list. The table is divided so as to show the number and distribution in 79 publicly controlled and 191 privately controlled universities and colleges.

TABLE 6.—Number and distribution of masters' degrees granted in 1927-28¹

Master of—	79 publicly supported institutions				191 privately supported institutions				Total of 270 institutions			
	Men	Women	Total	Percent ²	Men	Women	Total	Percent ²	Men	Women	Total	Percent ²
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Arts.....	1,203	1,063	2,266	55.0	2,622	2,705	5,327	70.0	3,885	3,776	7,661	65.0
2. Science.....	550	119	669	16.0	505	179	684	9.0	1,055	298	1,353	11.0
Total.....	1,753	1,182	2,935	71.0	3,127	2,884	6,011	79.0	4,940	4,074	9,014	76.0
3. Science in education.....	115	27	142	3.3	101	96	197	2.6	216	123	339	3.0
Arts in education.....	167	115	282	6.7	3	3	6	0.1	170	115	285	2.4
Education.....	8	3	11	0.3	88	69	157	2.1	93	72	165	1.5
Science in vocational education.....	14	4	18	0.5					14	4	18	0.2
Religious education.....					8	2	10	0.1	8	2	10	0.1
Total.....	301	149	450	10.0	200	167	367	4.7	501	316	817	7.0
4. Business administration.....	51	7	58	1.6	373	17	390	5.0	424	24	448	4.2
Commercial science.....					20	1	21	0.3	29	1	30	0.3
Science in commerce.....	20	1	21	0.6					20	1	21	0.2
Science in business administration.....	2	1	3	0.1					2	1	3	0.03
Arts in business administration.....	1	1	2	0.06					1	1	2	0.02
Arts in commerce.....	1		1	0.03					1		1	0.01
Total.....	75	10	85	2.3	402	18	420	5.5	477	26	503	4.2

¹ Adapted from tabulation prepared by David T. Bloss, assistant statistician, U. S. Office of Education.

² Percentage of total number of masters' degrees.

TABLE 6.—Number and distribution of masters' degrees granted in 1927-28—Continued

Master of—	79 publicly supported institutions				191 privately supported institutions				Total of 270 institutions			
	Men	Women	Total	Percent	Men	Women	Total	Percent	Men	Women	Total	Percent
1	2	3	4	5	6	7	8	9	10	11	12	13
5. Science in engineering.....	161		161	3.8	206		206	2.7	367		367	3.1
Arts in engineering.....	3		3						3		3	
Total.....	164		164	+3.8	206		206	2.7	370		370	3.1
6. Science in agriculture.....	204	19	313	7.0	7	1	8		301	20	321	2.7
Agriculture.....	5		5		23	7	30		28	7	35	
Science in rural sociology.....	1	2	3						1	2	3	
Science in entomology.....	1	1	2						1	1	2	
Science in horticulture.....	2		2						2		2	
Total.....	303	22	325	+7.0	30	8	38		333	30	363	2.7
7. Laws.....					191	16	207	1.8	191	16	207	1.8
Patent law.....					26	3	29		26	3	29	
Total.....					217	19	236	1.8	217	19	236	1.8
8. Theology.....					76	3	79		76	3	79	
Sacred theology.....					72	1	73		72	1	73	
Divinity.....					3		3		3		3	
Arts in religion.....					1	1	2		1	1	2	
Science in theology.....					2		2		2		2	
Total.....					154	5	159		154	5	159	
9. Science in home economics.....		49	49							49	49	
Arts in home economics.....		1	1							1	1	
Total.....		50	50							50	50	
10. Science in medicine.....	27		27						27		27	
Medical sciences.....					19	3	22		19	3	22	
Total.....	27		27		19	3	22		46	3	49	
11. Social relations.....					8	13	21		8	13	21	
Science in social advancement.....					12	2	14		12	2	14	
Total.....					20	15	35		20	15	35	
12. Landscape architecture.....					11		11		11		11	
Landscape architecture and city planning.....					4		4		4		4	
Landscape design.....	5		5						5		5	
Total.....	5		5		15		15		20		20	
13. Forestry.....	7		7		3		3		10		10	
Science in forestry.....	8		8						8		8	
Total.....	15		15		3		3		18		18	

TABLE 6.—Number and distribution of masters' degrees granted in 1927-28—Continued

Master of—	79 publicly supported institutions				191 privately supported institutions				Total of 270 institutions			
	Men	Women	Total	Percent	Men	Women	Total	Percent	Men	Women	Total	Percent
1	2	3	4	5	6	7	8	9	10	11	12	13
14. Science in public health.....	3	3	6						3	3	6	
Public health.....					4		4		4		4	
Total.....	3	3	6		4		4		7	3	10	
15. Arts in municipal administration.....	4		4						4		4	
Science in municipal administration.....	4		4						4		4	
Total.....	8		8						8		8	
16. Arts in journalism.....	3	1	4						3	1	4	
Science in journalism.....					3		3		3		3	
Journalism.....		1	1							1	1	
Total.....	3	2	5		3		3		6	2	8	
17. Science in zoology.....	2		2		3		3		5		5	
Zoology.....					3		3		3		3	
Total.....	2		2		6		6		8		8	
18. Science in chemistry.....	9		9		8		8		17		17	
19. Science in dentistry.....	1		1		11		11		12		12	
20. Foreign service.....					11		11		11		11	
21. Science in hygiene and physical education.....					11		11		11		11	
22. Fine arts.....	2	1	3		7	1	8		9	2	11	
23. Arts in liberal science.....					1	8	9		1	8	9	
24. Science in pharmacy.....	3	3	6						3	3	6	
25. Political science.....					4	2	6		4	2	6	
26. Music.....					5		5		5		5	
27. Science in botany.....	2	2	4						2	2	4	
28. Science in physics.....	1		1		3		3		4		4	
29. Science in bacteriology.....	3		3						3		3	
30. Science in mathematics.....					2		2		2		2	
31. Science in economics.....	2		2						2		2	
32. Science in geology.....	2		2						2		2	
33. Architecture.....	2		2						2		2	
34. Science in veterinary medicine.....	1		1						1		1	
Grand total.....	2,087	1,424	4,111	100	4,469	3,130	7,699	100	7,216	4,562	11,778	100

Without counting similar terminologies relating to the same degree or degrees, it appears that there are at least 34 varieties of master's degrees offered by the 270 colleges and universities. Of the 11,778 master's degrees granted in 1928, 7,661, or 65 percent, were masters of arts; 1,353, or 11 percent, were masters of science; 817, or 7 percent, were masters

in education; 505, or 4.2 percent, were masters in business administration and commerce; and 370, or 3.1 percent, were masters in engineering. It was not possible to find the distribution of majors in education and other special fields included under the degrees of masters of arts and masters of science.

It will be observed that the number of masters of arts degrees constitutes 70 percent of the total number of master's degrees of all types granted by privately controlled institutions, and only 55 percent of the total number of master's degrees of all types granted by publicly controlled universities. On the other hand, the number of master of science degrees constitutes 16 percent of the total number of master's degrees granted by publicly controlled institutions and only 9 percent of the number granted by privately controlled schools.

7. INCREASE IN THE NUMBER OF PH. D. DEGREES GRANTED SINCE 1876

In the following table is shown the number of Ph. D. degrees granted for the years indicated between 1876 and 1930.

TABLE 7.—Increase in Ph. D. degrees

Year	Number of institutions	Number of Ph. D. degrees		
		Men	Women	Total
1876.....	25			144
1890.....				164
1900.....		322	20	342
1910.....	38	365	44	409
1920.....	44	439	93	532
1926.....	62	1,115	187	1,302
1928.....	69	1,249	198	1,447
1930.....	74	1,692	332	2,024

- ¹ United States Commissioner of Education, Annual Report, 1876, pp. 763-771.
² Dunway, C. A., *graduate courses, 1897-98*. New York, The Macmillan Co., 1897, p. XIV.
³ United States Commissioner of Education, Annual Report, 1899-1900, pp. 1836-38.
⁴ United States Commissioner of Education, Annual Report, 1910, pp. 846-847.
⁵ United States Office of Education, Biennial Survey of Education, 1918-20, pp. 286-287.
⁶ United States Office of Education, Biennial Survey of Education, 1924-26, pp. 807-808.
⁷ United States Office of Education, Biennial Survey of Education, 1926-28, pp. 698.
⁸ United States Office of Education, Biennial Survey of Education, 1928-30, pp. 363.

Since 1910, there has been an increase in the number of institutions granting the Ph. D. degree, from 38 in that year to 74 in 1930, or nearly double the number. The percentages

of men and women who were granted this degree beginning with 1900 are as follows: In 1900, men 94, women 6; in 1910, men 89, women, 11; in 1920, men 83, women 17; in 1926, men, 86, women 14; in 1928, men 86, women, 14; in 1930, men 83, women 17.

While it is apparent that the increase in the percentage of women who received the Ph. D. degree has been considerable the increase is not in proportion to that for women with respect to the master's degree.

8. THE PH. D. AS AN HONORARY DEGREE

Between 1872 and 1900, and even later, the Ph. D. degree was granted honoris causa to a considerable extent, as shown in the following table:

TABLE 8.—*Ph. D. degrees granted according to type between 1872-73 and 1898-99*

Year	Number of Ph. D. degrees granted—			
	In course	Honoris causa	Total	Percent honoris causa
1	2	3	4	5
1872	141	20	161	12.4
1874	173	20	193	11.5
1878	263	35	298	11.7
1888	106	29	135	21.4
1889	121	50	171	29.2
1890	125	39	164	23.7
1891	136	30	166	18.0
1892	152	36	188	19.0
1893	189	32	221	14.4
1894	233	33	266	12.4
1895	234	34	268	12.6
1896	285	30	315	9.5
1898	325	11	336	3.0

¹ In Annual Reports of the United States Commissioner of Education for these years.

² Dunlway, C. A., graduate courses, 1897-98. A Handbook for Graduate Students. New York, the Macmillan Co., p. XIV.

While the absolute accuracy of detail cannot be vouched for in some of the earlier reports, there is ample evidence given in the tables to show an increased proportion in the number of honorary Ph. D. degrees given until 1890. The decline began definitely in 1891, and by 1898-99 the percentage had been greatly reduced. Among the institutions that granted the Ph. D. degree honoris causa during these years, very few were doing any real graduate work.

9. GRANTING OF HONORARY PH. D. DEGREES OPPOSED

This practice of giving the honorary Ph. D. degree was increasingly opposed by leading universities and scientific associations. The American Philological Association at its meeting in Cincinnati, Ohio, July 1881, was among the first to condemn it, as shown by the following resolutions:

Whereas many colleges in the United States have, in recent years, conferred the degree of Doctor of Philosophy, not by examination, but honoris causa: be it

Resolved, That this association deprecates the removal of this degree from the class to which it belongs (namely, B. D., LL. B., M. D., and Ph. D. degrees conferred after examination), and its transfer to the class of honorary degrees.³⁹

This resolution in the following month was concurred in by the American Association for the Advancement of Science. Notwithstanding these actions, for some years after this there was little reduction in the proportion of honorary Ph. D. degrees granted.⁴⁰

In 1889, Prof. Charles Foster Smith, of Vanderbilt University, spoke before the National Education Association, calling attention to the abuses in granting degrees honoris causa, including among these the A. M. and Ph. D. degrees.⁴¹

In 1892 the *Educational Review* also opposed the practice and threatened to publish lists of colleges that continued this abuse.⁴² This threat was carried out.

In 1893, or shortly after, the University Senate of the General Conference of the Methodist Episcopal Church set up regulations regarding degrees for the colleges recognized by the church. Opposition was registered against the giving of the Ph. D. degree as an honorary degree. At a meeting of the Affiliated Clubs of Graduate Students held in New York City, April 23, 1893, similar action was taken and at the convention of graduate students held in New York City, April 16, 1895, the practice of giving the master's or doctor's degree either honoris causa or in absentia was condemned.

³⁹ Op. cit., p. xi.

⁴⁰ *Educational Review*, 4: 208, September 1892.

⁴¹ In National Education Association. *Addresses and proceedings, 1889*, p. 291.

The board of regents of the University of the State of New York, October 15, 1896, adopted ordinances among which we find prohibited the giving of the A. B. and other bachelor's degrees, or the Ph. D. as honorary degrees after January 1, 1897.⁴¹

Again the convention of the Federation of Graduate Clubs in its 1897 meeting resolved among other things that it is inexpedient for any institution to give the same degrees honoris causa as it grants in regular course on examination. * * *. That the degrees of Ph. D., Sc. D., M. D., and Pd. D. should never be given honoris causa nor in absentia * * *.⁴²

From these statements it is evident that the time was nearly ripe for a more critical study of the question of the standards of the A. M. and Ph. D. degrees. The efforts of small private groups or organizations, while stimulating, were not sufficient to cope with the task. Consequently, it became necessary for the stronger universities to band themselves together for the purpose of giving these questions the serious study they deserved.

⁴¹ University of the State of New York. 111th Annual Report of the Regents, 1897. Administrative Department, Albany, 1898, p. r156.

⁴² Duniway, C. A. Graduate Courses, 1897-98. A handbook for graduate students, pp. xi to xv.

CHAPTER II

DEVELOPMENT OF STANDARDS AND PRACTICES IN GRADUATE STUDY

1. THE PROBLEM OF STANDARDS OF GRADUATE STUDY

In 1893 we find the beginnings of a concerted attack on the problem of graduate-school standards, although for a number of decades criticism had been directed against certain practices that had developed in our colleges and universities with respect to the granting of higher degrees.

ACTION OF EDUCATIONAL ORGANIZATIONS IN 1893

In this year, at the International Congress on Education held at the Columbian Exposition in Chicago, William O. Sproull, Dean of the faculty of the University of Cincinnati, read a paper expressing the desire

that there should be a general understanding in regard to the essential conditions to which the examination for the degree of doctor of philosophy should conform.

As there was no authority in the central government to appeal to in this matter,

it was suggested to appoint a committee composed of the chiefs of the principal universities. It should be the duty of this committee to draw up a list of the institutions which it should judge were qualified by their importance and the value of their studies to confer the degree. A journal to be the organ of the committee would publish this list which might be extended or restricted from year to year. The proposition was approved by the congress and a committee was appointed, including the presidents of Johns Hopkins, Yale, Columbia, Princeton, Chicago, and California Universities with instructions to take the necessary steps to maintain the plane and protect the significance of the degrees of doctor of philosophy and science.¹

¹ United States Commissioner of Education, Annual Report, 1895-96, vol. 2, pp. 1158-1159.

This committee was not expected to have any more than a moral effect on the situation, and apparently the committee did not exert itself very much although in 1900, 7 years later, we find the recommendations given above beginning to be carried out very definitely by an important group of universities including the six aforementioned institutions.

In 1893 we also find the University Senate of the Methodist Episcopal Church taking action on the matter, the resolutions of this body having been accepted by the College Association of the Methodist Church. These are as follows:

Resolved, That it is the sense of this body: (1) That the Ph. D. degree should not be given as an honorary degree; (2) that in order to become a candidate for the Ph. D. degree, the applicant shall have taken the B. A. degree from a college whose curriculum requires 4 years of work in addition to 3 years preparatory work beyond the English branches; (3) that the applicant be required to pass a preliminary examination in both French and German, showing that he has such a reading knowledge of these languages as shall make them serviceable in his preferred line of investigation; (4) that, in case the work is to be done in residence, the minimum time be 2 years, and if done in part in absentia, the last year being resident, that the work in absentia should then cover a period of at least 2 years, and be done under such circumstances as will give the candidate access to libraries and other facilities for thorough work; (5) that the final test shall be a thesis which shall show original work, the examination before the faculty to be given only upon condition that the thesis presented shows satisfactory work; and (6) that the post-graduate work done in the professional schools should not be credited in the period of working for the degree.²

ACTION OF THE GRADUATE STUDENTS' CLUBS

Perhaps the strongest movement in behalf of improved graduate school standards was initiated by graduate students themselves. As the result of a report made in 1889, by Harvard University students who had also attended other colleges, the Harvard Graduate Club was founded. Other clubs were established, and by 1893, the Harvard Club began the publication of the Handbook for Graduate Students.³

On April 23, 1893, the affiliated clubs of graduate students of Harvard, Cornell, and Johns Hopkins Universities held

² Duniway, C. A. *Graduate Courses, 1897-98*. New York, The Macmillan Co., p. xii.

³ Bradley, Barclay W. *The Graduate Handbook*, no. 7. New York, The Macmillan Co., 1899, p. 21.

their first convention and addressed the governing boards of American universities on the questions of (1) uniformity in the requirements for the doctor's degree, and (2) the facilitation of migration of students between universities. It was shown in comparing the standards for the Ph. D. of 11 institutions, Bryn Mawr, Chicago, Clark, Columbia, Cornell, Harvard, Johns Hopkins, Michigan, Pennsylvania, Princeton, and Yale, that 4 institutions gave 3 years as the period of minimum time requirement, 6 gave 2 years, and 1 gave none. The minimum residence requirement was 2 years in 3 cases; 1 required $1\frac{1}{2}$ years; 6 required 1 year; and 1 made no requirement of this type. Nine institutions required a thesis based on research. In 1 case the thesis was not mentioned, the degree being given on examination. Another, required evidence of high attainment. Eight required the printing of the thesis, while in 1 case it was not absolutely required. Other data were shown regarding the size of libraries, number and value of fellowships and scholarships.* As indicated before Ph. D. degrees conferred honoris causa or in absentia were condemned.

The importance of university intermigration was discussed as follows:

While seeing the advantages of pursuing the sequence of elementary studies planned in any one university, we must recognize the importance to higher education of such frequent migrations on the part of the students as occur in German universities. The scope of the courses at one university is limited by the knowledge and special interests of the instructors there. By receiving instruction from several teachers at different places, the student gains that breadth of view which is his best preparation for research. On the other hand the teachers gain new ideas and new inspiration from contact with students trained elsewhere. Intermigration is leaven, penetrating and raising the whole lump of higher study. In the absence of intermigrations each university is forced to cover the ground completely and, instead of effective division of labor, the announcements of many departments show a dreary uniformity, and an absence of special, advanced courses, for which the instructors have no time.[†]

We do not forget the compensating advantages of long residence at one center of study and research. It is a question how far a conservative regard for these should control university legislation.

* In *Graduate Courses. A Handbook for Graduate Students, 1893-94.* Boston, Ginn & Co., 1894, pp. 12-13.

[†] Italics by author.

It was suggested that the residence at any university be reduced to 1 year, as this practice appears to be accepted in a number of institutions.*

In 1896, the Federation of Graduate Clubs was formed in Philadelphia at the University of Pennsylvania, taking the place of the convention of graduate students.

Conventions of the Federation of Graduate Clubs were held annually for a number of years. By 1899, there were 24 institutions represented as follows: Barnard College, Brown University, Bryn Mawr College, University of California, University of Chicago, Clark University, Columbia University, the Columbian University. (now George Washington), Cornell University, Harvard University, Johns Hopkins University, The Leland Stanford Junior University, University of Michigan, University of Minnesota, University of Missouri, New York University, University of Pennsylvania, Princeton University, Radcliffe College, Vanderbilt University, Wellesley College, Western Reserve University, University of Wisconsin, and Yale University.

At the convention held in Baltimore, December 29, 1896, the following resolutions were adopted among others relating to college degrees:

Resolved, that it is the sense of this convention—

1. That it is inexpedient for any institution to grant the same degree, honoris causa as it grants in regular course or examination.
- * * * * *
4. That the master's degree should never be granted except for graduate study of at least 1 year's duration, tested by adequate examination.
5. That the minimum requirements for the degree of doctor of philosophy should be as follows:
 - a. The previous attainment of a bachelor's degree or equivalent.
 - b. The completion of at least 2 years of resident graduate study, not more than 1 year, however, to be required in residence at the institution conferring the degree.
 - c. Adequate examination and a thesis embodying the results of original research. Such thesis should bear the written acceptance of the professor or department in charge of the major subject, and should be accompanied by a short biography of the candidate.

* Op. cit., pp. ix-x.

- d. That the degrees of Ph. D., Sc. D., M. D., and Pd. D. should never be given *honoris causa* or *in absentia*. L. H. D., S. T. D., D. D., LL. D., D. C. L., Mus. D. are recognized as honorary degrees.

THE REQUIREMENTS FOR MASTER'S AND DOCTOR'S DEGREES IN 1899

The Handbooks of Graduate Courses from 1893-94 to 1899, published by the Federation gave in tabular form the essential standards for the doctor's degree, and beginning with 1896-97 included those for the master's degrees also. The following table shows the requirements for higher degrees of the institutions constituting the Federation of Graduate Clubs for the year 1899.

TABLE 9.—Requirements for higher degrees in 1899

Institution	Masters (A. M., M. S., M. L., Ph. M.)		Doctors (Ph. D., Sc. D.)	
	Minimum time in residence	Requirement	Minimum residence required	The thesis
Brown.....	1 year.....	A. B., B. S., Ph. B., or examinations.	2 years.....	Either printed or typewritten.
Bryn Mawr.....	do.....	Bryn Mawr A. B. Courses 10 hours, with examinations.	do.....	Must be printed.....
California.....	do.....	Bachelor's degree, dissertation and examinations.	1 year.....	150 copies to library.....
Chicago.....	do.....	Bachelor's degree, examination, thesis.	1½ years.....	Must be printed.....
Clark.....	(?).....	(?).....	1 year.....	do.....
Columbia (including Bernard), ³	1 year.....	A. B., B. L., B. S., Ph. B., Engineer's degree/or equivalent from a foreign university, examinations, essay.	do.....	Must be printed. 150 copies to the faculty.
Columbia (now George Washington).	do.....	Bachelor's degree, examinations, thesis.	2 years.....	Expected to be printed. 50 copies to library.
Cornell.....	do.....	do.....	1 year.....	Must be printed. 50 copies to library.
Harvard.....	do.....	Harvard A. B. or equivalent. Examinations, 4 approved full courses, with high credit.	do.....	Need not be printed.....
Johns Hopkins.....	(?).....	(?).....	1 year.....	Printed in full or in part. 150 copies to library.
Leland Stanford, Jr.....	1 year.....	A. B. Examinations, thesis.	do.....	Printing must be guaranteed; 100 copies to university.
				Requirement
				A. B., B. S., Ph. B., or B. L., examination, thesis.
				A. B. or equivalent. Oral and written examinations, dissertation.
				California bachelor's degree or equivalent. Oral examinations. Latin, French, and German, thesis.
				Bachelor's degree or equivalent. French and German, oral and written examinations, thesis.
				Bachelor's degree or equivalent. French and German. Examinations.
				Degree same as for M. A. French and German, oral examination, defend dissertation.
				A. M. or M. S. or equivalent. French and German, examination, defend thesis.
				Bachelor's degree. Oral and written examination, thesis.
				Harvard A. B. or equivalent. General and special examinations, thesis.
				Bachelor's degree or equivalent. French and German; oral and written examinations, dissertation.
				A. B. Examinations, thesis.

STANDARDS AND PRACTICES

State	Time	Requirements	Printed in full or in part	Examinations, theses
Michigan	1 year (for Michigan graduates 6 months)	Bachelor's degree, examinations, thesis may be required.	do.	Bachelor's degree. Examinations, theses.
Minnesota	No minimum time specified.	Bachelor's degree, examination, thesis.	Must be printed. 100 copies to library.	Bachelor's degree. Examinations before faculty.
Missouri	1 year	Bachelor's degree or equivalent, thesis.	Need not be printed.	Bachelor's degree. Examinations, theses.
New York	do.	Bachelor's degree, 2 years' standing, written examinations.	do.	Bachelor's degree of 3 years' standing. Examinations, written and oral, theses.
Pennsylvania	do.	Approved bachelor's degree, examinations, 12 standard courses.	May be ordered printed and 50 copies to library.	Two European languages besides English, approved bachelor's degree, written and oral examinations, 24 standard courses.
Princeton	do.	A. B. or B. S. examinations	Must be printed.	A. B., B. S., or equivalent. Examinations (oral or written on 2 years' graduate work), thesis.
Radcliffe	do.	Same as Harvard	(¹)	(¹)
Vanderbilt	do.	Vanderbilt A. B. or equivalent bachelor's degree, Latin, 4 courses in 3 schools, grade 80, examinations, thesis.	Must be printed. 50 copies to library.	Vanderbilt A. B., B. S., or equivalent Bachelor's degree. Latin for Ph. D. Examinations, dissertation.
Wellesley	do.	Five 4-hour courses, examinations, thesis, or both.	(¹)	(¹)
Western Reserve	do.	Bachelor's degree, 4 graduate courses in 3 subjects, examinations.	Must be printed.	Bachelor's degree. Oral and written examinations, theses.
Wisconsin	do.	A. B., B. S., or B. L., thesis, examinations.	Must be printed. 100 copies to library.	A. B. or equivalent. French and German. Examinations, theses.
Yale	do.	A. B., B. S., Ph. B., examinations or printed thesis.	Need not be printed.	Bachelor's degree or equivalent. Latin, French, and German. Examinations.

¹ Resident study in other universities for a year and a half may be counted, and (on special vote) 1 year of residence in Chicago may suffice.
² Master's degree not granted.
³ Harvard has no graduate school.
⁴ Last year of study for the degree to be spent in residence.
⁵ Ph. D. degree not granted.
⁶ Last year or first 2 years of study to be spent in residence at Wisconsin.

THE FEDERATION OF GRADUATE CLUBS AND THE ASSOCIATION OF AMERICAN UNIVERSITIES

In 1900 the Federation cooperated with the newly formed Association of American Universities by sending a representative to the first meeting and suggesting certain topics for discussion. In 1901 the president of the Federation addressed a letter to the association encouraging the migration of graduate students. He called attention to previous actions in favor of high standards for the Ph. D. degree and recommended that 3 years be the minimum time of graduate study in order to obtain the doctorate. It was also urged that all Ph. D. theses be published in order to give the students the benefit that comes with publication and also to avoid unnecessary duplication of work.⁷

These years mark the beginning of a new epoch in the advancement of higher standards in graduate study in the country. From this time under the leadership of the Association of American Universities, together with the National Association of State Universities, the American Association of University Professors, and the Association of Land-Grant Colleges and Universities there has been a slow but steady elaboration of definitions, standards, policies, and practices which have had a growing influence on graduate instruction and research for more than 30 years.

2. THE EARLY INFLUENCE OF THE ASSOCIATION OF AMERICAN UNIVERSITIES UPON STANDARDS

THE PURPOSE OF THE ASSOCIATION

In view of the absence of any Federal or other national agency with authority to set up higher education standards for the United States, the presidents of Harvard, Columbia, Johns Hopkins, Chicago, and California Universities called the first meeting of the Association of American Universities, in 1900.⁸ The call included the following important statements:

⁷ Journal of the Proceedings and Addresses of the Association of American Universities, 1901, pp. 11, 17, 23.

⁸ The institutions included in the call were the University of California, Catholic University of America, University of Chicago, Clark University, Columbia University, Cornell University, Harvard University, the Johns

We beg to suggest that the time has arrived when the leading American universities may properly consider the means of representing to foreign universities the importance of revising their regulations governing the admission of American students to the examination for the higher degree.

This invitation is prompted by a desire to secure in foreign universities, where it is not already given, such credit as is already due to the advanced work done in our own universities of high standing, and to protect the dignity of our own doctor's degrees. It seems to us, for instance that European universities should be discouraged from conferring the degree of doctor of philosophy on American students who are not prepared to take the degree from our own best universities, and from granting degrees to Americans on lower terms than to their native students.

There is reason to believe that among other things the deliberations of such a conference as has been proposed will (1) result in a greater uniformity of the conditions under which students may become candidates for higher degrees in different American universities, thereby solving the question of migration, which has become an important issue with the Federation of Graduate Clubs; (2) raise the opinion entertained abroad of our own doctor's degree; (3) raise the standard of our own weaker institutions.*

INTERNATIONAL RECOGNITION OF THE ASSOCIATION OF AMERICAN UNIVERSITY STANDARDS

In Holland "by Royal Order of February 12, 1904, the Dutch Government approved the admittance of American students holding the bachelor's degree from any of the association-member universities to the Dutch universities under all faculties without examination."

On July 18, 1904, the faculty of philosophy of the Friedrich-Wilhelms-Universitaet (Berlin) adopted the following regulations regarding candidacy for the doctor's degree, notice of which was forwarded to the Association of American Universities.

- (1) The faculty recognizes every baccalaureate degree (A. B., B. Sc., etc.) acquired at an American University as the equivalent of the German Testimonium Maturitatis.

Hopkins University, University of Michigan, University of Pennsylvania, Princeton University, the Leland Stanford, Jr., University, University of Wisconsin, and Yale. In addition to the delegates from these institutions there were present on invitation the U. S. Commissioner of Education, Dr. Wm. T. Harris, and Orlando Faulkner Lewis, representing the Federation of Graduate Clubs.

* Journal of the proceedings and addresses of the Association of American Universities, 1900, p. 11.

(2) In order to have graduate work pursued at an American University credited to this faculty, upon proper approval of the ministry, toward the 3 years of study prescribed by this university for the degree of doctor of philosophy, the candidate must have taken his graduate work at one of the institutions represented in the Association of American Universities. The candidate must, however, have been in residence at a German university for at least three semesters.

This is followed by a list of the 14 institutions comprising at that time the Association of American Universities.¹⁰

In 1913, the executive committee of the association made the following suggestion:

To be included in a list of American institutions whose bachelor's degrees should be accepted by foreign universities are:

First, the members, present and future, of the Association of American Universities.

Second, those other institutions on the accepted list of the Carnegie Foundation for the Advancement of Teaching, about whose claims to recognition there can be no question.

Third, those institutions which are not included in the accepted list of the Carnegie Foundation because they are in some sense sectarian as defined in the terms of gifts of fund, but otherwise conform to its standards of acceptability. Such a list has readily been furnished by the Carnegie Foundation with the understanding that it is to be used for the present purpose.¹¹

It will be observed in studying the development of university standards of this association that in the beginning, qualitative standards were determined largely by the personal acquaintance of a few leaders with sister institutions rather than by a set of formal quantitative standards. The use of the latter arose primarily in connection with the rating of colleges by the Carnegie Foundation with reference to their eligibility to receive the pensions offered to university professors.

Although the standardization of American universities and colleges was at first largely instigated by the need of improved relations with foreign universities, the second major objective as shown in the call that resulted in the organization of the association, was the establishment of uniformity

¹⁰ Journal of the proceedings and addresses of the Association of American Universities, 1906, pp. 10, 11.

¹¹ Journal of the proceedings and addresses of the Association of American Universities, 1913, p. 59.

of conditions under which students might become candidates for higher degrees in different American universities and the raising of standards in the institutions themselves. The association in setting up standards for the bachelor's degree has left much detail to local undergraduate administration.

The acceptance by the Association of American Universities and regional accrediting associations of the technique used by the foundation in evaluating colleges and universities was an event of great importance in that this procedure has come to be the dominating force in standardizing our higher educational institutions.

The more detailed activities of the association are given in the following pages in company with the activities of other national educational organizations in relation to inter-institutional standards.

3. INTERINSTITUTIONAL STANDARDS

UNIVERSITY DEFINED

As has been shown in the preceding chapter, the extremely rapid growth in the number of institutions that had been attempting to offer graduate work between 1890 and 1910, led to a number of questions. Many of these institutions showed little indication of an exact understanding of the meaning of the term "university" and other essential definitions.

Lord Bryce's Definition.—As early as 1886, in his "American Commonwealth", the Hon. James Bryce made the following observations regarding the 345 colleges and universities then listed by this Office, then Bureau of Education. He remarks—

Out of this enormous total of degree-granting bodies very few answer to the modern conception of a university. If we define a university as a place where teaching of a high order, teaching which puts a man abreast of the fullest and most exact knowledge of the time, is given in a range of subjects covering all the great departments of intellectual life, not more than 12 and possibly only 8 or 9 of the American institutions fall within the definition. Of these nearly all are to be found in the Atlantic States. Next below them come some 30 or 40 foundations which are scarcely entitled to the name of universities some because their range of instruction is still limited to the traditional literary and scientific course, such as it stood 30

years ago; others because, while professing to teach a great variety of subjects, they teach them in an imperfect way, having neither a sufficiently large staff of highly trained professors, nor an adequate provision of laboratories, libraries, and other external appliances. The older New England colleges are good types of the former group. Their instruction is sound and thorough as far as it goes, well calculated to fit a man for the profession of law or divinity; but it omits many branches of learning and science which have grown to importance within the last 50 years. There are also some Western colleges which deserve to be placed in the same category. Most of the Western State universities belong to the other group of this second class, that of institutions which aim at covering more ground than they are as yet able to cover. They have an ambitious program, but neither the state of preparation of their students nor the strength of the teaching staff enables them to do justice to the promise which the program holds out. They are true universities rather in aspiration than in fact.

Below these, again, there is a third and much larger class of colleges, let us say 300, which are for most intents and purposes schools. They differ from the gymnasia of Germany, the lycees of France, the grammar schools of England and the high schools of Scotland, not only in the fact that they give degrees to those who have satisfactorily passed through their prescribed course or courses, but in permitting greater personal freedom to the students than boys would be allowed in those countries. They are universities and colleges as respects some of their arrangements, but schools in respect of the educational results attained. These 300 may be further divided into two subclasses distinguished from one another partly by their revenues, partly by the character of the population they serve, partly by the personal gifts of the president, as the head of the establishment is usually called, and of the teachers. Some 70 or 80, though comparatively small, are strong by the zeal and capacity of their teachers, and while not attempting to teach everything, teach the subjects which they do undertake with increasing thoroughness. The remainder would do better to renounce the privilege of granting degrees and be content to do school work according to school methods.¹²

It will be noted that Mr. Bryce does not specifically mention the research function of the university although it may be implied in his comprehensive definition. Nevertheless, if Lord Bryce were to return in this day and evaluate our vastly increased number of higher educational institutions, he would not find it necessary greatly to modify his classification or his evaluation.

¹² In Bryce, James. *The American Commonwealth*. Rev. ed., 1913. New York, The Macmillan Co., vol. II, pp. 715-716.

President Hadley's definition.—In 1904, President Arthur T. Hadley of Yale University discussed the meaning of the terms "university" and "college." He said:

The actual lines of distinction between college and university work vary in different countries and in different localities. In England the university is primarily and chiefly an examining body, as contrasted with colleges which are primarily teaching bodies. In France the university is an administrative organization to supervise and regulate instruction; while the detail of the instruction is left to the colleges or schools. In Germany the university is a group of faculties which prepare men for the various learned professions; being distinguished from collegiate institutions of a single faculty as well as institutions of less antiquity or lower social standing. There is no uniformity in the use of the term "university" in America.

There is a general tendency to apply the name "university" to those institutions which are more advanced in their teaching or more complex in their organization; but there is no definite distinction. The faculties of American universities are occupied with the work of teaching and examining both. They do not distinguish between the learned and the unlearned professions for they teach engineering or technology in much the same place and in much the same ways that they teach law or medicine. A few of the American State universities do some work of supervision and regulation of public instruction but this is not all of their duties."

The definition of the National Association of State Universities.—In 1908, the National Association of State Universities accepted the report of its committee on standards which described the American university as an institution which should include (1) a college resting on a 4-year high-school course and offering 2 years of general or liberal work and 2 years of university work; (2) professional courses in law, medicine, and engineering, based upon the completion of 2 years of college work; (3) a graduate school properly equipped for research work. The report further stated that for the present an institution which was properly equipped to give instruction leading to the Ph. D. in at least 5 departments, and which had at least 1 professional school resting on the basis of 2 years college work should be regarded as "standard."¹⁴

¹³ Journal of the proceedings and addresses of the Association of American Universities, 1904, pp. 21-22.

¹⁴ In National Association of State Universities, transactions and proceedings, 1908, p. 151.

To these definitions are added those of the head of one of our leading privately controlled universities and the head of one of our leading State universities.

Definition of President Robert Maynard Hutchins.—We observe in the first place that the university has always been devoted to inquiry, * * *

Inquiry * * * has been free inquiry. The university has been independent * * *

That the university believes in independence is evidenced anew by its present educational scheme. The student is offered the realms of learning to explore at will. At entrance he stops being taught and begins to learn. His education depends on himself. He does not have to accept the views of his professors or conform to any social, religious or political creed. The university believes in independence for others as well as for itself.

The third characteristic of the university is enthusiasm. The university has believed that something can be done. It has enthusiastically entered into the life of the community. It has enthusiastically developed or accepted new ideas. There has never been anything contemptuous, defeatist, or indifferent about it. * * *

The fourth characteristic of the university has been its perpetual agreement with Cardinal Newman that the object of a university is intellectual, not moral. This is not to disagree with the attitude that moral values, high ideals, and strong principles must be among the results of education. The history of the university and this building are the best guarantees of this university's belief in these things. But universities are founded as places where scholars and their students may develop or exercise their intellectual powers. In universities and only in universities may this be done on the highest level. A university provides its students with rigorous intellectual training at the hands of stimulating individuals, surrounded by able, industrious, and intelligent contemporaries. It sets a standard of intellectual attainment that can only be achieved through those qualities that are commonly called character. Character is the inevitable prerequisite and the inevitable byproduct of university training. A system of education that produced graduates with intellects splendidly trained and no characters would not be merely undeserving of public support; it would be a menace to society. In a real university, however, such a result is impossible. The business of education in a real university is too exacting, too strenuous, and puts too high a premium on character for the student to be affected intellectually alone.²⁸

Definition of President Lotus D. Coffman.—A university is a community of scholars; it breathes the spirit of the social order; it is

²⁸ Excerpts from an address delivered on Convocation Sunday, by President Robert Maynard Hutchins, University of Chicago Chapel. Dec. 20, 1931, University of Chicago, Chicago, Ill.

constantly engaged in an attempt to understand the meaning of the age; it inculcates the craft spirit of the profession; it molds character. Every member of a university is a locus of influence. The individual professor still has limitless opportunities to make an impression upon his students. He must play his part; he must accept and express in his daily life the sacred obligation of his profession if the university would serve its true purpose in every respect. He must assist by every act in building that subtle, pervasive, and irresistible force which can best be described by the term "The institutionality of the university." Its constituent elements are the attitudes, the standards, the ideals, and the traditions of the institution * * *

The primary factor of institutionality in a university is student-ship, but a university is no longer a school merely. It is a republic of minds dedicated to the dispassionate consideration of the problems of life and dominated by a wholesome philosophy of helpfulness and mutual good faith. Just as the largest achievement of an individual is himself, so the largest achievement of a university is itself. It makes its own soul—a soul that resides in the best thoughts, the best feelings, and the best conduct of everyone connected with it, and in the attitude toward it of the community in which it is located."

The State universities originated in response to public demands and have been maintained, fostered, and encouraged all these years by the citizens of the States in which they are located. Both their origin and the sources from which they have received their support have affected their composition and the character of their activities. Growing out of and flourishing in the very soil of democracy, supported and maintained by the people, committed unequivocally to a more highly trained intelligence of the masses, believing that the road to intellectual opportunity should never be closed, maintaining a wide-open door for all those who are willing to make a trial, the State universities, nevertheless, have held in common with the private universities a high sense of obligation with regard to the necessity and importance of advancing human knowledge, of promoting research, and of training those of superior gifts for especial leadership. If the presence of these two points of view in a single type of university be incompatible, then the philosophy that has animated and actuated American life from colonial days to the present time has been based upon false premises. * * *

A university, if it be worthy of the name, no matter whether it be a State or private university, is fundamentally and primarily dedicated to the freedom of the human spirit, to the improvement and advancement of culture, and the liberalizing of the human mind through learning and the search for knowledge."

"Coffman, Lotus D. From his inaugural address at the University of Minnesota. In *The State University and its Problems*. Minneapolis, Minn., University of Minnesota Press, 1934, pp. 10-11.

"Ibid. In his address, *The Obligation of the State of the Social Order*, pp. 201-203.

Definitions of the Association of American Universities.—In 1909 the Association of American Universities began to suggest proper definitions for such terms as "department", "course", "college", "school", and "division" through its special committee on university nomenclature, and in its supplementary report in 1910 recommended definitions for the terms "group", "curriculum", and "division."

GRADUATE SCHOOL STANDARDS

The character of the graduate student.—Perhaps the most important element in graduate-school standards is the character of the graduate student. This topic was given a great deal of attention by the Association of American Universities between 1900 and 1930. At least 30 papers were devoted to the subject. The view was expressed that it is the business of the graduate school, first, to create the best environment for the development of scholarship, and for the faculty through this environment to develop the student's capacity for scholarship.

An excellent definition of the true scholar was given by President John Grier Hibben, of Princeton University, at the 1913 meeting of the association. He said—

In the development of the species of any organism there is always a typical form which represents the prevailing tendencies at work in producing and maintaining it.

True scholarship has power within itself to correct its own defects and transcend its own limitations * * *

The one whose self-discipline has produced a finely tempered intellect, who is possessed by the love of truth and counts no sacrifice too great in pursuit of it, who keenly scents the source of explanation in the concealed cause, who has acquired the habit of accurate observation and exact statement, who has learned the secret of making every stream of knowledge tributary to his particular specialty, who is accustomed to reserve his judgment until he is able to see the obverse side of the shield, who has a sense of relative values, who knows how to preserve a proper balance among his own mental powers, skilled in the art of humanizing knowledge and breathing upon it the breath of life—this is the full measure of the stature of the scholar.¹⁰

Attention has been given by the association to the gifted student who has been defined as one with creative ability.

¹⁰ Journal of the Proceedings and Addresses of the Fifteenth Annual Conference, Association of American Universities, 1913, pp. 23-28.

The means of his selection by intelligence tests, personal rating scales, and content examinations has also been discussed.

The meaning of research.—Among other questions emphasized was that of the dual function of the graduate school, namely, research and instruction. As early as 1902 President G. Stanley Hall, of Clark University, gave the following excellent definition of research:

First, the method must be either invented or adapted to the problem. There are conditions to be controlled; principles of selection must be determined; negative instances rejected; very often machinery must be devised and made * * *

Second, there must be data collected, experiments made and noted, facts gathered, protocol books filled, instances and experiments multiplied, and the basis of induction made broad and deep. * * * The method must not be too precise and accurate.

The third and main stage is to think it all out; to apply a rigorous philosophic method; to reason logically on the objective facts; to find their unity; to determine what is central and what is unimportant; to relate and determine the place and bearings of all; and find whether the accumulations are mere agglomerations, or have a meaning and value for science.¹⁹

General institutional standards—(a) *View of the Association of American Universities.*—In 1924, the Association of American Universities presented a memorandum of procedure advised for institutions seeking approval of the association for inclusion in its accepted list. These included recommendations for the use of the several national and regional standardizing agencies. Among these recommendations we find the seventh which particularly bears on graduate school standards.

(7) In determining the standing of a college, emphasis should be placed upon the character of the curriculum, the efficiency of instruction, the standard for regular degrees, the conservatism in granting honorary degrees, the tone of the institution and its success in stimulating and preparing students to do satisfactory work in recognized graduate, professional, or research institutions.²⁰

(b) *View of the Survey of Land-Grant Colleges and Universities.*—This emphasis on qualitative factors is shown in

¹⁹ Journal of the proceedings and addresses of the Third Annual Conference of the Association of American Universities, 1902, pp. 46-51.

²⁰ Journal of the proceedings and addresses of the Twenty-Sixth Annual Conference of the Association of American Universities, 1924, p. 33.

the chapter on "graduate work" of the Survey of Land-Grant Colleges and Universities. Dean R. E. Buchanan points out on the basis of analyses of survey data that there are "six factors which are of prime importance in determining the character and quality of graduate work. These may be enumerated as follows:

(1) *Training, ability, and productivity of the staff.*—Undoubtedly the best single criterion as to the graduate work of an institution is the staff. This is largely true because it is not impossible to determine the training, ability, and productivity of the members.

(2) *Time permitted to staff for research and direction of graduate work.*—A staff overloaded with undergraduate teaching or with administrative responsibilities cannot develop graduate work on a very satisfactory basis. The facts in regard to this matter are also relatively easy to determine objectively with a fair degree of accuracy.

(3) *Facilities (laboratory, library, clerical, and laboratory assistants, etc.) available to staff and students.*—These are probably the most readily determined of the factors influencing graduate work.

(4) *The training and character of the graduate student body.*—This is comparatively difficult of evaluation, although the methods used, entrance standards, etc., provide considerable basis for judgment.

(5) *Organization and supervision.*—An ideal graduate school has been thought to be one in which there exists the minimum of organization and supervision. When graduate students are few in number, and are "apprenticed" to experienced and sympathetic researchers, this may be satisfactory. With larger numbers, however, the necessity arises for organization and some degree of supervision. Without some regulation, conditions would become chaotic. As long as the goal of the graduate student is the attainment of a degree, some amount of standardization is inevitable. The problem is to hold this to a minimum.

(6) *Character of graduate offerings.*—This factor involves several highly controversial problems. There is a fundamental lack of agreement among those administering graduate schools as to the relationships of so-called undergraduate and graduate work. One group would differentiate the graduate work very sharply from the undergraduate; the other believes that this line of demarcation should be drawn between the junior and senior college, rather than between the senior college and the graduate school. The problem of standards for graduate offerings is difficult. [See U. S. Office of Education. Report of the Survey of Land-Grant Colleges and Universities, vol. II, p. 740 (Bulletin, 1930, no. 9).]

STANDARDS FOR THE MASTER'S DEGREE

Resolutions of the Association of American Universities.—The question was raised by the association in 1902, whether the master's degree should be continued. It was suggested

at the time that the giving of the master of arts degree, honoris causa, should not be encouraged and that it should be granted on the basis of resident study and examination.²¹ In 1910, the following suggestion was made regarding the conditions of candidacy for the master's degree: (1) A bachelor's degree, or its equivalent, as an evidence of sufficient general education; (2) a searching examination in the normal preparatory requirements agreed on for the major subject.²²

However, in 1915, the association adopted the following resolution:

Resolved, first, that it is the sense of the meeting that the association shall reaffirm its belief that the master's degree should stand for at least 1 year of bona fide graduate study; second, that all institutions in the association should maintain a minimum residence requirement of 1 year, and third, that when candidacy for the master's degree is conducted through summer sessions the required work should be the full equivalent of that otherwise required for the degree sought. The resident work in such candidacy should be in amount not less than 5 summer sessions of 6 weeks duration.²³

In view of the rapidly increasing number of students who were obtaining the master's degree largely through summer courses, suggestions were made in 1927 to restrict enrollments by a more careful scrutiny of candidates for admission to the graduate school and particularly of those wishing to enter the summer sessions. It was also suggested that the length of time in residence in summer sessions should be increased. No extension or correspondence work was to be recognized for graduate credit and no absentia work was to be credited toward the master's degree.²⁴

The A. M. in Catholic universities and colleges.—In 1927, the Department of Colleges and Universities of the National Catholic Educational Association appointed a committee to survey graduate study in the Catholic colleges and universities. The findings which have a bearing on standards

²¹ Journal of the Proceedings and Addresses of the Second Annual Conference of the Association of American Universities, 1901-2, pp. 51-54.

²² Journal of the Proceedings and Addresses of the Twelfth Annual Conference of the Association of American Universities, 1910, p. 45.

²³ Journal of the Proceedings and Addresses of the Seventeenth Annual Conference of the Association of American Universities, 1915, pp. 21-22.

²⁴ Journal of the Proceedings and Addresses of the Twenty-ninth Annual Conference of the Association of American Universities, 1927, pp. 110-111.

for the master's degree are summarized for 32 institutions in the following table:

TABLE 10.—Requirements for the master's degree¹

Institution	A ²	B	C	D	E	F
1	2	3	4	5	6	7
Canisius College.....	30	18	6	R	1	T
Catholic Sisters College.....	24	12	12	R	1	T
Catholic University of America.....	24	12	12	F, G	1	T
College of Mount St. Vincent.....	24	12	6	F, G	1	T
Creighton University.....	24	12	6			T
DePaul University.....	30	16	14	F, G	1	T
Duquesne University.....	30	18	6		1	T
D'Youville College.....	24	12	12	F, G	1	T
Emmanuel College.....	30	16	14		1	T
Fordham University.....	24	18	6	F, G	1	T
Georgetown University.....	24	12	6	F, G	1	T
Gonzaga University.....	32	12	8		2	T
Holy Cross College.....	30	14	8		1	T
Loyola University (Chicago).....	26	16	9		1	T
Loyola University (New Orleans).....	30	12	6	R	1	T
Manhattan College.....	30	20	10		1	T
Marquette University.....	24	12	6	R	1	T
Mount St. Mary's Seminary.....	24	12	6		2	T
National Catholic School of Social Service.....				F, G	2	T
Niagara University.....	28	16	6	R	1	T
St. Benedict's College.....	30	15			1	T
St. Bonaventure's College and Seminary.....	68	40	28	R	1	T
St. Edward's University.....	24	12	6	R	1	T
St. Francis College.....	24	6	6	R		T
St. Louis University.....	24	12	6	F, G	1	T
St. Mary's College (Notre Dame).....	24	12	6	R	1	T
St. Mary's Seminary and College (Baltimore).....	32				1	T
St. Xavier's College.....	30	14	10	R		T
Trinity College.....	24	16	8		1	T
University of Detroit.....	24	16	8	R	1	T
University of Notre Dame.....	24	16	8	R	1	T
Villanova College.....	24	12	6	R		T

¹ National Catholic Educational Association Proceedings, 1928-29, p. 132.

² A Minimum graduate semester-hour requirement for master's degree.

B Minimum undergraduate semester-hour requirement for graduate major.

C Minimum undergraduate semester-hour requirement for graduate minor.

D Language requirement: R indicates Prerequisite; F, indicates French; and G, German.

E Residence requirement.

F Thesis. T indicates thesis is required.

These data show 24 semester-hours to be the principal frequency for the minimum number of semester-hours required for the master's degree. This requirement is found in 17 of the 32 institutions under consideration. Nine institutions require 30 semester-hours, the exceptions to these requirements are few.

The principal frequency for the minimum undergraduate requirement for the graduate major is 12 semester-hours, the next frequency of importance being 16 semester-hours.

The principal frequency for the minimum undergraduate requirement for the graduate minor is 6 semester-hours, the next frequency of importance being 8 semester-hours.

In 21 instances a modern foreign language is required for the master's degree. One year of residence is required in 25 cases and 3 require 2 years. In all of the 32 institutions the thesis is required for this degree.

Study of the master's degree by the American Association of University Professors.—One of the latest attempts to strengthen the standards for the master's degree was that begun by the American Association of University Professors in 1931. In 1932, a report was made by the committee on requirements for the master's degree known as committee M.

General findings.—As a part of the findings we quote the following statements:

The committee believes:

1. That the wide-spread dissatisfaction with the present status of the master's degree is justified.
2. That the demand for the degree is nevertheless great and in many quarters increasing.
3. That immediate standardization of requirements is impracticable in view of the several useful purposes which the degree now serves in different institutions.²²

(The last statement fully accords with the large variety of masters' degrees now offered as shown in table 6, ch. I.)

It is clear that the standards according to which the M. A. and the M. S. are at present conferred in America vary abnormally and on three different levels of comparison. First, as between institutions of different rank; second, as between the different departments of a university; third, as between candidates of different equipment in the same department.

The purposes of the master's degree were indicated as follows: A, for teacher training for secondary schools; B, research training, and C, a postgraduate course.²³

Length of the A. M. course.—One year in the majority of institutions. This is the longest term assumed, apparently, by secondary school regulations which prescribe the M. A. as a guide to teacher advancement; and it seems to be the common practice to allow the requirement to be fulfilled by work in three summer sessions of eleven or twelve weeks each. At Iowa 4 summer "terms" of 6 weeks each or 3 summer "sessions" of 11 weeks are acceptable; at Michigan 4 summer sessions of 8 weeks each, or (for graduates of Michigan) 3 summer sessions.

Yale, which has a general 2-year requirement for the degree, allows a 1-year M. A. on the following conditions: (a) Evidence satis-

²² Bulletin of the American Association of University Professors, 18: 169-170, March 1932.

²³ Ibid., pp. 174-175.

factory to the M. A. committee that the candidates undergraduate record indicates special aptitude; (b) Distinguished work through 1 year in the Yale Graduate School. Attainment of the degree is very exceptional.

Princeton also has a two-year experiment, but students who pass the departmental comprehensive examination may take the degree in one.²⁷

The requirement of a minor (or minors).—Regulations designed to force the student to divide his attention between several fields, during a course of study as brief as the M. A. course ordinarily is, it seems to most of the committee to be unwise in theory and practically justified only in weak colleges or departments.²⁸

Final comprehensive examination.—A comprehensive examination for the M. A. is generally regarded as highly desirable, but makes such demands upon the time of the faculty, particularly when given orally, that only about half of the larger universities require it * * *²⁹

The M. A. thesis.—After much discussion the committee decided to propose making the thesis optional with the department * * *. When written, the thesis is to count from 6 to 9 hours at present.³⁰

Foreign-language requirements.—The Colorado report shows that of the 28 institutions investigated, 16 have not foreign-language requirement for the M. A. Where a general requirement exists, it is evidently more valid and more rigidly enforced in some departments than others.³¹

The report also states certain practices as to the acceptance of work done in other colleges or by extension as well as the admission of M. A. candidates to undergraduate courses and Ph. D. seminars.³²

The master of science degree.—Practically all discussion of the standards of the master's degree has by implication included the master of science degree. However, in the group of 50 or more land-grant colleges and universities the question of standards for the M. S. degree has been considered by the survey of land-grant colleges and universities from

²⁷ Ibid., p. 176.

²⁸ Ibid., p. 178.

²⁹ Ibid., p. 179.

³⁰ Ibid., p. 181.

³¹ Ibid., p. 184.

³² Ibid., pp. 182-188.

the standpoint of institutional practices inasmuch as this degree predominates in these institutions.

The findings of the land-grant college survey show for that group of institutions certain tendencies although no standards have been set up by the Association of Land-Grant Colleges and Universities.

The minimum residence requirements are in most cases 1 year of three-quarters or 2 semesters. The number of credit hours set up by institutions varies considerably for the degree, 30 hours being the most common. Buchanan reports that in two institutions it is 24 semester hours; in one, 40; in one, 36; and in one, 50.²²

STANDARDS FOR THE PH. D. DEGREE

Introductory.—The Ph. D. degree, by its very nature resists any attempt at standardization, particularly from the standpoint of detailed quantitative requirements. It is possible, however, to observe certain changes in the requirements for this degree using as the point of departure the requirements for the first Ph. D. degree set up in this country at Yale College. In the catalog of 1860-61, we find the following:

It is required of candidates for the degree of doctor of philosophy, that they shall faithfully devote at least two years to a course of study selected from branches pursued in the Department of Philosophy and the Arts. The selection may be made from either or both sections, but must belong to at least two distinct departments of learning. All persons who have not previously received a degree or furnished evidence of acquaintance with the Greek and Latin languages, will be required before presenting themselves for the final examination for the doctor's degree, to pass a satisfactory examination in those languages, or in some other studies (not included in their advanced course) which shall be accepted as an equivalent to the Faculty. The degree of doctor of philosophy will be conferred on all members of the Department, who, having complied with the conditions above stated, shall pass a satisfactory final examination, and present a thesis giving evidence of high attainment in the branches they have pursued. Bachelor's of Arts, Science and Philosophy will be admitted to the Scientific School as candidates for the degree of doctor of philoso-

²² In U. S. Office of Education. Report of the Survey of Land-Grant Colleges and Universities, vol. II, pp. 8-16 (Bulletin 1930, no. 2).

phy without examination. Other persons may be admitted as candidates for the same degree on passing the examination required for the bachelor's degree.

With this sound foundation as a basis, the Ph. D. degree rapidly spread throughout the universities and colleges of the country. Within 50 years there were 38 institutions that offered the degree, 409 degrees having been granted in 1910. The question of comparative standards was gradually brought to the front when criticism of the abuse of giving the Ph. D. honoris causa was voiced by various individuals and organizations.

In 1900 the Association of American Universities had considered on its agenda various matters relating to the doctorate: topics relating to the character of the dissertation, the subjects not related to the major, and the undergraduate preparation for the major subject; but no important attempt to define the standards of the Ph. D. was made by the association until more than a decade later. Meanwhile, another organization took up this task in connection with its study of what it considered a standard university.

Recommendations of the National Association of State Universities.—In 1905 the National Association of State Universities began to consider the question of minimum essentials for the establishment of graduate schools in its group, and in that year President George E. MacLean of the State University of Iowa succeeded in appointing an authorized committee to report to the association upon standards for the recognition of American universities and upon standards for the recognition of the A. B. degree and higher degrees.³⁴ In 1908, the committee made its report³⁵ from which are quoted the parts pertinent to advanced degrees.

In gross, therefore, we recommend as standards for an institution to be recognized as a standard university:

- I. A university giving the degree of doctor of philosophy or doctor of science after 3 years of graduate study in residence, one of which shall be in residence at the institution conferring the degree:

³⁴ In National Association of State Universities, Transactions and Proceedings, 1905, p. 8.

³⁵ In National Association of State Universities, Transactions and Proceedings, 1908, pp. 145-146, 151.

II. A university that requires in addition to the points named in graduate study, that a candidate before receiving his higher degree shall have completed for his bachelor's degree a course of not less than 120 semester hours in subjects distributed with reasonable sequences, and preliminary requirements among the great groups of subjects ordinarily recognized in the field of liberal arts as languages and literature, philosophical and historical sciences, natural sciences, and fine arts.

V. *Scope of curriculum.*—To be a standard university an institution shall be equipped to give instruction leading to the Ph. D. degree in at least five departments. * * *

Definition of the Ph. D. degree by the Association of American Universities. In 1912 the next synthesis of the Ph. D. requirements was made by Dr. Frederick J. E. Woodbridge, dean of the faculties of political science, philosophy, pure science, and fine arts, Columbia University. This was presented at the Fourteenth Annual Conference of the Association of American Universities. He said—

The doctor of philosophy degree in the Association of American Universities is defined as follows:

A period of university study never less than 2 years; familiarity with a recognized branch of learning and its most closely related branches; and a dissertation embodying the results of individual research—these are the things for which the degree theoretically stands. A requirement of at least 1 year of residence in the university conferring the degree leaves the migration of students unhampered. * * *

In 1915 the association appointed a committee on academic and professional higher degrees. In 1916 it made a report on the status of degrees more commonly conferred. Quotations regarding degrees other than the doctor's degree are omitted in the following:

(3) Ph. D.—Conferred for advanced work in which independent investigation occupies an essential place. The results of this investigation should be set forth in a thesis worthy of publication. The amount and character of the work should be such that the degree rarely could be attained in less than 3 years following the attainment of a bachelor's degree or equivalent."

(6) The committee is of the opinion that the subject matter of the applied sciences or the professions constitutes appropriate fields for

" Journal of the Proceedings and Addresses of the Fourteenth Annual Conference of the Association of American Universities, 1912, p. 19.

" Journal of the Proceedings and Addresses of the Eighteenth Annual Conference of the Association of American Universities, 1916, pp. 65-66.

research leading to the degree of Ph. D. It finds, however, that this degree does not meet all the demands in the various professions for higher training in research, as contrasted with practice, on the part of students who have already had a professional course preceded by substantial college training; so that for degrees representing advanced research in the various professions it suggests the degree of doctor of science with mention of the professional field; to wit, D. S. Jur., D. S. Med., D. S. Theol., D. S. Eng. It is understood that these degrees shall not be inferior to the Ph. D. in standard and dignity. The Sc. D. without specification of field shall be construed as an honorary degree.²⁸

Since the presentation of these data, the association has given considerable time to the discussion of the linguistic prerequisites for the Ph. D. degree including foreign language and English.

Report of committee O of The American Association of University Professors, on Ph. D. Standards.—In 1915 the American Association of University Professors appointed a special committee on the "Requirements for the Ph. D. degree, known as committee O. The chairman of this committee was Dr. J. R. Angell, of the University of Chicago, now president of Yale University, who stated "that this knotty subject is an ever present problem. Some attempts should be made to reach some results representing a common understanding."²⁹

On December 20, 1918, this committee filed a comprehensive report. The first part contains the formulation of the problems considered by the committee and includes a series of 20 questions basic to the investigation. The second part gives the specific recommendations of the committee following the line of questions. For convenience the writer has combined the questions and answers in catechetical form.

A. General standards controlling the degree

Division I

1. The minimum time requirement for the degree; should there be such, and if so, at what point should it be set?
 - (a) Should more than a single year of residence in any one institution be required?

²⁸ Ibid., p. 66.

²⁹ Bulletin of the Association of American University Professors, 2: 29, April 1916.

There should be a minimum time requirement for the doctor's degree to be disregarded only in the most exceptional cases. Not less than 3 years should be thus required, of which at least 1 year should be in the institution granting the degree.

2. The definition of residence.

- (a) Should work in summer schools be recognized?

Your committee recommends that organized summer school work be recognized as part of the preparation for the doctorate when conducted on the same plane as work in the regular session, and when of distinctly advanced character.

- (b) On what terms should work in other institutions be recognized?

The committee recommends that work in other institutions of substantially equal rank should be accepted at par value.

- (c) Should work in Government bureaus and similar institutions be accepted as equivalent to university residence?

The committee believes that approval should be given to work done in Government bureaus or similar institutions when a careful scrutiny of the situation indicates that conditions are substantially equivalent to those of properly organized university work. The committee believes that such work should have to be accepted at some discount, and to a limited extent.

- (d) What methods can be devised to stimulate migration of graduate students among different institutions?

The committee has expressed approval of the encouragement of migration, but no satisfactory methods for promoting it have thus far been discovered.

3. Standardization of requirements for entrance upon candidacy. Should these differ from a mere admission to the graduate school?

It is recommended that sharp distinction be made between admission to the graduate school and admission to candidacy for the doctor's degree. The first should depend upon the presentation of a standard bachelor's degree, or in the case of foreign students of some unquestionable equivalent. Admission to candidacy should involve in addition written assurance by the head of the department in which the candidate desires to do his major work that he deserves the opportunity to secure the degree.

4. May work done in correspondence departments of reputable universities be accepted, and if so, under what conditions?

The committee disapproves the acceptance of correspondence work as satisfying any part of the requirements for the doctor's degree.

5. Should the requirements of familiarity with languages other than English be rigidly enforced, and if so, what languages should be demanded?

It is recommended that French and German should both be required of candidates for the doctorate, efficiency to be tested at least

1 year before the conferring of the degree. Other languages will often be necessary also.

Division II

6. To what extent should the candidates for the conferring of the degree be subject to general faculty rules, and to what extent an affair of the department?

The committee is of the opinion that general faculty control of the standards under which the doctor's degree is conferred is desirable, but administrative detail should largely be left to departments.

7. May the entire work fall within the confines of one department, or should there be a major and at least one minor department substantially separate from one another, and if so, how shall "department" be defined?

The committee is unable to agree upon any single formulation as to the confinement of the work of the doctorate to one department, but it is clear that such differences of opinion as exist concern solely the best methods for assuring breadth and depth of training without undue sacrifice of either qualification. There has been evidence of some distrust of the wisdom of allowing the work to fall entirely within the confines of one department lest the eccentricities of one or two individuals be given too free range. On the other hand, it is obvious that the men actually in charge of the research are more likely than others to appreciate the requisites for sound training in the case of any particular candidate. The committee has not found it practicable to frame a satisfactory definition of a "department".

8. Is the doctor's degree to be differentiated rigidly from the bachelor's degree as not attainable by persons of mere average ability who give the necessary time?

The committee is unanimous in holding that the doctor's degree should be conferred only upon persons of unusual intellectual endowment with unequivocal capacities for research.

9. The relation of the Ph. D. to other doctorates.

(a) Emphasis on high technical proficiency in distinction from research.

(b) The relation to the law degrees (D. C. L., J. D., and LL. M.).

(c) The relation of the doctor's degree to work in the applied sciences, e. g., home economics and farm management. In this case, should the pure sciences most closely related be constituted a major or a minor field? (See A-7.)

The relation of the Ph. D. degree to doctorates in law has been postponed for later consideration as indicated above. The committee feels that the doctor's degree should always involve distinct proficiency in research, but are doubtful whether this can always be distinguished from technical proficiency. A majority of the committee hold that wherever applied science is implicated in the work for the doctorate, the pure science most nearly related should also be definitely represented, and emphasis should particularly fall upon

the making of a definite contribution to knowledge in the work of the thesis.

10. Should there be an explicit definition of the type of laboratory, library, and instructional equipment justifying the institution in undertaking to confer the doctor's degree?

If so, what requirements are to be thus formulated?

The committee feels that at present it is impracticable to characterize explicitly the type of laboratory, library, and instructional equipment justifying the attempt to confer the doctorate.

B. The thesis

1. Should it be required that the thesis be printed, and, if so, in full or in abbreviated form?

(a) Should the expense of publication fall wholly on the candidate or be borne in part by the institution?

(b) Should the form and general style of the thesis, including the grade of paper used, be explicitly stipulated?

There is considerable diversity of opinion in the committee, only one member maintaining that the thesis should be printed in full, but a considerable majority would require the printing of a portion or an abstract. In general, it may be said that the committee favors the publication of at least so much of the thesis as would adequately represent the method and the results.

The committee is divided in its opinion regarding the requirement that the university should share the cost of publication with the candidate. The committee also is indisposed to dictate with regard to the format and so on, but is appreciative of the advantages of uniformity.

2. Should the completion and acceptance of the thesis always precede the final examination?

The committee is divided in its opinion regarding the scheduling of the final examination before the completion of the thesis. The views are so diverse as to render a summary impracticable.

3. May a digest or outline be required for publication in place of the complete thesis?

This point is substantially covered above under B-1.

C. The examination

1. Should more than one department be represented in the examining committee: e. g., law on a political science degree? (See A-7 and 9-c.)

The committee recommends that more than one department should always be represented on the examining committee.

2. Should the examination be oral or written or both?

In the judgment of the committee both oral and written examinations should be given.

3. Should there be a preliminary or qualifying examination, and if so, at what period in the training of the student should this be given?

The committee recommends that there should be preliminary examinations held at a considerable period in advance of the final examination as a protection both for the candidate and the institution.

4. The thesis being accepted, should the final examination deal exclusively with the subject matter of the thesis and principles of the major subject, or should it cover the expert capacities of the candidate over major and minor fields in a large way?

The committee is of the opinion that the final examination should cover the capacities of the candidate in the widest possible way, with distinct emphasis, however, upon the subject of the thesis.

In the discussions and correspondence of the committee it has been abundantly shown that the committee regards the creation of a genuine appreciation of research work and the providing of satisfactory conditions for its encouragement as of vastly more consequence than any agreement upon technical requirements or administrative details. On the other hand, the discussions have served to bring out with great distinctness the impossibility of safeguarding standards under the existing conditions in American institutions without explicit and unambiguous formulation of ideals.

JAMES R. ANGELL, chairman (University of Chicago).

GEORGE ERNEST BARNETT (Johns Hopkins University).

CHARLES ABRAM ELLWOOD (University of Missouri).

WILLIAM FRANCIS MAGIE (Princeton University).

MARTIN ANDRE ROSANOFF (University of Pittsburgh).

MOSES STEPHEN SLAUGHTER (University of Wisconsin).

FRANK THILLY (Cornell University).

CALVIN THOMAS (Columbia University).

HORATIO STEVENS WHITE (Harvard University).

Members assigned to the committee in 1917:

FLORENCE BASCOM (Bryn Mawr College).

JOHN HENRY WIGMORE (Northwestern University Law School).

December 20, 1918.*

Standards for the Ph. D. in Catholic universities and colleges.—Attention was called to the survey of graduate study in Catholic higher institutions made in 1927. As a part of the findings of this survey we find the following requirements set up for the Ph. D. degree in 12 institutions.

* Bulletin of the American Association of University Professors, 5:12-18, January-February 1919.

TABLE 11.—Requirements for the doctor's degree

Institution	A ¹	B	C	D	E	F	G
Catholic Sisters College ²	¹ (1)	(2)	(3)	F, G	3	R	R
Catholic University of America				F, G	1	R	R
Duquesne University	60	24	10	R	2	R	R
Fordham University	48	36	12	F, G	1	R	R
Georgetown University	72	24	12	F, G	1	R	R
Loyola University (Chicago) ⁴	90	60		F, G	3	R	R
Marquette University	72	36	18	F, G	1	R	R
Niagara University	48	24	12	F, G	1	R	R
St. Louis University	(4)	(5)	(6)	F, G	1	R	R
St. Mary's Seminary and University (Baltimore)	(1)	(1)		F, G	1	R	(7)
Trinity College ³				F, G	1	R	R
University of Notre Dame	48	36	12	F, G	1	R	R

¹ A Minimum semester-hour requirement for doctor's degree.

B Minimum semester-hour requirement for major.

C Minimum semester-hour requirement for minor.

D Languages required. F indicates French. G indicates German. R indicates required.

E Residence requirement.

F Dissertation. R indicates required.

G Publication of dissertation. R indicates required.

² The graduate work of this institution has since 1928 been taken over by the graduate school of the Catholic University of America.

³ References to numbers in parentheses:

(1) 3 years' work. Semester hours not specified.

(2) 3 full years.

(3) First minor, 2 years; second minor, 1 year.

(4) 3 years' full time.

(5) 2 years' full time.

(6) 1 year's full time.

(7) Not required except by abstract in periodicals.

⁴ Ph. D. degree conferred in education only.

The interpretation of this table is quoted herewith:

Several of the institutions do not measure their minimum requirements in terms of semester hours. The Catholic University of America and St. Louis University belong to this group. These same institutions, together with the University of Notre Dame do not state their requirements for graduate majors or minors toward the doctor's degree in terms of semester hours. Marquette University requires 72 semester hours, presumably above the bachelor's degree. Loyola University in Chicago which confers the Ph. D. in education only, requires 90 semester hours. The University of Notre Dame states that it requires 48 hours, but presumably this number of hours must be superadded to the master's degree.

All of the institutions conferring the doctor's degree demand French and German as a prerequisite. In 9 of the 12 institutions the residence requirement is satisfied by 1 year, while Duquesne University demands 2 and Loyola University and the Catholic Sisters College demand 3 years of actual residence. The publication requirement may be satisfied at St. Mary's Seminary and University by publication of an abstract.⁴

⁴ National Catholic Education Association, proceedings, 1928-29, pp. 103-104.

4. THE STANDING OF GRADUATE SCHOOLS

INTRODUCTION

The question of the relative standing of graduate schools is a matter which has not been given the same attention as that of undergraduate and professional colleges. Nevertheless, attempts have been made to indicate to the public facts concerning the status of graduate study in universities and colleges.

In 1892 the editor of the *Educational Review* condemned those institutions that still continued the practice of giving the Ph. D. honoris causa.⁴² This practice had long been condemned, but many schools continued in the abuse. As a more definite means of bringing such schools into line he warned that he would publish their names in the *Educational Review*. Consequently the names of a number of universities and colleges were posted in the editorial section of the journal. This negative list doubtless had its influence.

The rating made in 1911 of 344 universities and colleges by Dr. Kendrick C. Babcock, specialist in higher education of the Bureau of Education, while not directly concerned with graduate schools had an important bearing on graduate school standards. This tentative classification of institutions was concerned with the quality of preparation of undergraduate students that contemplated doing graduate work in those institutions constituting the Association of American Universities. Institutions were rated A whose programs made it feasible for the student to obtain the master's degree in 1 year. Institutions whose programs made it necessary for the student to spend between 1 and 2 years were rated B, and those whose programs required the student to spend more than 2 years were rated C. This classification was made at the urgent request of the Association of American Universities in 1910 at the Charlottesville meeting.

The classification was printed by the Bureau of Education and distributed semiconfidentially for study and criticism in order to help in the preparation of a classified list of a large number of institutions to be published later. "Re-

⁴² See p. 21, Ch. I.

lease of the classification led to considerable protest on the part of certain institutions." ⁴⁸ It was withdrawn on the order of the President of the United States. However, the effect of this tentative effort on the part of the Government to help in encouraging higher standards in the interest of graduate work was indirectly of great value although it was left to private and State accrediting agencies to continue the work of developing approved lists of higher educational institutions.

SPURIOUS DOCTORS' DEGREES

During the period immediately preceding the World War, the demand for the Ph. D. and other higher degrees proved a temptation to a number of individuals who organized, under lax incorporation laws, universities that conferred these degrees primarily on the basis of monetary consideration. Little real work was expected or required. A great many of these spurious degrees were granted not only to residents in this country but also to residents of other countries. After a great deal of effort, the Commissioner of Education with the assistance of authorities of the District of Columbia, succeeded in eliminating most of these schools located in the District, and in obtaining for the District of Columbia legislation that protected the integrity of college degrees.

CLASSIFICATION OF GRADUATE SCHOOLS

The demand on the part of students and teachers for information as to the relative strength of graduate schools in the principal fields of study and research led President R. M. Hughes of Miami University to make a survey of graduate education in collaboration with 20 members of his faculty in 1925. A method was devised by which the ranking of 36 graduate schools was made in relation to the following fields of study, 20 in all: Astronomy, botany, chemistry, classics, economics, education, English, French, geography, geology, German, government—political science,

⁴⁸ John, Walton C. Services of the Office of Education to higher education. *School Life*, 17: 52-53. November 1931.

history, mathematics, philosophy, physics, psychology, sociology, Spanish, and zoology.⁴⁴

It was not expected by President Hughes that the ratings obtained would be considered as fixed. Ratings should be made from time to time, perhaps every 3 years. However, no other attempt at rating graduate schools was made until 1933 when the American Council on Education undertook the evaluation of 35 carefully selected major fields or departments of instruction and research in 76 institutions offering work on the graduate level. This evaluation was again made under the direction of President Hughes on a more thorough basis than was the case in his first rating.

On this occasion the classification was made with the assistance of the national learned society of each of the 35 fields chosen. These committees averaged 88 in membership. The committees indicated those schools in their respective fields that they adjudged as being adequately equipped for granting the doctor's degree. Graduate schools having the highest rank were also indicated.^{45 46}

Although ratings of this type or probably of any other type are seldom acceptable to all concerned, it is true that these ratings have already stimulated a deep interest among graduate schools and have had an excellent effect on encouraging reforms, either by strengthening weak departments or by abolishing them.

The following tables summarize certain of the principal features of the ratings. The first shows the relative rank of institutions (names omitted) according to the number of recognized fields covered. The second shows the rank of subject-matter departments according to the number of institutions giving work in each.

⁴⁴ Hughes, Raymond M. *A study of graduate schools of America, 1925*. Miami University, Oxford, Ohio.

⁴⁵ American Council on Education. *Report of the committee on graduate instruction*. April 1934. Washington, D. C.

⁴⁶ Eells, Walter Crosby. *American graduate schools. School and society*. 39: 708-712. June 2, 1934. This study compares the ratings of 1925 with that of 1934.

TABLE 12.—*Institutions ranked according to number of fields giving work toward the Ph. D. in 76 universities and colleges*¹

Rank	Number of fields	Rank	Number of fields	Rank	Number of fields
1.....	33	24.....	19	52.....	10
2.....	32	25.....	19	53.....	10
3.....	31	26.....	18	54.....	10
4.....	30	27.....	17		
		28.....	17		
		29.....	17		
5.....	29	30.....	17	55.....	9
6.....	29	31.....	17	56.....	9
7.....	29	32.....	17	57.....	9
8.....	29	33.....	16	58.....	8
9.....	29	34.....	16	59.....	8
10.....	29	35.....	16	60.....	7
11.....	27	36.....	16	61.....	7
12.....	26		15	62.....	7
13.....	26			63.....	7
14.....	26	37.....	14	64.....	6
15.....	25	38.....	14	65.....	5
16.....	25	39.....	13		
		40.....	13		
		41.....	13	66.....	4
17.....	23	42.....	12	67.....	4
18.....	22	43.....	12	68.....	4
19.....	22	44.....	12	69.....	4
20.....	21	45.....	12	70.....	3
21.....	20	46.....	12	71.....	3
		47.....	11	72.....	3
		48.....	11	73.....	3
		49.....	11	74.....	3
22.....	19	50.....	11	75.....	2
23.....	19	51.....	10	76.....	1

¹ Based on original tables.

In the light of the total number of fields selected in this classification there are 4 universities covering between 30 and 33 fields of graduate study, 12 covering between 25 and 29 fields, 5 covering between 20 and 23 fields, 15 covering between 15 and 19 fields, 18 covering between 10 and 14 fields, 11 covering between 5 and 9 fields, and 11 covering between 1 and 4 fields.

The number of institutions offering work toward the Ph. D. in each of the 35 fields with their relative ranking is shown as follows:

TABLE 13.—*Rank of subject-matter fields, according to number of institutions giving work in each*¹

Rank	Subject-matter fields	Number of institutions in each field	A ²	B ³	C ⁴
1	2	3	4	5	6
1	Chemistry.....	67	16	21	30
2	Education.....	61	10	20	31
3	Zoology.....	59	11	20	28
4	History.....	55	8	18	29
5	Economics and business.....	53	11	11	31
6	Physics.....	52	12	13	27
7	Psychology.....	49	11	20	18
8	English.....	49	8	19	22
9	Mathematics.....	48	7	9	22
10	Philosophy.....	45	7	17	21
11	Botany.....	45	8	22	15
12	Sociology.....	44	5	9	20
13	Political science.....	39	8	16	15
14	Geology.....	39	12	9	18
15	Classics.....	38	9	14	15
16	Romance language.....	37	7	15	15
17	Bacteriology.....	37	9	8	20
18	German.....	33	7	14	12
19	Plant pathology.....	32	4	15	13
20	Plant physiology.....	27	6	15	6
21	Entomology.....	23	5	9	9
22	Electrical engineering.....	22	3	10	9
23	Genetics.....	22	6	12	4
24	Civil engineering.....	19	3	12	4
25	Mining and metallurgical engineering.....	19	3	11	5
26	Geography.....	18	4	5	9
27	Human nutrition.....	18	5	9	4
28	Chemical engineering.....	18	3	6	9
29	Mechanical engineering.....	17	3	8	6
30	Soil science.....	15	4	7	4
31	Astronomy.....	14	5	4	5
32	Anthropology.....	12	5	2	5
33	Fine arts.....	11	3	3	5
34	Animal nutrition.....	9	3	5	1
35	Aeronautical engineering.....	7	2	1	4

¹ From report of committee on graduate instruction. See footnote 45.

² Voted by national jury as being among the most distinguished in the field.

³ Voted by national jury as being adequately staffed and equipped for work leading to the doctorate in the field.

⁴ Institutions lacking votes to come under the first 2 headings.

It will be observed that chemistry stands first with 67 institutions that are offering work toward the doctorate in that field. Education is next with 61 institutions; history with 55 institutions stands first in the humanistics. It is interesting to note that in the language fields there are 38, 37, and 33 institutions, respectively. Graduate work in the applied fields has naturally a smaller representation.

5. SUMMARY

In considering chapters I and II, which are primarily historical in character, the following observations may be in order:

Graduate instruction dates back more than 300 years, almost to the beginning of the settlement of the American people in New England, and it is one of the earliest forms of education carried on in this country. This period of 3 centuries may be divided roughly into 3 parts, the first, from 1642 to about 1860, which may be designated as the period of the supremacy of the master's degree. The second period, from 1860 to 1900, was concerned with the growth and development of the Ph. D. degree. The third period, from 1900 to the present, has been characterized by great diversification of degrees on both the master's and doctor's levels.

During the first period, or for approximately 218 years, the master's degree was conferred by a relatively small number of colleges, located largely in the East and South, and including a few institutions in the Middle States. Not many of these institutions had reached or assumed the dignity of a university nomenclature. During the greater part of this long period graduate work was largely a matter of rounding out the rather narrow and traditional fields of knowledge in religion and the humanistic fields that grew out of the quadrivium. The methods used emphasized logic and disputations, although there are indications of scientific thinking which must have involved an experimental approach. Those who gained the master's degree *in course* were left to their own devices for obtaining such additional culture or knowledge as their respective professions or duties might permit.

The second period, which covers about 40 years (1860-1900), is a decidedly significant one. The influence of modern science, with its well-organized mathematical approach, began to be felt particularly by the old traditional group of colleges. This influence was greatly accelerated by the urgent need for agricultural and industrial research and received its greatest single impetus from the large number of newly organized land-grant colleges and State universities.

But, perhaps, the most significant force was the immediate recognition of the meticulous and exacting research methods of the German universities. These methods almost from the beginning controlled the development and character of the Ph. D. degree in this country in the more conservative schools. But no sooner had the true significance of this degree begun to be realized than a large number of schools took advantage of its dignity and prestige to confer it honoris causa to such an extent that it cast great reflection upon the degree and upon those who thus conferred it. Because of the vigorous efforts of graduate students in the leading universities, and due to the action of leading college presidents and others, this abuse of the Ph. D. came to an end about the year 1900.

The third period covers more than 30 years to date. During this time the A. M. and Ph. D. degrees have become generally required for the teaching profession, whereas in earlier years preparation for research had been the nearly exclusive function of these degrees, especially the doctor's degree.

As a result of these needs there has been a great increase in the number of colleges and universities that offer degrees on the graduate level.

In order to safeguard the character of these higher degrees various national educational organizations have defined the functions of graduate study and recommended definite standards for the master's and Ph. D. degrees. Both public and private agencies have worked with considerable success in outlawing institutions that have granted spurious graduate degrees.

As a new means of encouraging the development of the highest standards in the several fields of graduate instruction and also in helping students in the selection of institutions most fitted for advanced studies in one or more of the several fields, a classification has been made of the leading graduate schools under the direction of the American Council on Education. It is expected that the classification will be revised with some frequency.

CHAPTER III

OBJECTIVES AND SCOPE OF GRADUATE STUDY

1. OBJECTIVES OF GRADUATE STUDY

GENERAL STATEMENT

The aims or objectives of graduate study in American universities may be considered from different viewpoints; but fundamental to all aims is the concept of scholarship of a high order. In the group of institutions under consideration the expressed definitions of aims range from those that relate primarily to the character and development of the student to those that are concerned with social and economic objectives. In varying degrees, stress is placed on the importance of research, subject-matter mastery, and the ability to teach.

From the standpoint of the student, great emphasis is placed on the possession of the spirit of research or the spirit of original and independent thinking. The mastery of subject matter through the student's own initiative combined with the ability to analyze critically is everywhere stressed. The graduate student is expected to demonstrate a higher degree of scholarship than the undergraduate.

From the broader objective we find that the university through its graduate program completes and crowns the work that is begun in the public schools: It is the extension of undergraduate work in the direction of specialization and research; it provides the student with a comprehensive view of a field of knowledge; it gives adequate preparation for those who expect to become investigators, teachers, and administrators; it trains for individual research and fosters the discovery of knowledge; it permits the student to share

the investigations of the instructor by direct contact with research problems.

Altogether the function of graduate study is quite clearly expressed in the following statement:

Graduate study makes teaching a profession; it brings science into medicine; it broadens the specialized professions; it strengthens the pulpit; it organizes industry; it lays the foundation for invention and commercial projection; it makes knowledge of human society the basis of government and public administration; it guides in the development of natural resources; it enriches literature; and it furnishes the highest opportunities for liberal culture. This is achieved through the pursuit of liberal studies and the advancement of science as such.¹

THE RESEARCH AIM

The stimulation of research in the graduate school has been due largely to two factors: The creative attitude and powers of the graduate student and his guiding officer, and the influence of outside agencies. While it is not possible in a study of this type to enter into historical details there are evidences to show that almost from the beginning research in American universities has been greatly stimulated by scientific societies and other cultural associations whose interest was the development of new knowledge and methods as related to the needs of our growing social, economic, and scientific organization.

Among these organizations, with the dates of their establishment, may be mentioned the following which are the present-day constituents of the American Council of Learned Societies devoted to humanistic studies:

The American Philosophical Society (1727); American Academy of Arts and Sciences (1780); American Antiquarian Society (1812); American Oriental Society (1842); American Philological Association (1869); Archeological Institute of America (1879); Modern Language Association of America (1883); American Historical Association (1884); American Economic Association (1885); American Philosophical Association (1901); American Political Science Association (1904); American Sociological Society (1905); Linguistic

¹ Seashore, Carl E. Trends in Graduate Work. In University of Iowa Studies, no. 33, p. 11. Edited by John William Ashton. Published by the university, Iowa City, 1931.

Society of America (1924); History of Science Society (1924); and Medieval Academy of America (1925).²

To these may be added the American Association for the Advancement of Science, the National Research Council, the Social Science Research Council, the Association of Land-Grant Colleges and Universities, the Library of Congress, the Office of Experiment Stations of the United States Department of Agriculture, the Smithsonian Institution, the Rockefeller Foundation, and the Carnegie Foundation, as well as other societies and organizations many of which are connected with industry and cover special fields of investigation which need not be enumerated here.

Statements of the research aim in universities and colleges have appeared in the Reports of Committee R of the American Association of University Professors on the Promotion of Research in Colleges and Universities. (See Bulletins of Association for March 1919, pp. 11-17, Apr. 2, 1922, December 1924, October 1925, March 1930.)

The importance of research in all branches of knowledge was emphasized. Objection was raised against the possibility of a mere utilitarian approach in research. The "purely professional or pedagogic aims of colleges and universities" are not to be allowed "to discourage or curtail research." The real graduate school has as its object, investigation. A careful distinction must be made between undergraduate professional and graduate students. A number of practical reforms were recommended.

In December 1924, the Division of Educational Relations of the National Research Council held a conference of representatives of 24 colleges and educational organizations for the purpose of increasing creative effort in American colleges.

RESEARCH INTERRELATIONSHIPS

In 1920, Dr. Charles Homer Haskins, formerly dean of the Graduate School of Arts and Science of Harvard University, before the conference of the Association of American Universities stressed the importance of closer relation-

² Ogg, Frederick Austin. *Research in the Humanistic and Social Sciences*. New York, London, The Century Co., 1928.

ship of graduate schools with outside research associations, including the industries.

From the standpoint of the industries, Dr. Frank Baldwin Jewett, chief engineer of the Western Electric Co., stated:

It seems to me that we should look to the universities for practically all our great advances in the fields of fundamental research; should look to them for the training of all men destined for the conduct of industrial research; that from time to time, both for the benefit of industry and for the university obtain men on loan account, and should facilitate the work of the university whether on the research or training side, by placing at their disposal such educational and research facilities as may exist in industry.³

AIMS NOT CLEARLY DEFINED

It will be observed that in nearly all statements of aims of graduate study whether found in catalogs or elsewhere, there are few definitions that are specific as to detail. In discussing the research aim or the teaching aim a few general abilities or qualities such as are summarized in this section, have been mentioned. But there is little agreement as to the exact nature of these abilities and to what extent they constitute the true objectives or aims of graduate instruction. At the same time along with the research aim, the teaching aim is of great importance; yet little has been known as to the extent to which the graduate school ministers to the latter aim. The question is made more difficult because the true teacher is usually deeply interested in some phase of research or other creative scholarly activity. The two aims are inextricably involved.

Nevertheless through a carefully developed study the several abilities which are generally recognized by competent authorities as those which must be included in the qualifications of successful candidates for the master's or doctor's degrees have been determined. This is found in *The Aims of Graduate Instruction in the Preparation of College Teachers* prepared in cooperation with the United States Office of Education by Dr. Charles H. Thompson, professor

³ Journal of the proceedings and addresses of the twenty-second annual conference of the Association of American Universities, 1920, p. 51.

of education of Howard University.⁴ The more important findings of a part of this unpublished study are given in the following section in the form of abstracts and quotations.

THE AIM OF PREPARING TEACHERS

The first finding of significance in this study is that the principal practical function of the graduate school is the preparation of teachers, and primarily college teachers, as shown by the following:

Seventy-one percent of all successful candidates for the doctorate plan to teach or were so engaged when they received their degrees, and the majority of them on the college and university levels. "In every subject-matter field except chemistry, the large majority of the candidates planned to teach or were so engaged."

Ninety-three percent of the college presidents indicated that they required either a master's or doctor's degree for appointment to a teaching position in their colleges—77 percent requiring the master's degree and 16 percent requiring the doctor's degree.

It was also found that three important specific aims are a part of the larger objective of the graduate school: Namely, developing in the candidate (1) research ability, (2) general knowledge of the candidate's field, and (3) teaching ability.

The development of research ability—doctoral candidates.—Successful candidates for the doctorate are expected to possess as a minimum attainment at graduation the following general research abilities, without regard for the size of

* ⁴In ascertaining the abilities which should come under the aims of graduate instruction, Professor Thompson submitted a preliminary check list of the potential abilities and knowledge that recipients of higher degrees were expected to possess at graduation to 20 deans of graduate schools, 200 professors and heads of departments in graduate schools, and 100 recipients of the doctor's degree, for criticism and recommendations. This list revised was then sent to larger groups of deans, professors, and Ph. D. graduates. From these groups the list was checked by 572 department heads in graduate schools and 474 doctors of philosophy who had received their degrees since 1924, thus indicating which abilities and knowledge successful candidates for the master's degree and doctor's degree were expected to possess and were believed actually to possess at the time of graduation. The presidents of 688 university colleges, separate colleges, teachers colleges, and junior colleges also checked the same list indicating which of these abilities and knowledge they expected their teachers with master's and doctor's degrees to possess, and which abilities the teachers actually possessed. Comparison of the returns from the department heads with the returns from the Ph. D. graduates shows almost absolute agreement as to what abilities were possessed, as well as those that should be possessed.

the school, or whether with research or teaching objectives or without reference to field of specialization.

The candidate must have ability: (1) To understand a research problem in his field when presented by a competent authority; (2) to recognize and state additional problems growing out of a research study; (3) to select, delimit, and state hypotheses for the solution of one or more minor problems of research; (4) to select, delimit, and state hypotheses for the solution of one or more major problems of research; (5) to solve a research problem by utilizing known techniques and methods; (6) to solve a research problem by devising new techniques or methods; (7) to interpret original and derived data secured in the solution of the problem; (8) to draw valid conclusions and to indicate their significance for the research field to which the problem is related; (9) to make an accurate written report in correct English of a research project clearly setting forth the problems undertaken, materials and methods of procedure employed, and results obtained; (10) to make an accurate oral report in correct English of a research project clearly setting forth the problems undertaken, materials and methods of procedure employed, and results obtained; (11) to read French; (12) to read German; (13) to direct research in his field as a teacher of graduate students; and (14) to direct research as head of a cooperative research organization.

Master's candidates.—Successful master's candidates are expected to attain the same research abilities that are expected of successful doctoral candidates, except the following four: Ability to define major problems of research, ability to devise original techniques and methods of solving research problems, ability to direct research in one's field as a teacher of graduate students, and ability to direct research in one's field as head of a cooperative research organization. Whether the abilities that are expected to be the common possession of both master's and doctor's candidates are to be possessed by both groups to the same extent could not be definitely ascertained by the data of this study. The fact, however, that the main difference between the abilities that are considered proper objectives of the master's degree and those that are considered exclusive objectives of the doctor's degree is a distinction in the extent of possession of the same type of abilities it is reasonable to conclude that little or no discrimination is expected in the extent of possession of the abilities that are common outcomes for the master's degree and doctor's degree.

While no distinction was found between the research abilities expected of master's candidates who are going to teach as compared with those who were going into research, yet the data indicate specifically that the department heads in small institutions are much more definitely agreed upon what the master's degree is and ought to be than department heads in large institutions.

With the exception of the ability to use foreign languages, the research abilities expected of master's candidates in various subject-

matter fields follow very closely the general trend of the abilities expected of the group as a whole. Where foreign-language ability was considered an expected outcome, ability in one of the languages was deemed sufficient—English and the languages, emphasizing French; German and the natural sciences, emphasizing German; and education, psychology, and the social sciences, emphasizing statistics or some tool of research other than foreign-language ability.

General knowledge of the candidate's field.—The second specific aim of the graduate school is to help the student to obtain a "General knowledge of his field."

Doctoral candidates.—This involves, according to the findings, that the doctoral candidate should have the ability: (1) To make an exhaustive annotated bibliography of the literature on a particular problem in his field; (2) to make an exhaustive annotated bibliography of the literature on two or more problems in his field; (3) to make a critical summary of the literature in his field on a particular problem, evaluating the validity of the conclusions in the light of the techniques employed; (4) to make a critical summary of the literature on two or more problems in his field, evaluating the validity of the conclusions in light of the techniques employed; (5) to write a critical review of a book or monograph in his field. The candidate must also have: (6) Knowledge of the major contributions of American scholars who are in the candidate's field; (7) of the major contributions of representative foreign scholars in the candidate's field; (8) of the scope and relative importance of outstanding American publications and periodicals in the candidate's field; (9) of the scope and relative importance of outstanding foreign publications and periodicals in the candidate's field; (10) of outstanding American learned societies in the candidate's field; their purposes and contributions to the field; (11) of outstanding foreign learned societies in the candidate's field; their purposes and contributions to the field; (12) of outstanding problems in one's field.

Also, the candidate must have (13) a comprehensive understanding of the relationship of his field to the field of knowledge as a whole, and (14) a comprehensive grasp of the basic philosophies or theories underlying the facts in his field, such as *Vitalism vs. Mechanism* or *Classicism vs. Romanticism*.

The candidate must have (15) a recognition of the limitations of his knowledge in his field, and he must have (16) ability to find the basic sources of information in his field.

The department heads indicate that successful doctoral candidates attain the knowledge expected of them in only 8 of the 16 cases involved. The following facts indicate the extent of the deficiencies in general:

Doctoral candidates are expected to be as familiar with the foreign scholars, publications, and learned societies in their fields as they are

with the American. Fourteen percent of the department heads indicate that 10 percent or more of their successful doctoral candidates are not allowed to receive their degrees without obtaining the expected knowledge of foreign scholars, 8 percent indicate a like deficiency relative to knowledge of outstanding foreign publications, and 21 percent indicate a similar deficiency relative to knowledge of outstanding foreign learned societies. It is not clear whether these deficiencies are due to a species of overspecialization, or to the ineffective operation of the foreign-language requirement, or to some other similar factor or combination of factors, but the facts suggest that they are most likely due to present methods of administering the foreign-language requirements.

Master's candidates.—Department heads indicate that successful master's candidates are expected to attain the same general knowledge of their respective fields as doctoral candidates with the following exceptions: "Ability to make a critical summary of the literature on two or more problems in one's field, evaluating the validity of the conclusion in the light of the techniques employed"; "knowledge of foreign scholars, publications, and learned societies"; "knowledge of the outstanding problems in one's field"; "a comprehensive understanding of the relationship of one's field to the field of knowledge as a whole"; and "a comprehensive grasp of the basic philosophies or theories underlying the facts in one's field."

There is no significant difference in the knowledge expected of master's candidates who are going to teach as contrasted with those who are going into research. However, heads of departments in small graduate schools expect considerably more of their master's candidates in respect to general knowledge of their special fields than is true in the large graduate schools. In the case of special subject-matter fields, the judgments of the majority of the department heads in each field followed, in general, the trend of the group as a whole; and where a few exceptions occur, they do not seem to be explained by the differences in the nature of the subjects involved, since variations occur in one subject of a logical group but do not occur in other subjects of that group.

The development of teaching ability.—The third specific aim of the graduate school, according to Dr. Thompson's study, is the development of teaching ability. A small majority of the department heads in graduate schools recognize teaching preparation as an important function of the graduate school.

Doctoral candidates.—Heads of departments agree by large majorities that successful doctoral candidates should possess the following abilities connected with the selection and organization of the facts in their respective fields for purposes of teaching on the secondary, college, and graduate levels: (1) Ability critically to utilize

the literature in the candidate's field for purposes of teaching; (2) ability to organize the facts in the candidate's field for the purposes of instruction. The candidate should also have: (3) Knowledge of the most valid sources of instructional material; (4) knowledge of the educational objectives or aims that he should try to attain in teaching. Department heads agree by a small majority that special consideration should be given to the development of teaching ability on the part of doctoral candidates.

Master's candidates.—Master's candidates are definitely expected to possess the ability to select and organize the facts in their respective fields on the secondary and college levels, but are not expected to be able to do so on the graduate level. The fact that such a significantly larger number expect this ability of doctoral candidates on the college level seems to lend weight to a previous observation that many of the department heads expect this ability to be developed as an inevitable concomitant of one's mastery of the knowledge and research techniques in the field.

2. SCOPE OF GRADUATE STUDY

IN INSTITUTIONS OF THE ASSOCIATION OF AMERICAN UNIVERSITIES

The scope of graduate study in American universities varies greatly according to institutions. In the group of 28 institutions constituting the Association of American Universities in this country we find for 1931-32, 16 major fields covered. These fields in fact correspond to the different schools or colleges included in these universities, as follows: Agriculture, architecture, arts and sciences, business and commerce, education, engineering, fine arts, home economics, law or jurisprudence, library science, music, medicine, nursing, pharmacy, dentistry, and journalism. In the following table are indicated the fields covered by the 28 institutions of that group:

GRADUATE STUDY

TABLE 14.—Scope of graduate study by major fields, 1931-32, in 28 institutions of the Association of American Universities¹

University designated by number	Principal major curricular fields of schools													Total			
	Arts and science	Agriculture	Architecture	Fine arts	Business and commerce	Education	Engineering	Home economics	Law or jurisprudence	Library science	Music	Medicine	Nursing		Pharmacy	Dentistry	Journalism
1	x																18
2	x																16
3	x																12
4	x																12
5	x																11
6	x																10
7	x																10
8	x																9
9	x																9
10	x																9
11	x																9
12	x																9
13	x																9
14	x																8
15	x																8
16	x																8
17	x																8
18	x																7
19	x																7

In the 28 institutions under consideration we find that each gives graduate work in the arts and sciences and, in addition, all give graduate work in professional fields, the number varying from 3 professional fields to 15.

IN TYPICAL STATE UNIVERSITY

The following departments are listed by one of the larger State universities as having courses or curricula for graduate students:

Arts and sciences.—Astronomy, bacteriology, bibliography, botany, chemistry, classical languages and literature, economics, English, geography, geology, German, history, mathematics, mineralogy, philosophy, phonetics, physics, political science, psychology, Romance languages, sociology, zoology, and entomology (22 departments).

Agriculture.—Agricultural chemistry, agricultural engineering, agricultural extension, animal husbandry, dairy technology, farm crops, horticulture and forestry, poultry husbandry, rural economics, soils, veterinary medicine (11 departments).

Fine arts.

Business and commerce.—Accounting, business organization (2 departments).

Education.—Adult education, agricultural education, history of education, physical education, practical arts and vocational education, principles and practice of education; school administration, survey courses (8 departments).

Engineering.—Ceramic engineering, chemical engineering, civil engineering, electrical engineering, engineering drawing, industrial engineering, mechanical engineering, mechanics, metallurgy, mine engineering (10 departments).

Home economics.

Music.

Medicine.—Anatomy, pathology, physiological chemistry, pharmacology and materia medica, physiology, public health and hygiene (6 departments).

Dentistry.—Operative dentistry.

Journalism.

Altogether there are 66 departments of study on the graduate level in the institution given.

IN CATHOLIC UNIVERSITIES AND COLLEGES, 1927

As a part of the survey of Catholic universities and colleges made in 1927,⁵ the fields of activity were classified for 32 institutions. Fifty-six different fields or subjects were listed.

Fields of graduate study covered.—The number of institutions that offer graduate work in specific fields is shown here-with: History, 21; English, 20; philosophy, 19; Latin, 16; education, 16; chemistry, 13; Greek, 12; mathematics, 12; social science, 10; French, 10; Spanish, 8; biology, 8; physics, 8; economics, 7; German, 7; psychology, 6; political science, 6; moral theology, 6; dogmatic theology, 6; canon law, 5; liturgy, 5; sacred Scriptures, 5; apologetics, 4; church history, 4; homiletics, 4; pastoral theology, 4; music, 3; patrology, 3; Semitic language, 3; biochemistry, astronomy, bacteriology, botany, civil engineering, electrical engineering, geology, internal medicine, law, pathology, 2 each; anatomy, architecture, Celtic, drama, Egyptian language, engineering, ethics, geophysics, jurisprudence, mechanical engineering, mechanics, pharmacology, philology, Portuguese, religion, Russian, Sanskrit, 1 each.

3. SUMMARY

The aim of graduate study has a dual purpose: One relates to the character and interests of the graduate student; the other relates to the character and interests of the university or graduate unit through the staff in serving and advancing the social organization. The aim is conditioned by the needs of learned societies, industrial, commercial, educational, and scientific organizations as well as by the professor, who usually has his own research interests.

From a practical standpoint, the aim of graduate study may lie in the direction of a life devoted to either research or teaching; more often a combination of both. There are evidences that the teaching aim is now dominant. The master's degree and doctor's degree are tending to become prerequisites for professional recognition and employment in

⁵ National Catholic Educational Association Proceedings, 1928-29. 25: 126-129, November 1928.

the teaching profession. The essential qualities required for holders of these degrees include research capacity, knowledge of the field studied, and teaching ability. For the doctor's degree greater originality and independence of thought, and a much more complete knowledge of the field of study is expected than is the case for the master's degree.

The scope of graduate study has become exceedingly broad covering almost every field of knowledge, pure and applied, and including the professions.

CHAPTER IV

ADMINISTRATION OF GRADUATE STUDY

1. INTRODUCTION

Graduate study or graduate work referred to in this chapter is understood to mean all college courses or programs of study that are conducted on the graduate level and that lead to the master's or doctor's degrees.

Courses and programs leading to the degrees of bachelor of divinity (B. D.), doctor of medicine (M. D.), and with certain exceptions the doctor of jurisprudence or law (J. D.), are considered to be professional in character and are not included as pertaining to graduate study. However, courses of study that are open to both graduate and undergraduate students that are under the control of the graduate administrative unit are within the definition of graduate study.

2. AGENCIES OF ADMINISTRATION AND CONTROL OF GRADUATE STUDY

THE GRADUATE SCHOOL AS THE SOLE ADMINISTRATIVE AGENCY

The graduate school or unit through its properly constituted authorities, is the principal agency of control for all graduate study and for the granting of all graduate degrees offered by each institution in 17 of the 28 universities in this country that are members of the Association of American Universities, and in 98 other universities, colleges, and technical institutions that are not members of that association. A total of 139 institutions are considered in this section.

The status of control of graduate study in all of the institutions under consideration is shown as follows:

A. Universities and colleges where all graduate study is under the control of the graduate school or unit.

1. *Members of the Association of American Universities:*

California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri,¹ Nebraska, North Carolina, Ohio, Virginia, Washington University (St. Louis), Wisconsin, Stanford, Clark, Cornell, Brown (17). 11 publicly controlled; 6 privately controlled.

2. *Nonmembers of the Association of American Universities:*

Alabama, Alabama Polytechnic Institute, Arizona, Arkansas, Colorado, Colorado Agricultural College, Florida, Georgia, Georgia School of Technology, Idaho, Purdue, Iowa State College, Kansas State College, Wichita, Kentucky, Louisiana, Maine, Maryland, Massachusetts State College, Colleges of the City of Detroit (now known as Wayne University), Michigan State College of Agriculture and Applied Science, Mississippi, New Hampshire, New Mexico, North Carolina State College of Agriculture and Engineering, North Dakota, North Dakota Agricultural College, Akron, Oklahoma, Oklahoma Agricultural and Mechanical College, University of Oregon, Oregon State College, Pennsylvania State College, South Carolina, South Dakota, Tennessee, Agricultural and Mechanical College of Texas, Utah, Utah State Agricultural College, Virginia Polytechnic Institute, University of Washington, Washington State College, West Virginia, Wyoming (44 publicly controlled). Howard College, College of the Pacific, California Institute of Technology, University of Denver, Wesleyan University, Georgetown University, American University, Emory University, Oglethorpe University, DePaul University, Loyola University (Ill.), Butler University, Notre Dame University, Loyola University (La.), Boston College, Massachusetts Institute of Technology, Radcliffe College, Simmons College, Smith College, Tufts College, Wellesley College, University of Detroit, St. Louis University, Creighton University, Dartmouth College, Rutgers University, Canisius College, Fordham University, Rensselaer Polytechnic Institute, St. Bonaventure's College, St. John's College, St. Lawrence University, Syracuse University, Union College, University of Rochester, Case School of Applied Science, Oberlin College, Ohio Wesleyan University, Western Reserve University, Wittenberg College,

¹The graduate school of the University of Missouri also controls the work for the Ph. D. degree at the School of Mines and Metallurgy at Rolla, but not the masters' degrees in engineering.

Bryn Mawr College, Duquesne University, Lehigh University, Marywood College, St. Francis College, University of Pittsburgh, Carnegie Institute of Technology, Vanderbilt University, Baylor University, Rice Institute, Southern Methodist University, Texas Christian University, Middlebury College, Marquette University (54 privately controlled).

DIVISION OF ADMINISTRATION BETWEEN GRADUATE SCHOOL AND OTHER SCHOOLS

In 23 institutions included in this study, the control of graduate work is divided between the one or more different schools or colleges.

B. Universities and colleges where all graduate study is not under the control of the graduate school or unit.

1. *Members of the Association of American Universities:*

Indiana, Texas, Yale, Catholic, Northwestern, Chicago, Johns Hopkins, Harvard, Princeton, Columbia, Cornell, Pennsylvania (12).²

2. *Nonmembers of the Association of American Universities:*

The College of the City of New York, Georgetown, George Washington, Tulane, Boston University, Drew, New York University, Buffalo, Duke, Cincinnati, Phillips, Temple (12).²

C. Institutions where one school in addition to the graduate school has control of its graduate program and degrees.

1. *University of Texas:*

The graduate school: Offers the degrees of master of arts, master of business administration, master of education, master of journalism, master of science in home economics, master of science in engineering, master of science in medicine, and doctor of philosophy (8).²

The school of law: Master of laws (1).

2. *Princeton University:*

The graduate school: Master of arts, master of fine arts in architecture, and doctor of philosophy (3).

The school of engineering: Civil engineer, electrical engineer, and chemical engineer (3).

3. *Tulane University of Louisiana:*

The graduate school: Master of arts, master of science, master of architecture, mechanical engineer, civil engineer, electrical engineer, chemical engineer, and doctor of philosophy (8).

The college of law: Master of civil law (1).

¹ Figure in parenthesis indicates number of schools.

² Figure in parenthesis indicates number of different kinds of graduate degrees offered. This is for the remainder of the tabulation.

4. *Duke University:*

The graduate school of arts and sciences: Master of arts, master of education, and doctor of philosophy (3).

The school of law: Master of laws, and doctor of juridical science (2).

Institutions where two schools in addition to the graduate school have control of their graduate programs and degrees:

1. *Indiana University:*

The graduate school: Master of arts, master of science, and doctor of philosophy (3).

The school of education: Master of science in education and doctor of education (2).

The school of law: Master of laws (1).

2. *Yale University:*

The graduate school: Master of arts, master of science, master of fine arts (in architecture and drama), master of music, master of science in transportation, certificate in public health, master of science (engineering), master of science in civil engineering, master of science in electrical engineering, master of science in mechanical engineering, master of science in mining engineering, master of science in metallurgical engineering, Civil engineer, electrical engineer, mechanical engineer, metallurgical engineer, engineer of mines: Doctor of philosophy, doctor of public health (19).

The school of law: Master of laws, doctor of the science of law, and doctor of civil law (3).

The school of forestry: Master of forestry (1).

NOTE: Attention is called to the new plan which supersedes the one just given. In his 1932-33 report Dean Edgar S. Furniss makes the following statement:

The courses of study leading to the higher professional degrees in engineering, public health, the fine arts, and music have been transferred from the graduate school to other faculties of the university; and the graduate degrees pertaining to these fields of study will be awarded hereafter through the various professional schools. The re-allocation of these branches of study has afforded the university the opportunity to rid itself of the anomalous master's degree with designation which, because of its requirement of but 1 year of graduate study, has represented an exception to our general standards. This degree has been discontinued in the graduate work in engineering. Although it is still offered in the field of transportation, the committee which serves as a department of the graduate school in this subject has undertaken after a year of readjustment to discard the degree with designation and to expand its course of study to the measure of the 2 full years of graduate work required for our master's degree in other subjects. When these changes have been completed

the work of the graduate school will be concerned only with study and research in the academic branches of the natural sciences, the social sciences, and the humanistic studies as represented by its degrees of master of arts, master of science, and doctor of philosophy.*

3. *University of Buffalo:*

The college of arts and sciences: Master of arts and doctor of philosophy (2).

The school of education: Master of education and doctor of education (2).

The school of business administration: Master of business administration (1).

D. Institutions where three or more schools in addition to the graduate school have control of their respective graduate programs and degrees.

1. *Catholic University of America:*

The graduate school of arts and sciences offers the degrees of master of arts, master of science, doctor of philosophy, doctor of science, master of architecture, master of music, and doctor of architecture (7).

The school of sacred sciences offers the degrees of licentiate in sacred theology and doctor of sacred theology (2)

The school of canon law offers the degrees of doctor of canon law and doctor in both laws (J. U. D.) (2).

The school of law offers the degree of master of laws (1).

The school of engineering offers the degrees of master of science in architectural engineering, master of science in civil engineering, master of science in electrical engineering, master of science in mechanical engineering, civil engineer, mechanical engineer, electrical engineer, and doctor of engineering (8).

2. *Northwestern University:**

The graduate school: Master of arts, master of science, master of science in journalism, master of sacred theology, and doctor of philosophy (5).

The law school: Master of laws and doctor of juridical science (2).

The school of engineering: Electrical engineer, mechanical engineer, civil engineer, and industrial engineer (4).

The school of commerce: Master of business administration (1).

* Yale University. Report of the dean of the graduate school, 1932-33, supplement, p. 3.

* The J. D. not included as graduate degree in this study. The degrees of M. D. and doctor of dentistry are not included here as graduate degrees.

The school of speech: Master of science in speech (1).

The school of music: Master of music (1).

The school of education: Master of science in education (1).

The school of dentistry: Master of science in dentistry (1).

3. Johns Hopkins University:

The school of higher studies of the faculty of philosophy: Master of arts and doctor of philosophy (2).

The school of higher studies in education: Master of education and doctor of education (2).

The school of hygiene and public health: Master of science in hygiene, doctor of science in hygiene, and doctor of public health (3).

The school of engineering: Mechanical engineer, and master of gas engineering (3). The Ph. D. in engineering is granted by the faculty of philosophy.

The school of medicine: Courses of instruction for graduates in medicine.

4. Boston University:

The graduate school: Master of arts and doctor of philosophy (2).

The college of business administration: Master of business administration (1).

The school of theology: Master of sacred theology and doctor of theology (2).

The school of law: Master of laws (1).

The school of education: Master of education and doctor of education (2).

5. Harvard University:

The graduate school of arts and sciences: Master of arts, master of forestry and doctor of philosophy (3).

The graduate school of education: Master of education and doctor of education (2).

NOTE.—The master of arts degree with educational subjects is administered by the graduate school of arts and sciences.

The faculty of architecture: Master of architecture, master of landscape architecture, master of city planning (3).

The graduate school of business administration: Master in business administration and doctor in commercial science (2).

The school of public health: Master of public health and doctor of public health (2).

The law school: Master of laws and doctor of juridical science (2).

The theological school: Master of theology and doctor of theology (2).

The engineering school: Master of science in engineering, master of science, master of science in industrial chemistry, and doctor of science (4).

The M. A. and Ph. D. in the medical sciences are voted by the faculty of arts and sciences upon recommendation of a committee consisting of members of the faculties of medicine and of arts and sciences.

The degree of doctor of medical sciences is administered by the above committee, excepting the members of Harvard College. The degree is voted by the medical faculty.

The Ph. D. in hygiene is granted on recommendation of a committee consisting of members of the faculties of public health, medicine, and of arts and sciences.

The Ph. D. in education or in allied subjects, is administered by a committee of the faculty of arts and sciences, of which a majority of the members are also members of the faculty of the graduate school of education.

6. New York University:

The graduate school: Master of arts, master of science and doctor of philosophy (3).

The graduate school of business administration: Master of business administration, master of commercial science, and doctor of commercial science.

The school of law: Master of laws and doctor of juridical science (2).

The school of education: Master of arts and doctor of philosophy (2).

The college of fine arts: Master of architecture (1).

The college of engineering: Aeronautical engineer, civil engineer, chemical engineer, electrical engineer, and mechanical engineer (5).

The school of retailing: Master of science in retailing (1).

7. Columbia University:

The (nonprofessional) graduate faculties of political science, philosophy, and pure science: Master of arts and doctor of philosophy (2).

The school of law: Master of laws and doctor of law (2).

The school of engineering: Engineer of mines, metallurgical engineer, civil engineer, electrical engineer, mechanical engineer, chemical engineer, master of science in industrial engineering and master of science in mineral dressing (8).

The school of architecture: Master of science (1).

The school of journalism: Master of science (1).

The school of business: Master of science (1).

The school of library service: Master of science (1).

Teachers college: Master of arts and master of science (2).

Union Theological Seminary offers certain university work leading to the degree of master of arts (1).

The administrative board of graduate studies in medicine offers the degree of master of arts (1).

8. *University of Cincinnati:*

The graduate school of arts and sciences: Master of arts, master of science, and doctor of philosophy (3).

The college of law: Master of laws (1).

The teachers college: Master of education and doctor of education (2).

The college of engineering and commerce: Master of science in engineering, and doctor of engineering (2).

9. *The University of Pennsylvania:*

The graduate school: Master of arts, master of science, and doctor of philosophy (3).

The school of fine arts: Master of architecture (1).

The Wharton School of Finance and Commerce: Master of business administration (1).

The Towne Scientific School: Master of science in civil engineering, master of science in mechanical engineering, doctor of science in civil engineering, and doctor of science in mechanical engineering (4).

The Moore School of Electrical Engineering: Master of science in electrical engineering and doctor of science in electrical engineering (2).

The law school: Master of laws (1).

The school of education: Master of science in education (1).

The graduate school of medicine (the medico-chirurgical college): Master of medical science and doctor of medical science (2).

The Ph. D. with major in education is under the graduate school.

F. Institutions where the control of graduate study is of a special type.

1. *George Washington University:*

The graduate council offers the doctor of philosophy degree (1).

The senior arts college offers the master of arts degree (1).

The law school offers the degree of master of laws (1).

The school of education offers the degrees of master of education and doctor of education (2).

University of Chicago:

The divisions of biological sciences, the humanities, the physical sciences, the social sciences, offer the degrees of master of arts, master of science, and doctor of philosophy (3).

The divinity school offers the degrees of master of arts and doctor of philosophy (2).

The law school offers the degree of doctor of jurisprudence (1).

The school of commerce and administration offers the degrees of master of arts and doctor of philosophy (2).

The graduate library school offers the degrees of master of arts and doctor of philosophy (2).

Rush post-graduate school of medicine recommends its students to the graduate faculties of the university for admission to candidacy for the master's degree M. A. or M. S., and the doctor of philosophy, and for those degrees (3).

The graduate school of medicine of the division of biological sciences offer the degrees of master of science and doctor of philosophy (2).

3. *Drew University:*

The Drew Theological Seminary offers the degrees of master of arts and doctor of philosophy (2).

4. *The College of the City of New York:*

The school of technology: Chemical engineer, civil engineer, electrical engineer, and mechanical engineer (4).

The school of business and civic administration: Master of business administration (1).

The school of education: Master of science in education (1).

5. *Phillips University:*

The college of the Bible: Master of arts (1).

The college of education: Master of education (1).

6. *Temple University:*

The college of liberal arts: Master of arts (1).

The teachers college: Master of education and doctor of education (2).

The graduate school of theology: Doctor of sacred theology (1).

Nomenclature of the major graduate unit.—The term "Graduate school" is most often used to designate the graduate unit particularly where the unit includes under its jurisdiction all forms of graduate work of the institution, as well as in those cases where it is one of a number of graduate units. In the latter case the graduate school usually is limited to the arts and sciences or nonprofessional fields.

Among the institutions using the term "Graduate school" for the principal graduate unit may be mentioned the fol-

lowing universities: Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, North Carolina, Ohio State, Texas, Wisconsin, Yale, Northwestern, Washington (St. Louis), Princeton, Cornell, Pennsylvania, Brown, Alabama, Colorado, Georgia, Purdue, Maryland, New Hampshire, Oklahoma, Washington, Boston, Pittsburgh, Gonzaga, Georgetown, Western Reserve, New York, Tulane, Creighton, Mercer, and Bryn Mawr College.

The term "Graduate school of arts and sciences" is used by Harvard University, the Catholic University of America, University of Cincinnati, and Duke University. The term "Graduate division" is used at the University of California, Stanford University, and Clark University. "Graduate college" is used at the State University of Iowa, Iowa State College and the University of Nebraska. "School of graduate studies" is used by Alabama Polytechnic Institute; "Department of graduate studies" is used by the University of Virginia. Johns Hopkins uses the term "The school of higher studies of the faculty of philosophy." Columbia University uses the term "Faculties of political science, philosophy, and pure science." Case School of Applied Science uses "Division of graduate study and research."

THE GRADUATE SCHOOL FACULTY

Most of the institutions included in this section of the study have graduate school faculties which are primarily responsible for graduate work conducted by their respective schools.

Certain exceptions to this form of control are given herewith.

At the University of California and the University of Michigan the academic senate determines the policies of the graduate school. At Ohio State University the general university faculty is the responsible legislative body for the graduate school. At Harvard University the faculty of arts and sciences has general control of the graduate school of arts and sciences. At Princeton University the general faculty is responsible for the graduate school. At Clark University the university faculty has immediate supervision over the general educational work of the university includ-

ing graduate study. At Purdue University the university faculty determines the policies relating to graduate work and advanced degrees.

At the University of Chicago the division faculties have charge of the graduate work of their divisions.⁶

MEMBERSHIP OF THE GRADUATE SCHOOL FACULTY

University of Illinois.—The graduate school faculty includes all members of the university faculty who give instruction in approved graduate courses.

University of Minnesota.—Includes those faculty members who are properly approved and qualified to offer courses carrying graduate credit.

Cornell University.—Includes in the graduate school faculty those members of the university faculty who during 5 consecutive years shall have been in charge of graduate work.

In a number of cases membership in the graduate school is limited according to rank.

State University of Iowa.—Membership to all those in and above the rank of assistant professor giving graduate instruction.

Yale University.—The membership is limited to those of professorial rank.

Indiana University.—Limits membership to those of professorial rank whose work is divided between research and graduate instruction.

University of Kansas.—Includes in this membership all professors and associate professors in departments giving graduate instruction.

The *University of Missouri* includes all teachers of professorial rank offering courses numbered 200 or above and all other teachers that may be admitted by action of the faculty of the graduate school.

University of Colorado.—The teaching faculty of the graduate school includes all members of the university faculty that give instruction in approved courses of graduate grade.

⁶ The University of Chicago. *Announcements, arts, literature, and science*, vol. xxxii, no. 12, Feb. 15, 1932.

George Washington University.—The graduate council (faculty) is made up of professors assigned to graduate work and includes the president, who is chairman.

Iowa State College.—The graduate faculty includes the president, dean of the graduate college, deans of the five major divisions, the librarian, the registrar, the examiner in modern languages (head of department), the heads of departments offering major graduate subjects, and other staff members in direct charge of subjects offered only to graduate students for major credit.

Boston University.—The graduate school faculty includes the deans of the several colleges and schools and full professors with few exceptions offering work suitable for the A. M. and Ph. D. degrees.

University of Oklahoma.—The legislative faculty of the graduate school is composed of the president, the dean, heads of departments offering courses for graduate credit, and members of the university faculty who regularly teach courses primarily for graduate students.

University of Pittsburgh.—The graduate faculty consists of those officers of instruction whose courses for graduate students have been approved by the graduate council.

Washington State College.—The graduate school faculty includes the president, the deans of the various divisions, and all members of the college senate who are actively supervising the work of graduate students.

DUTIES OF THE FACULTY OF THE GRADUATE SCHOOL

The duties of the faculty are usually general in character, specific regulation of the graduate school being assigned to the graduate council or equivalent.

University of Minnesota.—The graduate school faculty determines general educational policies and recommends candidates for degrees.

University of Missouri.—The graduate faculty has charge of all graduate work.

Yale University.—The graduate faculty is organized according to four major subject-matter divisions. These have general supervision of all matters relating to the courses of study given by their members. On the nomination of the

several departments of instruction, which have their own individual organization of graduate study under a director, they recommend candidates for degrees, and determine the conditions upon which recommendations for degrees shall be made.

The faculty of arts and sciences of *Harvard University* fix for the graduate school of arts and sciences (a) the conditions of admission; (b) provide courses of instruction for its students; (c) direct their studies and examine them in the same; (d) establish and maintain the degrees in arts, science, and philosophy; and make recommendations for those degrees to the president and fellows; (e) lay down such recommendations as they may deem necessary or expedient for the government of the school, and to exercise a general supervision of all its affairs.

Iowa State College.—The graduate faculty has general control and supervision over all work done in the graduate college. It passes upon and recommends to the general faculty all candidates for the degrees of master of science and doctor of philosophy, and for all professional degrees. It fixes all rules governing the admission, registration, and classification of graduate students, and the requirements for all advanced degrees. It has supervision over a list of approved colleges which is maintained by the registrar. This list includes those institutions whose baccalaureate degrees are recognized for admission to the graduate college.⁷

Boston University.—The graduate faculty functions as a governing as well as an instructing body, having sole power to recommend to the trustees the promotion of candidates to advanced degrees.

University of Cincinnati.—The graduate faculty is responsible for administration of graduate work in the graduate school of arts and sciences.

THE GRADUATE SCHOOL COUNCIL

In nearly all of the institutions included in this study the actual administration of the graduate school or equivalent unit is delegated by the graduate faculty or other competent

⁷ *Iowa State College of Agriculture and the Mechanic Arts. The Graduate College. Handbook, organization and regulations, 1930. Ames, Iowa.*

body to a special committee known in many cases as the graduate council or board. As appears below there seems to be little agreement as to the nomenclature of this committee. The membership on these councils differs greatly; the largest membership is found on the board of permanent officers of the graduate school of Yale University with a total of 57, although at Johns Hopkins University, the board of university studies has a membership of 71, which works under the academic council of 12. Among the more prominent groupings we find memberships of 7, 8, 9, 10, 11, and 15. The median membership of the graduate councils for the 51 schools reporting is 11.

CHARACTERISTIC FEATURES OF THE GRADUATE COUNCIL, INCLUDING
NOMENCLATURE OF COUNCIL, NUMBER ON COUNCIL, OTHER CHARACTERISTICS

(In order of size of council)

1. *Yale University—Graduate school.*

Board of permanent officers; 57 members

Includes: President and provost of the university, dean of graduate school, and professors of the first rank who hold their appointments in the school; also certain other professors of the same rank from other schools of the university.

2. *Northwestern University—Graduate school.*

Board of graduate studies—34 members

The board in 1931-32 included 31 representatives of the several schools offering graduate work, 3 representatives of the graduate school of Garrett Biblical Institute. This number does not include the 3 administrative officers of the school.

3. *Indiana University—Graduate school.*

Council of the graduate school—27 members

Includes in addition to the dean, one representative from each department offering graduate work as well as the dean.

4. *Ohio State University—Graduate school.*

Graduate council—29 members

Includes the dean and 28 others. Of this number 21 are members of the instructional staff appointed from among

those departments that offer graduate work in the university. The remaining 7 include the directors of the bureaus of business research and educational research, the director of the engineering experiment station, a representative from the Ohio Agricultural Experiment Station, the university librarian, and 1 representative from each of the faculties of Ohio University (Athens) and Miami University (Oxford). The members of the instructional staff are appointed for 3-year periods and are not eligible for reappointment until after the lapse of 1 year.

5. *University of California—Graduate division.*

Graduate council—24 members

The graduate council is a standing committee of the academic senate. It includes the president of the university, chairman; the dean of the graduate division, vice chairman; the vice president and the provost of the university, the dean of the summer sessions, and the registrar, secretary ex officio; and 18 other members appointed by the committee on committees, chosen to give adequate representation to the larger divisions of graduate study associated with the M. A. and Ph. D., as well as to the departments of engineering and agriculture, and the schools of architecture, education, jurisprudence, and medicine.

6. *Brown University—Graduate school.*

Graduate council—23 members

Includes the president, the two vice presidents, the dean of the graduate school ex officio, and one member from each department of the university which is doing a considerable amount of graduate work—elected annually by the university faculty.

7. *Princeton University—Graduate school.*

Faculty committee on graduate affairs—18 members

This committee consists of the dean of the graduate school and 17 professors.

8. *Purdue University—Graduate school.*

Graduate council—18 members

The council includes the dean of the graduate school, the registrar, and 16 other members appointed from the professorial staff, for a term of 4 years, one-fourth retiring each year.

9. *Clark University—Graduate division.**The graduate board—16 members*

The board consists of the president and 15 representatives of departments offering graduate study.

10. *Massachusetts Institute of Technology—Graduate school.**Committee of graduate school—16 members*

The committee includes the dean of the graduate school, the director of admissions, and a representative of each department offering graduate work leading to a higher degree.

11. *University of Maryland—Graduate school.**Graduate council—16 members*

Includes the president of the university, the dean of the graduate school, director of the agricultural experiment station, and 13 professors appointed for an indefinite term by the president on recommendation of the dean of the graduate school.

12. *Cornell University—Graduate school.**The general committee of the graduate school—15 members*

The committee consists of the dean of the graduate school, 4 members at large elected by the faculty; 9 members elected, 1 by each subject matter field; also the secretary of the faculty.

13. *Lehigh University—Graduate courses.**Graduate board—15 members*

Includes president of the university, dean of the university, and 13 professors. Number not fixed.

14. *University of Illinois—Graduate school.**Executive faculty—15 members*

The executive faculty consists of the dean of the graduate school and 14 professors appointed each year by the president.

15. *Duke University—Graduate school of arts and sciences.**Council on graduate instruction—14 members*

Includes the president of the university, the dean of the graduate school and 12 other members.

16. *George Peabody College for Teachers—Graduate school of education.**Committee on graduate instruction—14 members*

17. *University of Alabama—Graduate school.**Graduate Council—13 members*

Includes dean of graduate school, 7 deans from other schools, the director of the summer school and 4 professors.

18. *University of Pittsburgh—Graduate school.**Graduate council—13 members*

Includes the dean of the graduate school and 12 elected representatives 1 each from the following groups: English, fine arts, foreign languages, physical sciences and mathematics, natural science, social science, psychology—philosophy ethics and history of religion, education, engineering—mines and metallurgy, business administration, and the bureau for retail training (economics excepted), medicine, dentistry.

19. *University of Buffalo—Graduate study.**Committee on graduate study and degrees—13 members*

Includes the chancellor, a chairman, and 11 other members, who supervise graduate study.

20. *Wellesley College—Graduate work.**Committee on graduate instruction—12 members*

Includes the president of the college, dean of the college, dean of graduate students, director of the graduate department of Hygiene and physical education, and 8 faculty members.

21. *Alabama Polytechnic Institute—School of graduate studies.**Committee on graduate studies—12 members*

Includes the president of the institute, the dean of graduate studies, and 10 other deans or heads of schools.

22. *Johns Hopkins University, school of higher studies of the faculty of philosophy.**The academic council—12 members*

Includes the president (chairman), dean of college of arts and sciences, and 10 other members of the faculty. It guides the various departments of study for the entire faculty of philosophy, selects the fellows, etc.

The academic council has delegated to the board of university studies the arrangements for instruction of advanced students and of the examinations for the degrees of Ph. D. and M. A. This board includes 71 members as follows: The president of the university, the professors of the philosophical faculty, the associate professors of the philosophical faculty, 4 delegates from the advisory board of the medical faculty, 4 delegates from the advisory

board of the school of hygiene and public health, 4 delegates from the advisory board of the school of engineering, and other officers of administration and instruction elected by the academic council.

23. *University of New Hampshire—Graduate school.*

Graduate council—11 members

Includes the president of the university, the dean of the graduate school, and 9 other members.

24. *University of North Carolina—Graduate school.*

Administrative board—11 members

Includes the dean of the graduate school and three members each from the divisions of languages and literature, philosophy and political science, mathematics and the sciences.

25. *Harvard University—Graduate school of arts and sciences.*

Administrative board—11 members

Includes the dean of the graduate school of arts and sciences and 10 other professors and associate professors, including the acting dean of the faculty of arts and sciences and the dean of the graduate school of education.

26. *Stanford University.*

Committee on graduate study—11 members

This committee directs the policies of the university in granting advanced degrees; members are elected by the academic council. This committee passes upon the qualifications of applicants for admission to candidacy for advanced degrees and determines in the case of all advanced degrees whether the requirements of the academic council have been met. The chairman of the committee is designated dean of graduate study.

27. *Washington University (St. Louis)—School of graduate studies.*

Board of graduate studies—11 members

Dean of school is chairman.

28. *University of Michigan—Graduate school.*

Executive board—10 members

Includes the president of the university and dean of the graduate school and eight additional members.

29. *University of Nebraska—Graduate college.*

The graduate council—10 members

Includes the dean (chairman) and nine professors.

30. *State College of Washington—Graduate school.*

Committee on graduate studies—10 members

31. *Bucknell University—Graduate courses.*

Committee on advanced degrees—10 members

32. *University of Georgia—Graduate school.*

Graduate Council—9 members

33. *Tulane University of Louisiana—Graduate school.*

Executive committee—9 members

34. *Boston University—Graduate school.*

Graduate school board—9 members

Was formerly executive committee of graduate school with 6 members on the committee.

35. *Catholic University of America—Graduate school of arts and sciences.*

Graduate council—9 members

Elected by the faculty to act with the dean as chairman, as its responsible standing committee.

36. *State University of Iowa—Graduate college.*

Graduate council—9 members

The council is elected by the Graduate faculty. The council has 2 classes of members: First, ex officio (the deans of the colleges of liberal arts, education, commerce and medicine.) Second, four members elected by the faculty upon the nomination of a committee elected by the faculty with the dean of the graduate college as chairman. The council also includes the dean of the graduate college.

37. *University of Minnesota—Graduate school.*

Executive committee—8 members

Includes the dean of the graduate school and 7 members representing the following groups: Social sciences and law, physical sciences—mathematics—engineering, biological sciences, philosophy—psychology—education, language and literature, medicine, agriculture.

38. *University of Pennsylvania—Graduate school.*

Executive committee—8 members

Includes the dean of the graduate school, the provost of the university, and 6 professors.

39. *University of Colorado—Graduate school.*

Executive committee—8 members

Includes the president of the university, dean of the graduate school, dean of engineering, dean of the summer quarter, and 4 professors.

40. *Colorado State Teachers College—Graduate school.*

Graduate Council—8 members

41. *New York State Teachers College—Graduate work.*

Graduate Committee—7 members

42. *University of Virginia—Department of graduate studies.*

Administrative committee—7 members

Includes the dean of the graduate department and 6 professors for the regular session, and the dean and 2 professors for the summer session.

43. *Gonzaga University (Washington)—Graduate school.*

Committee on graduate work—7 members

Includes the dean of the graduate school, the dean of the faculties and 5 faculty members.

44. *University of Rochester—Graduate studies.*

Committee on graduate studies—7 members

45. *University of Wisconsin—Graduate school.*

Graduate school committee—6 members

A standing committee of the university faculty. Includes the dean of the graduate school and 5 professors. There is also a similar research committee of 6 members.

46. *Case School of Applied Science—Division of graduate study and research.*

Committee on graduate study and research—6 members

47. *Mount Holyoke College—Graduate study.*

Committee on graduate work—6 members

Includes the academic dean and 5 other members.

48. *Dartmouth College—Graduate work.*

Committee on graduate instruction—6 members

Includes 6 professors.

49. *Kansas State Teachers College (Emporia) graduate division.*

Graduate council—5 members

50. *Mercer University—Graduate school.*

Committee on graduate studies—5 members

51. *University of Akron—Graduate courses.*

Graduate committee—5 members

Appointed by the president and approved by faculty council; all colleges are represented.

52. *Bryn Mawr College—Graduate school.*

Committee on graduate students—5 members

Includes president of the college, dean of the graduate school and 3 professors.

Committee on graduate courses—4 members

Includes the president and 3 professors.

53. *University of Nevada—Graduate courses.*

Graduate committee—3 members

A standing committee of the university.

Functions of the graduate council.—In general the functions of the graduate council or equivalent unit are concerned with the coordination of procedures with respect to admission to candidacy for higher degrees, the recommending of candidates for these degrees to the faculty, senate, or trustees, the examination of candidates, the regulation of research activities, the naming of special auxiliary committees, the selection of fellows and scholars, the recommendation or approval of graduate courses or programs of study, and the recommendation of appointments to the graduate faculty.

In universities in which all graduate work in different schools and colleges is brought together under the general control of the graduate school, the coordination of the above-mentioned activities in whole or in part is of major importance.

The graduate council, nevertheless, in certain instances, delegates some of its duties to other officers or special committees. Examples are given as follows:

At the University of California there is a body of graduate advisers which assists the graduate students in making the necessary adjustments for graduate study. As this body represents a unique system applicable to a large or well-

scattered graduate school, it may not be amiss to give in detail the activities set forth in the graduate bulletin.⁵

Each professional school, or academic department, or group of departments offering majors for higher degrees, on request of the dean of the graduate division nominates each half-year an adviser to whom graduate students may direct requests for information concerning graduate study in special fields, subject to the general requirements in the announcements.

The graduate adviser is recognized by the graduate council as the sole representative of the school, department, or group in all matters pertaining to the organization of graduate instruction and administration of candidacies for higher degrees.

In the absence of a nomination the dean of the school or chairman of a department or group is expected to perform the duties of graduate adviser. The duties of the graduate advisers include the following activities:

1. Appraise the qualifications of applicants for advancement to candidacy on the basis of the standards in force.
2. Report to the dean of the graduate division on the upper division and graduate work completed by new students from other institutions, on the basis of evaluation of credentials by the university examiner.
3. Advise prospective candidates regarding their programs of study.
4. Sign in behalf of the school or department or group all applications for candidacy for the master's degree and professional higher degrees and for qualifying examinations for the Ph. D. degree, and petitions of students.
5. Keep a record of all candidates taking majors in the school or department or group for its information and consideration.
6. Furnish whatever information may be requested by the dean regarding graduate students and graduate work within the department or group.
7. Assist the dean in the observation of university regulations within the department or group, particularly those relating to admission of students to graduate courses. In all these matters the signature of the accepted graduate adviser is recognized as expressing the decision of the school, department, or group.

State University of Iowa.—The graduate council during its earlier years tended to undertake as a body the various powers originally held by the faculty, for example, that of approving subjects for research, voting degrees, and budgetary matters. There has been a tendency, however, to dele-

⁵University of California bulletin. Third series, vol. XXV, no. 14. Announcement of the graduate division for the academic year, 1932-33, June 1932.

gate to smaller committees or specific offices, various types of functions that may be routinized.⁹

Yale University.—There are 18 standing committees which assist the board of permanent officers in their duties. These are listed as follows:

1. Ph. D. degree in the humanistic studies, 5 members.
2. Ph. D. degree in the natural sciences, 6 members.
3. M. A. degree, 5 members.
4. M. F. A. degree, 5 members.
5. Mus. M. degree, 4 members.
6. M. S. degree, 6 members.
7. Dr. P. H. degree and the C. P. H., 4 members.
8. Higher degrees in engineering, 6 members.
9. M. S. in transportation, 4 members.
10. General fellowships and scholarships, 7 members.
11. Sterling fellowships, 5 members.
12. Coxe fellowship, 4 members.
13. Seessel fellowships, 3 members.
14. Strathcona fellowships, 3 members.
15. Instruction, 4 members.
16. Research in language and literature, 6 members.
17. Appointments, 3 members, and the chairman of the department recommending an appointment.
18. Bishop Museum, 8 members.

University of Minnesota.—The executive committee of seven members is assisted by a corresponding number of group committees representing allied lines of work grouped together for administrative purposes, namely: Social sciences and law; physical sciences, mathematics, and engineering; biological sciences; philosophy, psychology, and education; language and literature; medicine; and agriculture.¹⁰

University of Nebraska.—Each department or group of allied departments, authorized to offer graduate work which may be used as a field of specialization, has at least 1 standing committee of not fewer than 3 members, which is known as the "graduate committee" in that department or group of departments. Each candidate for a degree is assigned to one of these committees which is known as "his graduate committee." These committees have general supervision over all of the work of candidates for a master's

⁹ Seashore Carl E. Trends in graduate work. In *University of Iowa Studies*, no. 33, p. 12. Edited by John William Ashton.

¹⁰ In *University of Minnesota. Graduate school announcement, 1931-33*, p. 4.

degree in their respective departments and they may give applicants such tests as in their judgment may seem necessary in order to determine whether they are adequately prepared for graduate study. The chairman of his committee must sign the candidate's application for registration before it is submitted to the dean for final approval. A special supervisory committee of nine members for each Ph. D. candidate is also named by the dean of the graduate college. The exact duties of this committee are discussed in connection with the standards for the Ph. D. degree. (See pp. 156, 165.)

3. SUMMARY

In 17 of the 28 universities that are members of the Association of American Universities in the United States, all graduate study is under the control of 1 unit—the graduate school. This is also the practice of nearly all other graduate institutions and is naturally the case in the smaller schools that grant only the master's degree.

While there is a tendency to limit the control of the graduate school to work leading only to the M. A., or M. A. and M. S., and the Ph. D. degrees, it is much more common for the graduate school to control the program leading to one or more technical masters' degrees as well as those above mentioned.

There is a definite tendency to limit graduate school faculties to teachers of professorial rank although in certain cases teachers of less than professorial rank are admitted to the graduate school faculty when their services are required in giving graduate courses. In most instances the graduate faculty is the legislative as well as the teaching body of the graduate school and has the final authority, with exception of the trustees, with respect to the granting of advanced degrees.

The graduate council functions as the administrative agent for the faculty in carrying on the activities of the graduate school. There is no uniformity in the size of the council, but it always includes the dean of the graduate school and in many cases the president of the university. The nomenclature of the graduate council varies a great deal in the different schools.

CHAPTER V

THE EDUCATIONAL ARTICULATION OF THE GRADUATE UNIT

1. ADMISSION TO GRADUATE STUDY

In general, a student may be admitted to graduate courses without the objective of a higher degree. In such a case graduate status is not required. He may be admitted also to graduate courses with the objective of a higher degree, but in such a case graduate status must be attained. Admission to candidacy for a higher degree is a matter which is concerned with specific degree requirements and is discussed in following chapters on the requirements for the several higher degrees.

Admission to graduate courses without reference to the objective of a higher degree is usually attained if the student presents admission credentials in the form of a bachelor's degree or certificate, or shows that sufficient undergraduate work has been done to warrant taking up graduate work. Seriousness of aim, as well as adequate undergraduate preparation in the field of interest, is required. Credit for specific courses taken is usually allowed but cannot be applied toward graduate programs until the student has attained what is called graduate status. In these cases the graduate departments concerned have the principal authority.

2. ATTAINMENT OF GRADUATE STATUS

A student seeking a higher degree must attain first of all graduate status. This usually includes the following: Graduation from a recognized or reputable college or university or technical school; the presentation of the undergraduate record showing scholarship of an excellent character; other evidences of distinction or ability sufficient to

promise success as a graduate student; an undergraduate program of study which serves as a sound general basis for advanced study, including an adequate major in the field in which the student plans to carry on his work.

Approval of the graduate courses selected and of the adequacy of prerequisite training is largely a departmental matter but is finally subject to the approval of the dean or the graduate council. In rare cases is a foreign language required at this stage. In a few cases attainment of graduate status is delayed until the student has shown for a term or a semester that he is worthy of proceeding toward candidacy for a higher degree. In most cases this ability is evidenced by the work done and in some cases by a special examination.

An examination of the admission requirements of a selected group of universities and colleges will show that the admission policies of American graduate schools are exceedingly liberal. Every opportunity is offered and many exceptions are made in the cases of those who appear to have real promise as graduate students or research workers. Relatively few institutions have set up specific quantitative entrance requirements including the exact amount of credits required in the undergraduate major.

The requirements for the attainment of graduate status shown in the following section are based on 60 institutions. Of these, 27 are members of the Association of American Universities. The others have been selected from a list of accredited publicly and privately controlled universities and colleges.

GENERAL DEGREE REQUIREMENTS

In general, the graduate schools or units under consideration in this study require for the attainment of graduate status that the candidate shall hold a bachelor's degree from a recognized or approved undergraduate college. In the case of a bachelor's degree from an outside college it must be recognized as the equivalent of the local bachelor's degree. In some cases the bachelors' degrees from technical and professional schools or units are not acceptable even from the local units. The recognition of outside colleges usually

depends on whether they are listed by the appropriate accrediting associations. This generally means either that the college is a member of the Association of American Universities or on one of its accredited lists, or is a member of one of the regional accrediting agencies such as the North Central Association of Colleges and Secondary Schools, or is a member of both associations.

The candidate's inability to present a bachelor's degree from an approved institution leads either to his complete elimination or to another classification involving special requirements.

Requirements for special cases.—At Indiana University admission with conditions is determined by the dean or the council of the graduate school and is granted to holders of the A. B. degree or its equivalent from institutions whose requirements lack less than a year of being the equivalent of the A. B. degree from this institution. Admission provisionally is granted on trial to holders of the A. B. degree or its equivalent whose requirements lack less than a year of being the equivalent of the A. B. degree from this institution, with status to be determined after one semester of graduate work has been completed at this institution. Admission may also be granted to graduate students not candidates for a degree.

The University of Michigan recognizes three types of entrants. First, regular students, who are admitted to graduate status if they give evidence of having graduated from a college of recognized standing. Second, admission as special students may be prescribed for those whose college or whose record at the college is not thoroughly approved. Work done under this form of registration may after one term has been completed with satisfactory standing be counted as residence hour-credit toward the degree. Third, admission as unclassified students may be granted to candidates who must present to the dean such evidence of a baccalaureate as he may demand. In this case no set requirements are made, no credit toward a higher degree given, but hour-credit for work completed is assigned.

The University of Missouri recognizes the bachelors' degrees from colleges in the Missouri College Union, and also graduates of Missouri State teachers colleges who have

completed the 120-hour curriculum and whose first regular enrollment in a teachers college was subsequent to September 1, 1916.

The University of Texas under prescribed conditions will accept a bachelor's degree in engineering or in business administration.

Both the University of Chicago and Johns Hopkins University give more attention to departmental and divisional requirements. At the University of Chicago each of the several major divisions—namely: Biological sciences, humanities, physical sciences, social sciences, medical sciences, etc.—has its special divisional requirements which may include the baccalaureate status or its equivalent. In the division of the social sciences students who have completed the bachelor's degree from accredited institutions will be admitted to the division for advanced work. Admission to the division does not imply that previous degrees will be accepted as equivalent to the same degrees at the University of Chicago.

Northwestern University may admit graduates of colleges whose requirements are not substantially the equivalent of those of Northwestern University as unclassified students.

Iowa State College admits provisionally graduates of institutions not on the approved lists of the Association of American Universities provided that departmental prerequisites have been met. But those not graduates of institutions listed by recognized accrediting agencies are in general not eligible for admission to the graduate college. Certain exceptions may be made subject to the candidate's success in passing such examinations covering the preparation on the proposed major and related fields and other tests as may be set. In such cases unqualified admission may be obtained only after completion of one quarter's successful work and with the approval of the major department and the graduate committee.

Provisional admission may be granted to graduates of institutions accredited by recognized regional associations as "Institutions primarily for the training of teachers" who plan to take major work in home economics education, in vocational, or in industrial arts education.

At Johns Hopkins University school of higher studies of the faculty of philosophy, for students who have not had more than 2 years of college work a minimum of 3 years' residence is required for the attainment of the master's degree and 4 years for the doctor's degree. Students who have received a bachelor's degree may apply for a reduction in the period of required residence. The department to which the student applies acts on his admission.

Clark University gives the status of a regular graduate student to graduates of an institution on the approved lists of the Association of American Universities. The status of a special graduate student may be granted to a graduate of an institution not on the list.

Cornell University denies admission to those whose baccalaureate training is a year or more short of that of Cornell University.

New York University will accept the A. B. or B. S. in education if the degree is recognized by the board of regents of the University of the State of New York.

New York State Teachers College admits without examination only graduates from 4-year courses of arts in institutions recognized by the board of regents of the University of the State of New York.

Princeton University requires a bachelor's degree of distinctively liberal studies. Other degrees are accepted only in cases of unusual merit.

Duke University will accept a graduate whose bachelor's degree is accepted by the State department of public instruction as a basis for issuing a high-school or primary certificate of class A.

The University of Pennsylvania does not accept as basis for admission to the graduate school degrees in law, music, theology, dentistry, veterinary medicine, and pharmacy.

A few cases follow in which more definite quantitative statements are set forth:

The University of California also specifies that the candidate must have completed during the last 2 years of his college course 36 hours of upper division academic work based on proper prerequisites, including at least 15 semester hours of advanced fundamental work basic to the proposed major subject for a higher degree, or he must have completed an

undergraduate curriculum equivalent to one of the curricula leading to the B. S. in the colleges of agriculture, engineering, chemistry, or commerce. Students meeting these requirements, but not accepted in full graduate status, are free to pursue their studies without the supervision of a department or committee, but must satisfy the dean that their attendance is based upon definite aims. For full graduate status the student must be certified by the department of his major subject to be eligible to complete the requirements for the higher degree on the basis of a minimum subject and residence requirements. This implies a scholarship record, averaging not lower than B.

Ohio State University may admit graduates of institutions not on the approved list, provided the college credits amount to not less than 135 quarter hours or 90 semester hours when checked by the university examiner, and provided the undergraduate record is satisfactory. In all such cases the residence requirement for the graduate degree will be correspondingly increased.

Stanford University specifies a minimum of 120 semester hours of college work as the requirement, 75 of which shall be in strictly academic subjects outside of the major field. Graduates of the university are admitted if their records show an average of 1.25 grade points per credit.

Iowa State College states that in general the applicant must show such preparation for his major work as should enable him to proceed to the degree of master of science in not more than 6 quarters, provided a full schedule is carried.

New York University specifies the following: To receive full standing the student must present an undergraduate record with not less than 64 points of academic work which should include 20 points in the subject matter of the proposed graduate major. Graduates in law, medicine, commerce, theology, etc., must likewise meet the above requirements as in the case of education. Holders of degrees from colleges which are not sufficient for full admission in the discretion of the enrollment committee may be admitted for the master's degree with additional requirements.

The University of Oklahoma states that students must also fulfill the requirements for work of graduate rank in the departments in which graduate work is to be done.

The undergraduate preparation must include 12 semester hours of English, 10 hours of modern language, 3 or more hours in mathematics, 10 hours of natural science, and 10 hours of social science, courses in education not being included in this number. Certain substitutions for the above requirements may be permitted. Students planning to do graduate work in business administration or education, in home economics, in pharmacy, in materia medica must present the equivalent of the corresponding bachelor's degree; otherwise they must satisfy the requirements stated above and offer the undergraduate courses prerequisite to graduate study in the chosen fields. The minimum requirement for admission to a graduate course is 8 hours in the same subject with few exceptions and the minimum requirement in the major subject is 12 hours. A department may add such requirements which must be met before the student can be given graduate standing in the department.

Several of the graduate schools under consideration emphasize the importance of the quality of the candidate either from the standpoint of his aptitude or other means of indication of superior ability as represented by the following statements:

Princeton University requires that satisfactory academic standing must be shown in terms of Princeton University. A bachelor ranking within the first three general scholarship groups is eligible. A bachelor of lower rank may not be admitted unless his average standing in the department of his proposed graduate work is higher than the third group. Fitness for graduate work in the proposed subject of study must be shown. Special departmental requirements are also demanded.

Harvard University in the graduate school of arts and science requires that the candidate must show ability to pursue graduate work with profit as evinced by graduation with distinction, election to Phi Beta Kappa, or by records that show distinguished work in a special field. He must have a reading knowledge of French or German, unless this requirement be waived on recommendation of a division or a department.

Cornell University makes the following special provisions for entrance: In certain cases, studies pursued after gradu-

ation and experience gained by professional work or otherwise are taken into consideration on deciding whether the candidate's preparation as a whole justifies his admission to the graduate college.

3. ARTICULATION OF THE GRADUATE SCHOOL WITH OTHER GRADUATE OR PROFESSIONAL UNITS OF THE SAME INSTITUTION

Subject to certain restrictions or additional requirements, it appears to be the policy of graduate schools to recognize the work given in other schools or colleges of the university, graduate or professional in character, provided that there is a proper coordination of work in the given program. In many cases more specialized programs are made possible by linking up with a school which has more adequate courses or facilities. Opportunities are thus available to earn not only a master's or a doctor's degree but also a professional degree in a shorter period of time. As there is little uniformity in practices of coordinated work between schools, owing to the highly individual character of each program, generalizations as to details of practice cannot readily be made.

The following examples of the different practices in institutional interarticulation on the graduate level may be of interest:

University of Alabama.—A first-rate student who has earned an approved bachelor's degree before entering may qualify for the M. S. upon completion of 18 hours of graduate work and a thesis, plus 6 hours of work in the school of medicine selected by the deans concerned. These 6 hours may be counted twice, provided (a) they are earned after the first year of work in medicine and (b) they are in subjects in which the student is adequately prepared to pursue graduate work. The 18 hours of graduate work may not be done concurrently with a full program of work in medicine. A similar arrangement is possible in connection with the school of law, but not more than 6 hours may be counted toward both the master's and the law degrees, and no work in the law school shall be counted toward the master's degree except that done during the senior year.

Yale University.—In general, students enrolled in any department of the graduate school are admitted to such courses as their program may require. In the department of education special attention is invited to these opportunities. In the department of religion, candidates for the Ph. D. may be credited with work offered for the bachelor of divinity degree to the extent of 1 year of the required 3. Students may work toward the M. A. and the Ph. D. in the divinity school and toward the M. S. and Ph. D. in the school of forestry. The department of education commends to its students certain offerings in the divinity school. Advanced courses in the school of medicine may be taken with the approval of the departments concerned.

George Washington University.—Not more than 12 hours may be taken in the school of medicine or in the law school, but such work may not be counted toward both the master's degree and a degree in medicine or law.

Georgetown University.—With the dean's permission students may take certain courses in other departments of the university.

Catholic University of America.—Students from neighboring affiliated ecclesiastical institutions may at the council's discretion receive credit for no more than one-third of a year's work toward the master's or doctor's degrees during a single academic year in the graduate school of the university. They may, however, obtain the S. T. B. and the M. A. in 3 years.

Northwestern University.—A candidate for a master's degree who has received a bachelor's degree under approved conditions before entering the school of medicine or the school of law or Garrett Biblical Institute may meet the requirement by completing, in addition to the maximum prescribed professional course, 12 hours of work of an advanced character in an approved field and a thesis for which credit is not included in the 12 hours. Graduates of the afore-mentioned schools may also be recognized as candidates for the master's degree provided the requirement is met within 1 year from the time of receiving the professional degree and provided registration is completed in compliance with the regulations previously stated. Graduates of Gar-

rett Biblical Institute or other theological schools of recognized standing may become candidates for the degree of Ph. D. Two years of additional residence in one department of study is required and subject to the approval of the board of graduate studies.

State University of Iowa.—The graduate college admits students from coordinate colleges, including those offering professional subjects and degrees.

Iowa State College.—Qualified students in scientific courses of study may arrange to work coincidentally toward the degrees of master of science and doctor of veterinary medicine.

University of Kansas.—An eligible student may be registered in the graduate school and school of medicine at the same time, provided some of the subjects are included in the curricula of both schools. However, a student shall not receive graduate credit for courses in his major department which are a part of the required medical curriculum.

Boston University.—Courses for which credit is given in the graduate school are assembled from all the other departments, five of which award graduate degrees of their own. Bachelors of sacred theology or bona fide candidates for this degree who have completed 60 semester-hours in the school of theology may be enrolled as candidates for the A. M. degree. It is not expected that a student will be a candidate for the A. M. and S. T. B. at the same time. Or students who have completed 30 semester-hours may with the approval of the administrative committee of the faculty become candidates for the A. M. and receive 15 hours' credit toward the degree. Work for the A. M. may be completed during the middle of the year. (Requirement of the graduate school for A. M., 30 hours plus thesis.) Courses so credited toward A. M. may be offered for S. T. B. Bachelors of sacred theology or bona fide candidates for this degree who have completed 60 semester-hours in the school of theology may be enrolled as candidates for the Ph. D. degree upon recommendations of the theological faculty. A reading knowledge of French and German is indispensable. Two years must elapse between receiving the S. T. B. and promotion to the doctorate.

Harvard University.—Resident students, if qualified, are admitted to the instruction given under the other faculties of the university except for exercises carried on in special laboratories.

Clark University.—Students in the graduate school of geography are administratively members of the graduate division and may elect recommended courses from departments other than their own.

Duke University.—Permits graduate students in the school of law and school of medicine to register for work in graduate-school courses.

Princeton University.—Students of Princeton Theological Seminary other than juniors (first-year students) may be admitted upon recommendation of the faculty of the seminary.

Columbia University.—A student may offer in lieu of graduate courses given under the faculties of political science, philosophy, and pure science, courses listed under the several professional schools of the university, courses to the extent of 15 points in fulfillment of residence toward the M. A. or Ph. D., subject to approval of the dean, and without their being used toward a professional degree or diploma. An accepted candidate for the Ph. D. degree holding a degree from the Columbia University School of Law, or the College of Physicians and Surgeons, or Union Theological Seminary, or a higher degree from the School of Engineering, may offer work done for the professional degree in lieu of 30 points toward the fulfillment of the residence requirements for the degree. The faculty of the Union Theological Seminary has the status of a faculty in the system of the university. Courses in the school of tropical medicine at the University of Puerto Rico are acceptable at Columbia subject to 1 year of residence and institutional approval at this institution.

Creighton University.—Credit is granted for advanced work done in the preclinical department of the medical school. This leads to the master of science degree.

New York University.—The graduate school does not accept courses offered by the institute of education toward a graduate degree. Courses offered by this institute are ac-

ceptable toward the master's degree only in the graduate division of the school of education. Certain courses offered by the graduate school of business administration and by the graduate division of the school of education are acceptable toward the graduate degrees of the graduate school.

University of Nevada.—Work for the A. M. and M. S. degrees may be done in part at the college of agriculture or the college of engineering.

University of Cincinnati.—Students registered in the graduate school of arts and sciences may take courses in other colleges and schools of the university. Students in the professional schools are subject to the following regulation: In the principal subject the courses presented for the M. A. or M. S., to the extent of at least 12 credit-hours, may not also have been presented as part of the requirements either as to time or subject credit for a professional degree. Courses not in the principal subject may be counted also for a professional degree, but such courses must be listed in the announcement of the graduate school.

Ohio State University.—The work of candidates may be in any one of the following schools or in more than one: The college or colleges of arts and science, education, commerce and administration, agriculture, engineering, medicine, and veterinary medicine. Students properly admitted to both the graduate school and either the college of dentistry or the college of medicine, may offer toward the master's degree not to exceed 15 quarter-hours of the work required for either the degrees of D. D. S. or M. D.

University of Pittsburgh.—The 24 required resident credits may be earned on the campus or with the approval of the major adviser either in the extension division or in the downtown division.

University of Pennsylvania.—Students already registered as candidates for a degree in other departments of the university are allowed to pursue courses in the graduate school on written consent of both deans.

Vanderbilt University.—Permits students registered for the A. M. or Ph. D. degrees to pursue courses in the school of medicine.

University of Texas.—Candidates for the Ph. D. may do minor work in the school of education, college of engineering, and the medical branch, as may be approved by the graduate faculty. For the master's degree with the consent of the department in which the major is taken, students majoring in experimental sciences may take both minors in the college of engineering. The correlation of the major and minor subjects must be approved by the dean. The 12 semester-hours of the minor or minors may be of junior, senior, or graduate rank.

4. THE ARTICULATION OF THE GRADUATE SCHOOL WITH UNDERGRADUATE UNITS

In view of the general prevalence of the practice of admitting graduate students to approved or appropriate undergraduate courses and of the practice of admitting qualified undergraduates to graduate courses, attention is called to some of the conditions under which such practices are permitted in a number of universities and colleges.

ADMISSION OF GRADUATE STUDENTS TO UNDERGRADUATE COURSES

In general, it may be said that graduate students are permitted to take undergraduate courses of the proper character in the same institutions in which they are doing graduate work in a large proportion of the institutions under consideration.

This practice is permitted, however, subject to approval of the proper authority, usually the head of the student's major department or the student's adviser. In one instance, the written consent of both deans concerned is required. In another, conditions are prescribed by the committee on degrees.

Among the graduate schools permitting this practice are the following: Indiana University, University of Kansas, University of Missouri, University of Pennsylvania, Stanford University, Yale University, Harvard University, Clark University, University of Alabama, University of New Hampshire, George Washington University, Univer-

sity of Akron, University of Cincinnati, Western Reserve University, Case School of Applied Science, Vanderbilt University, Gonzaga University, Bryn Mawr College, Dartmouth College, and George Peabody College for Teachers. This list is doubtless incomplete but is sufficient to indicate the practice.

In a number of cases we find that the graduate student must do a higher quality of work or do more work if he takes any undergraduate courses.

Among those schools requiring a higher quality of work are: The University of Kansas, University of Akron, and Dartmouth College. Among those requiring additional or supplementary work are: Clark University, University of Alabama, University of New Hampshire, University of Cincinnati, University of Akron, George Washington University, and George Peabody College for Teachers. In the last case this work must be of a research character.

Specific statements covering the most important limitations are given herewith:

University of Akron.—Will permit graduate students to do 6 semester-hours of undergraduate work, but no credit will be allowed for freshman and sophomore courses; half credit is allowed for junior courses; and full credit is allowed for senior courses; but both additional work and distinctly high grades are required.

Case School of Applied Science.—Permits most subjects of the senior year to be open as minors to graduate students.

Western Reserve University.—Permits first-year graduates to enter courses designed for juniors and seniors but only two-thirds of the amount of credit given to undergraduates can be given to graduates, and is limited to 4 credits thus obtained.

Gonzaga University.—Permits graduates to take toward the master's degree not to exceed one-third in courses open also to undergraduates.

ADMISSION OF UNDERGRADUATE STUDENTS TO GRADUATE COURSES

The data under consideration indicate that a large proportion if not all of the graduate schools under considera-

tion admit, subject to specific regulation, undergraduate students to their graduate courses. In view of the differences in the requirements and other limitations set up, it has not been found practicable to tabulate the information at hand. Consequently the practice of each school is described separately.

University of Alabama.—A student who has done 122 semester-hours of work toward his bachelor's degree (total 128) may with the approval of the dean pursue one or more graduate courses. But a course may not count for graduate credit in a program which requires more than 12 hours a week.

Graduate division of the University of California.—Admits to graduate courses seniors of the university who have completed at least 12 units of upper-division work basic to the subject of the graduate course and have an average scholarship grade of not lower than B in the basic course.

University of Colorado.—A student who lacks not more than 9 quarter-hours of completing the requirements for the bachelor's degree may be enrolled in the graduate school for enough work to complete his schedule.

Yale University.—In most departments the studies of the senior year in Yale College and the Sheffield Scientific School are so correlated with the studies in the graduate school that a student of honor holding the Yale B. A., Ph. B., or B. S. degree may reduce the time required for the master's degree to 1 full year.

Catholic University of America.—Certain graduate courses are open to properly qualified undergraduates, but no undergraduate is admitted unless he is capable of taking the work on a par with graduate students. With due approval a student lacking but 6 hours of the requirement for the bachelor's degree may register for courses credited toward a master's degree provided the student has been at least 1 year in residence.

University of Illinois.—Graduate courses to which juniors are admitted are discounted when applied to the graduate student's record; and graduate courses open to seniors carrying as much as 4 hours of undergraduate credit are also discounted, but less heavily. If at the beginning of

the second semester of his senior year a student who has been in residence at least 1 year is within 5 hours of a bachelor's degree, he may be permitted to register for courses which may count for residence for a master's degree, provided his program does not require more than 12 formal class, lecture, or laboratory exercises a week, and is approved by the dean at the time of registration. Only students of excellent record will be allowed this privilege.

Indiana University.—Candidates for the A. B. degree lacking not more than 5 hours of the requirements for that degree may be admitted to the graduate school by special arrangement with the dean. Such students will not receive full residence credit for the graduate work they do at the same time that they are completing the requirements for the A. B. degree.

University of Kansas.—A senior who is enrolled in sufficient work to satisfy the requirements for the bachelor's degree may enroll in the graduate school for the remainder of his program, provided the total enrollment does not exceed 16 hours for the semester.

Tulane University of Louisiana.—Permits the election of graduate courses by properly prepared undergraduate students who lack not more than 6 hours of baccalaureate status. Work done before the attainment of the bachelor's degree must be in excess of the amount required for that degree in order to be counted for graduate credit.

University of Maryland.—Seniors may, under specified conditions, register in the graduate school or register for graduate courses, credit to be later transferred to count toward an advanced degree.

Johns Hopkins University.—Admission to particular courses depends upon the satisfaction of particular prerequisites rather than upon the fact of a student's being in a given year of collegiate work.

Boston University.—Seniors in the college of liberal arts who have gained 90 of the 120 hours required for graduation may be allowed to take not more than 15 hours toward the master's degree.

Clark University.—Admission of other than regular or special graduate students to courses primarily for graduates

may be authorized by the secretary of the graduate board on forma' recommendation in each case by the department concerned.

Mount Holyoke College.—Seniors are not allowed graduate credit in advance of their actual promotion to the baccalaureate degree.

Wellesley College.—Most of the graduate courses are open to some undergraduates also. But no classroom work in a class to which sophomores are admitted may count toward a master's degree.

University of Michigan.—Undergraduates who at the beginning of a given semester are within 3 hours, or at the beginning of a summer session within 2 hours of graduation may be permitted to register in the graduate school and have that semester or summer session counted toward the residence requirement for a higher degree. Such students must complete the undergraduate work during the first semester or summer session in the graduate school. Only students of excellent record will be allowed this privilege. Students who finish the undergraduate course of this university at the end of the first semester and who continue their residence for the remainder of the year are permitted to register in the graduate school even though the bachelor's degree is not conferred until the close of the year.

University of Minnesota.—A student is allowed to petition to carry a limited amount of graduate work if not more than 9 quarter-credits (6 semester-hours) are lacking toward the completion of the bachelor's degree. None of this work may be applied toward an undergraduate degree. Undergraduates lacking not more than 6 quarter-credits (4 semester-hours) may be permitted in exceptional cases, with the permission of the dean of the undergraduate school, to register also in the graduate school.

University of Missouri.—Seniors lacking but 15 hours or less of the baccalaureate requirement may with the approval of the appropriate deans register simultaneously in the graduate school and the undergraduate college for courses sufficient to make up a full program.

Washington University, St. Louis.—Undergraduates may enter certain graduate courses, but most departments have

regulations restricting graduate credit to those who have had a specified amount of work in the field.

Duke University.—Seniors are admitted to certain graduate courses. A student lacking not more than 9 semester-hours of meeting the baccalaureate requirements may be permitted by the dean to take during the term work sufficient to bring his total program to 15 hours a week. These courses will be credited toward the master of arts or master of education degrees.

New York University.—Properly qualified seniors may enter certain courses intended primarily for graduates upon application at the graduate school office. Also, undergraduates, who at the beginning of any half year are within 12 points of a baccalaureate degree, may be permitted to take 1 graduate course (2 hours) with a view to counting it toward the master's degree; if within 8 points, 2 courses (4 hours); and if within 4 points, 3 courses (6 hours). Subsequent matriculation in the graduate school for advanced degrees by such students will permit these courses to be entered to their credit.

Cornell University.—Some courses carrying graduate credit are open also to undergraduates. Seniors in the colleges of Cornell University who have completed all the requirements for the bachelor's degree except that of residence may, with the approval of the deans of their respective colleges, be admitted to the graduate school.

Columbia University.—Nearly all departments include graduate courses that are open to undergraduates, but various restrictions are imposed to maintain the work at graduate level. Any undergraduate who is within 12 points of the bachelor's degree may arrange to register for graduate courses with a view to offering such courses in fulfillment of the requirements for residence for a higher degree; provided, however, that he shall not receive graduate credit in excess of the difference between 15 points and the number of points that he needed to fulfill the requirements for the bachelor's degree.

Ohio State University.—There are many courses available for graduate credit which are open to advanced undergraduates. However, by a ruling in most departments undergraduates are barred from entering strictly graduate courses

unless permission to do so is granted by the graduate council.

University of Akron.—Honor students are granted the privilege of registering for graduate credit in anticipation of graduate status. The honor student must have had a grand average of at least 90 for all work taken before the middle of the junior year.

Western Reserve University.—Students of outstanding ability who have completed or nearly completed the requirements for the first degree, with due approval, may be admitted to the graduate school in advance of formal graduation.

University of Oklahoma.—Students who have completed the undergraduate requirements and have been recommended for graduation are permitted to register in the graduate school, even though the bachelor's degree is not to be conferred until the close of the year. Students who are within 8 hours of graduation at the beginning of any semester may on approval of the dean of the graduate school select graduate courses to the extent of a total of 16 hours subject to such recognition for credit toward an advanced degree as may be determined by the graduate council.

University of Pittsburgh.—Certain graduate courses are open to juniors and seniors who secure special permission. A student who is at the beginning of his last semester, within 6 credits of completing his baccalaureate, may pre-register with the dean of the graduate school for not more than 15 total credits which may be applied toward a limited portion of graduate credit in the major department.

Gonzaga University.—Seniors with a first-semester average of B may, if they lack but 6 hours of baccalaureate status, count courses taken in the second semester toward their master's degree, subject to the approval of the dean of the faculties.

University of Wisconsin.—Seniors of the university who are within 6 credits of graduation may be admitted to the graduate school by obtaining a certified statement to that effect from the office of the registrar.

A student whose point-credit ratio for the first 2 years is not less than 2.5 and who is recommended by three of his sophomore instructors may be permitted by the major division of his choice to

pursue his major study independently of class work. At the close of the senior year such a student, provided he has met all the requirements outside the major, shall be tested on this independent work by the submission of a thesis and by a comprehensive examination in the major, covering subjects agreed upon at the inception of the independent work. If the thesis and examination are satisfactory, the student shall be granted the maximum number of credits allowed for the field of concentration selected, and grade-points shall be assigned according to the quality of the work.

Upon recommendation of the division and upon approval by the graduate office of work done on the thesis, such a student may be admitted to the graduate school at the end of the seventh semester, thereby becoming subject to its regulations and eligible to its scholarships. The student who, at the close of the eighth semester, has met the general requirements outside the major, has passed the comprehensive examination, has had his completed thesis approved by a committee of three appointed by the graduate office, and is recommended by the division and the graduate school, shall be granted the bachelor's degree (as of the close of the seventh semester) and the master's degree. If all other requirements have been met but the thesis has not been completed, the student shall be granted only the bachelor's degree, and the master's degree shall be withheld until the successful completion of the thesis.

5. ARTICULATION OF THE GRADUATE SCHOOL WITH THE GRADUATE SCHOOL OF ANOTHER INSTITUTION

The recognition by a graduate school of graduate work done in another institution is a common practice. In the graduate schools of this country the question of mutual recognition of graduate work is one which has been closely related to the question of the intermigration of graduate students. Between 1880 and 1900 the migration of graduate students became a live issue because students found it necessary to strengthen or fill out their graduate programs in some other school than where they started their work. The improvement of graduate schools has been so rapid in recent years that the earlier reasons for migration are not so pertinent; nevertheless, intermigration of students between institutions of high caliber is considered to be of great value in many cases because of the contacts made with other leaders of importance, thus adding to the candidate's breadth of view as well as depth of purpose.

TRANSFER OF CREDIT—ADVANCED STANDING

Only in very few cases is the transfer of graduate credit not permitted. The institutions that do not accept transferred credits toward the master's degree, and this refers only to credits applicable toward the master's degree, include the University of Virginia, Yale University, Harvard University, Cornell University, and the University of Pennsylvania. The amount of credit transferable from one graduate school to another depends on the degree involved. The practice of reducing the period of 1 year of minimum residence for the master's degree at the place where graduation is anticipated by presentation of outside graduate credits is usually discouraged, but in most cases 6 or 8 hours may be applied toward the local requirements, thus diminishing the number of courses required and giving greater opportunity for research or thesis work. The transfer of credit in the case of those working toward the Ph. D. degree is usually quite liberal but must never diminish the minimum number of credits prescribed in the required year of residence where the degree is to be granted.

The following are examples of the practice of recognition of outside graduate work:

University of Alabama.—Transfer credits are accepted from those approved to the extent of 6 hours toward the master's degree.

University of California.—No more than 4 semester units are allowed toward the master's degree and only for students of distinction from high-grade schools. But this transfer cannot be used to reduce the minimum residence requirement or minor requirement in graduate courses. For the Ph. D. degree residence work done elsewhere may be accepted at the discretion of the graduate council, but without reducing the minimum residence requirement.

Mills College.—Credits are accepted to the extent of 12 of the 24 required units for the master's degree.

University of Colorado.—For the master's degree after at least one quarter of satisfactory work in residence, 12 quarter hours may be accepted. This may reduce the number of formal courses, but not the residence requirement of three quarters.

Colorado State Teachers College.—One quarter of approved graduate work may be transferred from elsewhere toward the master's degree.

Yale University.—No work is accepted which has not been done in residence at a college or university or a research laboratory except that connected with the preparation of the thesis.

Catholic University of America.—For the master's degree at least 18 hours (of the 24) in addition to the thesis must be done in residence at that institution. For the doctor's degree at least the entire work of the final year.

George Washington University.—Not more than 6 semester-hours may be accepted in transfer toward the master's degree.

University of Georgia.—Graduate work done at a reputable university elsewhere may be credited here to an amount not exceeding one-quarter of the program. The candidate must present an outline of the course taken elsewhere to the appropriate professor and the head of the department for approval. In some cases the faculty must approve the course.

University of Illinois.—Members of the staff and high-school teachers residing and employed in Urbana or Champaign (the location of the university) who have done graduate work in approved institutions elsewhere may secure credit not to exceed 4 units (1 unit equals 10 hours of time a week through 1 semester, or a minimum of 180 hours irrespective of the mode of distribution of that time in class work, laboratory, and private study), more while registered in the graduate school for not less than 1 academic year. Students who take work in a marine or fresh-water laboratory, or station work in geology or on a geological survey, are permitted to offer not less than 6 weeks nor more than 9 weeks of such work toward the master's degree, subject to conditions approved in advance by the faculty and after submitting a full report of work and passing an examination. Students must be registered in the graduate school for at least 1 academic year.

Candidates for the doctorate who have done graduate work elsewhere may not have their credit transferred to this

university. However, it may be accepted on examination as equivalent to resident work at the University of Illinois, provided the institution in which it was done is of high standing.

Northwestern University.—A graduate of the college of liberal arts may present a maximum of 13 semester-hours of credit for work done in another university with equivalent standards, subject to final examination on all work offered for the degree. In general, and except by vote of the board of graduate studies, no credit toward a master's degree is accepted for work done elsewhere. For the doctor's degree 2 years of work may be accepted from other schools.

Indiana University.—Transfer is permitted only to graduates of the university. The latter may with consent do as much as one-third of their work in other accepted institutions. Candidates who are assistants or instructors may transfer to this school as much as 15 semester-hours.

Iowa State College.—Candidates for the M. S. must take not less than two-thirds of their work in residence at the college. Candidates for the Ph. D. spend 3 years in graduate study, of which one-half at least is to be in residence; but in some cases the residence requirement at the college may be reduced to 1 year, but must include a total of 3 years of residence in recognized graduate schools.

University of Kentucky.—The transfer of acceptable graduate credits from other institutions or of other work done in absentia such as writing a thesis under the direction of the major professor, cannot reduce the standard residence requirements for the master's degree.

University of Maryland.—Only in special cases may students earn one-third of the credits required for the master's degree in other institutions of approved standing. If a student has taken a graduate course at another institution this may be substituted for a required course on the student's graduate program at Maryland, but this course must be approved by the major department, and they must be satisfied that the course substituted is in every way equivalent to the course that would be required at Maryland. The extent of such substitution is limited to 10 hours for all departments except education where they permit only 6 hours to

be substituted. This substitution does not in any way change the residence requirements for the degree.

Johns Hopkins University.—Time spent elsewhere than at this university may be considered years of residence at the discretion of the board.

Harvard University.—No outside work is counted for the master's degree; but for the doctor's degree weight will be given to outside advanced work.

Boston University.—At least 25 of the 30 semester-hours required for the master's degree must be gained from Boston University. One full year or the equivalent of 30-semester-hours is the minimum residence requirement for the Ph. D.

Tufts College.—Students are accepted on transfer, but not less than half of the total requirements must be met at Tufts College for the master's degree.

Mount Holyoke College.—Graduate work done elsewhere may count for no more than 3 hours' credit toward a master's degree and only under the following conditions: (1) It shall under no circumstances take the place of the 6 hours of purely graduate courses to be taken at Mount Holyoke; (2) it shall be credited only if the student spend at least 2 years in residence at Mount Holyoke; (3) it must be undertaken with the approval of the department concerned and of the committee on graduate work; (4) it shall be tested by an examination set by the department concerned.

University of Michigan.—Credit for such work completed in approved schools is not awarded until the student has established a record by at least 1 semester or 1 summer session of residence, and work transferred must coordinate with the student's chosen subject of specialization and cannot exceed 6 hours.

University of Missouri.—Eight credits or one-fourth of the number required in the case of the master's degree may be accepted from another recognized graduate school; a larger privilege is accorded Ph. D. candidates, subject in each case to faculty decision.

University of New Hampshire.—Transfer credits are allowed to the extent of not more than half of the required number.

Dartmouth College.—Credit to the extent of 9 hours toward the master's degree may be granted for work done elsewhere prior to registration at Dartmouth.

University of Nevada.—Credit for work done elsewhere may be given, but such allowance will not reduce the period of residence.

Cornell University.—No credit may be obtained for work done elsewhere for the master's degree. The transfer of credit for the Ph. D. degree may be accepted, but each case is decided on its own merits.

University of Rochester.—Not more than 12 credits are accepted in transfer.

New York University.—Credit may be given for graduate work done in approved institutions provided such work has not been credited toward a professional degree. The equivalence of standards is assumed. For the master's degree two courses may be taken elsewhere.

University of North Carolina.—Credit for graduate work not to exceed two full courses may be transferred from institutions recognized by the Association of American Universities and subject to approval of major department head and of the administrative board.

Ohio State University.—Work done elsewhere may be accepted at the discretion of the graduate council.

Duke University.—Not more than 6 semester-hours of credit toward the master's degree may be given to graduates of Duke University or of other approved colleges or universities for acceptable graduate courses or research work completed elsewhere. Such credit shall not shorten the minimum period of residence.

Western Reserve University.—One-fourth of the credit toward the master's degree may be presented from an approved school, but credit must have been taken within 5 years.

Oberlin College.—Graduates of the college in residence at other universities may by advance arrangement receive credit in a limited amount toward the master's degree. Students transferring to Oberlin must complete 30 hours in residence before completing the degree.

University of Cincinnati.—A candidate, with the approval of the dean of the graduate school and his adviser, may

offer certain courses taken in Lane Theological Seminary and in the collegiate department of the Hebrew Union College in partial fulfillment of the requirements for the degree of master of arts. Not more than 12 units may be counted in fulfillment of the requirements of subjects outside the principal department for the master's degree. The graduate faculty may upon recommendation of the departments concerned accept work done in residence in other qualified universities, but the last half year of work is in residence for the master's degree, and the last year for the doctor's degree must be in residence at this university.

University of Akron.—Credits from the graduate units of other institutions are accepted to the limit of 10 for the master's degree.

University of Oklahoma.—Four hours of the thirty-two required may be taken either by correspondence or extension or in absentia, or at another graduate school.

University of Pennsylvania.—All work for the master's degree must be done at that institution, but graduate work done at other institutions may be accepted in lieu of part of the work required for the doctor's degree.

University of Pittsburgh.—For the master of education degree eight graduate credits earned in any recognized graduate school will be accepted without approval in advance provided that they fit into a logical program of teacher training. For the doctor's degree 2 years of the 3 required may be done in other approved institutions provided the work fits the ultimate program.

Bucknell University.—Six hours of resident graduate credit may be accepted from other institutions toward the master's degree.

University of South Carolina.—Transferred credits are not accepted toward the master's degree.

South Dakota Agricultural College.—One-third of the required credits for the master's degree may be earned at other approved institutions.

George Peabody College for Teachers.—As much as one-third of the 35 course hours may be taken at Vanderbilt University.

University of Texas.—As much as 6 hours will be accepted if completed in residence at another institution be-

longing to the Association of American Universities, and with approval of department concerned and the registrar, in any institution outside the United States and Canada. This applies to the master's degree.

Brigham Young University.—Sixteen quarter hours of graduate work may be transferred from other institutions.

Middlebury College.—For either of the advanced degrees one-third of the required work may be done elsewhere. Graduate work done in other institutions and presented for transfer credit toward Middlebury's master's degree must be acceptable toward the same degree at the institution where the work was done.

The University of Virginia.—Does not accept any transferred credits toward the master's degree.

State College of Washington.—Graduate credit for work done at other institutions is allowed when that work would be accepted as a part of graduate program in those institutions and when the work fits into approved programs of graduate work at the State College of Washington. This refers only to institutions approved by the Association of American Universities.

University of Washington.—A candidate for the master's degree may offer work done elsewhere, thus making his program less exacting, but this work must pass review in the examination and shall not reduce the residence requirement at this university. Candidates for the doctor's degree are required to spend but 1 of the 3 required years in residence at this university.

Gonzaga University.—No work done in another college or university can be accepted for advanced credit toward the minimum residence requirements.

University of Wisconsin.—No extension or correspondence work may be applied toward the master's degree, except in the department of education. But for the Ph. D. residence elsewhere may be accepted, without shortening the minimum residence requirement of 1 year.

University of Wyoming.—Students by special arrangement may receive graduate credit for graduate courses taken at other institutions, but this does not decrease the local residence requirement.

RECOGNITION OF WORK DONE ELSEWHERE UNDER THE
DIRECTION OF THE GRADUATE SCHOOL

A number of institutions have regulations regarding work that is done in absentia or at other institutions upon recommendation or with the consent of the school where the degree is to be given. In a number of schools migration is definitely encouraged. Examples of the regulations for such cases are given herewith.

University of California.—Whenever a student may be directed by the graduate council to prosecute regular research elsewhere on account of superior and indispensable facilities he is held to be in residence in the university.

University of Illinois.—Continuous residence and study are required of all members of the graduate school, unless they are granted leave of absence by the dean upon recommendation of the professor in charge of their work for the purpose of carrying on elsewhere studies or investigations in the line of work for their degrees.

Indiana University.—With the consent of the head of the department and the dean, graduates of Indiana University may do as much as one-third of their work in other accepted institutions.

University of Kansas.—In the case of members of the teaching staff and those holding bachelors' degrees from the University of Kansas, one-half year of work done in approved graduate schools and acceptable to the major department may be credited.

University of Nebraska.—An approved candidate for a higher degree, a graduate of the University of Nebraska, may be given permission to do part of his work elsewhere. The Ph. D. candidate is encouraged to do so in the interest of broadened academic contacts.

New York University.—Because of special advantages offered under articles of affiliation between the university and the National Academy of Design, courses in fine arts leading to appropriate degrees are jointly administered by the two institutions. A cooperative arrangement with the Brooklyn Botanic Garden enables students of the graduate school to profit by the unique educational opportunities available there. And, likewise, relations with the Metropolitan Mu-

seum of Art permit of a reciprocal use of the facilities for instruction of each institution.

Cornell University.—Students who have spent at least 2 terms in this university toward a doctor's degree may be permitted under restrictions provided by faculty legislation to spend not to exceed 2 terms in study and research carried on elsewhere but counted toward residence credit at Cornell.

University of North Carolina.—On the recommendation of the major department and with the approval of the administrative board, part of a student's thesis may be done elsewhere, and part of the work for the Ph. D. may be done at another university. All such work, even when credited, is subject to examination at the finals required for degrees.

Ohio State University.—A graduate of that university may do not more than one-half of the work required for the master's degree at another institution furnishing equivalent opportunities for study, subject, however, to final examination by this university on all work offered for the degree. A candidate for the Ph. D. degree may do part of his 3 years' work at another university, such work being subject to the approval of the graduate council. The university has specific agreements for the pursuit of graduate studies with Ohio University, Ohio Agricultural Experiment Station, the Merrill-Palmer School (Detroit), the Perkins Observatory of Ohio Wesleyan University, the Bureau of Juvenile Research of the State of Ohio; likewise, arrangements are made with different types of social organizations and with the State and numerous cities of Ohio for cooperative relations in carrying on graduate study subject to the supervision of the university.

Case School of Applied Science.—The division of graduate study and research has reciprocal relations with the graduate school of Western Reserve University.

University of Pittsburgh.—Limited resident credit with due approval may be given for certain courses of graduate character earned in the Western Theological Seminary, the Pittsburgh Theological Seminary, and the Carnegie Institute of Technology. Also, the university maintains special relations in program building with the Westinghouse Electric and Manufacturing Co. and the teacher-training courses of the Carnegie Institute of Technology.

George Peabody College for Teachers.—A considerable part of the work for the doctorate may be done in other institutions properly equipped for graduate work. But the 1-year minimum requirement in addition to the dissertation must be adhered to.

University of Washington.—Candidates for a doctor's degree may be required to avail themselves of superior facilities offered elsewhere, in the interest of their thesis research. But at least 1 year of the 3 must be in residence at the University of Washington.

6. ARTICULATION OF THE GRADUATE SCHOOL WITH SUMMER SESSIONS

The articulation of the graduate school or unit with the summer session of the same institution or other institutions does not present the problem that it did a decade or more ago. For many years the organization of courses of study in the summer session was deficient from the standpoint of graduate work. This has been overcome largely by more standard practices as to the length of the summer session, a careful differentiation of courses, selection of an adequate personnel, more strict observance of admission requirements to graduate courses given in the summer, and, in general, the maintenance of the same standards of scholarship as in the regular session. In the universities and colleges that operate on the 4-quarter or term basis, no difference is recognized between the work of the summer quarter and any other quarter.

In those that operate their summer sessions on a different basis we find that the recognition of summer graduate work varies considerably. These differences usually are related to credit toward an advanced degree and consequently are discussed in connection with the requirements for the master's and doctor's degrees.

7. ARTICULATION OF THE GRADUATE SCHOOL WITH EXTRAMURAL COURSES

There is little uniformity in the practice of many of the institutions considered in this study respecting the recognition by the graduate school of extension courses, correspond-

ence courses, and other types of extramural study on the graduate level. While the data concerning these types are not quite as complete as desired, the examples given are suggestive of existing tendencies.

RECOGNITION OF EXTENSION COURSES

Sixteen institutions report that they accept for graduate credit a limited amount of extension work on the graduate level. The names of these institutions with the amount and type of recognition of extension courses are as follows:

University of Alabama.—Accepts as high as 4 hours of work done in extension courses carried in centers maintained by the university.

Alabama Polytechnic Institute.—Recognizes as high as 6 semester-hours of work in extension courses as for advanced undergraduate courses; never more.

University of Colorado.—May permit a student who has done satisfactory work in residence for a period of time satisfactory to the dean to take 12 quarter-hours of credit, not more, through the university extension division, in extension classes of graduate standing conducted by members of the faculty, and subject to the following regulations: (1) The student must first be admitted to the graduate school; (2) such work added to any residence work transferred from another institution may not exceed 12 hours; (3) the requirement of resident study for a master's degree can in no case be reduced to less than 3 full quarters. Deficiencies in a student's graduate preparation may be removed by approved extension courses taken either before or after the resident graduate work is begun.

Colorado State Teachers College.—Credits 16 quarter-hours of extension courses under specified conditions protecting the graduate quality of the work.

University of Chicago.—Wide reading or other special work carried out by students under supervision of the department and subject to such tests as the department may present may be accepted as one or more majors of the required work at the discretion of the department concerned and corresponding registration in advance with the dean.

Indiana University.—Graduate work offered at an extension center of Indiana University may be counted toward advanced degrees under conditions safeguarding quality of work.

(1) Two-thirds of the students of a graduate class must be of graduate standing, and the remainder must have senior standing or equivalent.

(2) The course must be taught, (a) by an instructor who offers this same course for graduate credit at Indiana University; (b) by another instructor from Indiana University approved by the head of the department concerned and the dean of the graduate school, or (c) by an approved instructor from another university who offers the course for graduate credit in his university.

(3) All work is subject to the approval of the dean of the graduate school and of the head of the department in which the degree is to be secured. The student must see that such approval is secured.

Students working toward the Ph. D. degree in Indiana University may not offer more than 1 year (30 semester-hours) of extension work and work done in absentia to be applied toward the doctorate. But students working for the Ph. D. with a major in education may present a year and a half (45 semester-hours).

University of Kansas.—Work done in extension classes taught by members of the university faculty may be credited to the amount of 6 hours, provided that such courses are approved for graduate credit and the enrollment is approved by the dean of the graduate school.

University of Michigan.—Extension courses taken in the extension division of this university are subject to the same recognition for graduate credits as graduate courses completed in outside approved schools. Such credit may be awarded after a student has established a record at this University by at least 1 semester or 1 summer session of residence. The transfer credits must coordinate with the student's chosen field of specialization and cannot exceed 6 hours.

University of Missouri.—Credits are granted to the limit of 8 hours for work done either by extension or correspondence under certain conditions. But 4 additional hours may be secured if work is taken through extension center courses conducted by members of the graduate faculty. No credit,

however, is given for extension and correspondence work offered by other institutions. Nor will the university attempt to transfer its extension and correspondence credits to other institutions.

University of Rochester.—The extension division offers courses carrying graduate credit.

University of Oklahoma recognizes 4 credits of extension work toward the 32 required for the master's degree.

University of Pittsburgh.—Twenty-four required residence credits may be earned in the extension division with the approval of the major adviser. However, courses must be approved in advance if the work is to count toward an advanced degree. Individual departments and divisions of the graduate school shall determine how much of extension-course credit may be accepted from its majoring students. In every case, however, at least 6 credits toward the master's degree and 18 toward the doctor's degree must be taken in campus courses. But no credit is given for extension courses given elsewhere.

University of Texas allows a maximum of 6 hours of extension-course credits under specific restrictions after the student has demonstrated his ability to pursue graduate work with profit.

Baylor University allows credit for extension courses only upon approval of the head of the department concerned and of the graduate council.

University of Washington.—Students may earn nine graduate credits (approximately 6 semester credits, one-fifth of the normal requirements for the master's degree) through the extension service of this university. This reduces the residence requirement in the case of graduates of this university to $2\frac{1}{4}$ quarters; for others, not at all.

State College of Washington.—Extension courses may be accepted in fulfillment of not more than one-third of the total requirement for the master's degree subject to the approval of the graduate studies committee.

University of Wisconsin.—Extension or correspondence courses may be credited in special cases toward an advanced degree only in the department of education.

The institutions that specify definitely that extension courses are not acceptable for graduate credit include Ohio State University, University of Virginia, University of Wisconsin, Duke University, Mercer University, and Kansas State Teachers College at Emporia. The University of California does not permit credit for extension courses to be applied toward programs for higher degrees or for certificates under the control of the graduate division.

RECOGNITION OF CORRESPONDENCE COURSES

Six institutions indicate that correspondence courses may be accepted toward graduate credit subject to certain conditions.

The *State University of Iowa* gives credit for certain correspondence courses in the extension division to properly qualified graduate students. Such credit is limited to 6 hours and is validated after the candidate has earned 24 hours in residence at the university.

The *University of Chicago* offers a number of advanced or graduate correspondence courses in several departments. The amount of recognition of such work in the student's graduate program is a matter decided by the departments and divisions.

The *University of Missouri* grants credit to the extent of 8 hours of correspondence work under certain conditions. Only 4 of the 8 hours of credit may be required before the establishment of residence, provided all other regulations pertaining to admission and matriculation are satisfied. Correspondence work from other schools is not recognized.

The *University of Oklahoma* recognizes as many as 4 hours of correspondence work to apply toward the 32 hours required for the master's degree.

At *Washington State College* correspondence courses may be accepted in fulfillment of not more than one-third of the total requirements for the master's degree, subject to the approval of the graduate studies committee.

The *University of Wisconsin* credits correspondence work toward an advanced degree in the department of education only, in special cases.

The following universities specifically deny recognition of correspondence courses for graduate credit: University of

California, Indiana University, University of Kansas, Ohio State University, University of Texas, University of Virginia, University of Wisconsin (except department of education), University of Alabama, Iowa State College, Duke University, Mercer University, George Peabody College for Teachers, and Kansas State Teachers College at Emporia.

8. OTHER FORMS OF EDUCATIONAL ARTICULATION WITH THE GRADUATE SCHOOL

In addition to the types of graduate work indicated in this section, special opportunities for graduate students are given through ad interim courses, nonresident or absentia work, Saturday classes, and fieldwork.

AD INTERIM CLASSIFICATION

Iowa State College.—Interim classification may be granted to graduate students who are in residence during periods between the closing and opening of the regular quarters. Registration for graduate work under regular members of the instructional staff who are in residence is allowed upon special permission. Students may register in not to exceed one credit per week.

Ohio State University.—There is offered ad interim graduate work as follows: A graduate student who has been in residence for one quarter or more may in the interval between summer quarters pursue a course of studies under the direction of the department in which he is specializing. He is expected to register (not attend classes) at the university for one of the quarters in that period, to make monthly reports to his professor, and to pass prescribed examinations.

NONRESIDENT CLASSIFICATION OR IN ABSENTIA

University of California.—Nonresident study or research is permitted to graduate students in absence during the fall, or spring, or summer session.

Iowa State College.—In exceptional cases, permission may be granted to students who have been in residence in the graduate college to do a limited amount of work in absentia. The total credit thus obtained cannot exceed that previously gained in residence. Credit thus obtained will not be counted

as residence credit. The cases of this type are confined largely to research problems such as agricultural and ecological surveys carried on under the student's major department. Permission must be granted by the head of the department and the dean of the graduate college.

FIELDWORK

University of Kansas.—A nonresident candidate who has shown by graduate work in residence that he is prepared for independent study may enroll by means of fieldwork for a portion of credit for the thesis.

Ohio State University.—A graduate student who has been in residence one quarter may arrange to carry on research work toward his dissertation, his program being approved in advance. His registration is maintained at the graduate school.

SATURDAY CLASSES

State University of Iowa.—Six hours of graduate work in Saturday classes will be accepted toward the residence requirement, but no more.

University of Michigan.—The equivalent of one summer session (or half semester) may be acquired through constructive residence gained through pursuing Saturday courses arranged with the graduate board.

Bucknell University.—Saturday courses may not be counted for more than half of the residence requirement for the degree (master's).

9. ARTICULATION OF GRADUATE AND UNDERGRADUATE WORK THROUGH ADMINISTRATIVE ORGANIZATION

While there is a more or less unanimous view that there should not be too great a break between the graduate school and the undergraduate school, the practices indicate a great variety of differences as to the integration of these two important educational units. A dean in one of our larger State universities has made the following statement:

We are here, I think, year by year attaining a more decisive division of graduate and undergraduate instruction. Some of us con-

tinue to believe that the presence of graduate students in courses for undergraduates quickens the pace of instruction and tends to elevate it. On the other hand, some of us think that the presence of undergraduates acts as a drag on graduate instruction, and that it would be preferable to separate the two in the interests of both. Of course, this opinion is common in American universities.

The practices of three well-recognized graduate schools as to admission to types of courses offered are shown as follows: In one of the largest State universities the graduate-school offerings included 1,497 graduate courses. Of these, 1,099 were open to graduate and advanced undergraduates and 398 were limited to graduates only. In a large privately controlled university the offerings of the graduate school included 1,185 graduate courses, of which 1,060 were open to graduates and undergraduates and only 125 were limited primarily to graduate students. In a medium-sized State university the graduate school offered 705 graduate courses, of which 226 were open to graduates and undergraduates, 248 were open to graduates and advanced undergraduates, and 231 were open primarily to graduates.

The more common type of graduate school is one offering programs and courses of study leading to the master's degree or doctor's degree, or both, programs 1 to 3 or more years in length, respectively. These are conducted by graduate faculties and departments that are largely, if not entirely, separate from the undergraduate school. The principal integrating force in such cases is the prescribed undergraduate prerequisite group of studies or preparation for the graduate major or minor.

Another type of graduate school is one in which the graduate program is conceived as definitely beginning with the junior and senior years or the upper division of the 4-year undergraduate college. In this type of organization the undergraduate programs covering the junior and senior years of colleges are more definitely in line with the graduate programs available in the graduate school. In schools of this type the borderline graduate courses open to graduates, or graduate courses open to talented undergraduates, constitute in a sense another mode of articulation.

Another type of organization is known by some as the "vertical plan." This involves departments in which both

undergraduate courses and graduate courses are governed by a single head, with definite programs or department groupings integrated over the entire combined period of undergraduate and graduate activity.

An excellent description of the "Iowa vertical plan" has been made by Dean Seashore of the graduate college of the State University of Iowa. This is quoted as follows:

The logical units are departments, schools, or colleges, and that all the work within each of these respective spheres remains as a unit without a sharp differentiation between graduate and undergraduate. Thus the administrative unit is, for example, the department of geology, the school of letters, or the college of medicine. As a result of this conception, the graduate college has few research professors and allows great autonomy in the administration of the unit.

In accordance with this principle, matters of appointment, promotion, funds, and adoption of fundamental policies are initiated in these vertical units as wholes; and by precedent the dean of the undergraduate or professional college takes precedence in leading to action. However, the dean of the graduate college is always consulted and shares informally in responsibility for the action. In matters of primarily graduate interest he may take the initiative, but ordinarily this is made a cooperative move.

Thus when a professor in liberal arts is appointed, he is made professor of a subject and ordinarily has freedom to do either graduate or undergraduate work or both. After conferring with the departments concerned, the two deans confer with the president and virtually take concurrent action, although the official act is not that of the dean of the graduate college. There are many advantages of this vertical plan some of them inherent in the local situation, some even in the personalities of the administrative officers.

This plan simplifies budget making and the keeping of records; it makes it easier to allocate funds for new and highly technical work; it facilitates the promotion of research and places responsibility for principles and economy at closest range.

The vertical plan, therefore, furnishes a natural basis for departmental autonomy. A department becomes for most administrative purposes a self-contained unit; it develops standards, points of view, and an atmosphere which takes care in large part of the duties of administration of graduate work. The same is true of research units, such as the Child Welfare Research Station and the Bureau of Business Research. The office of the graduate college with its council and faculty becomes a clearing house for the large mass of activities conducted in departments, divisions, and research units.¹

¹ Seashore, Carl E. Trends in graduate work. University of Iowa Studies no. 33, pp. 14-15. Edited by John William Ashton. Published by the University, 1931.

At *Stanford University* the unit is the school which with its several departments are integrated more or less on the vertical plan. That is to say, each department sets up a program of undergraduate courses with definite requirements for not only the bachelor's but also the master's and doctor's degrees. Furthermore, each of the larger units including the school of biological sciences, school of education, school of engineering, school of letters, school of physical sciences, school of social sciences, have general requirements covering both the undergraduate and graduate phases leading to the several types of degrees.

California Institute of Technology is organized on the basis of seven divisions: (1) Physics, mathematics, and electrical engineering; (2) chemistry and chemical engineering; (3) civil and mechanical engineering; (4) geology and paleontology; (5) biology; (6) humanities; (7) physical education. Each division, with exception of the last, includes graduate work and research as well as undergraduate work. The careful integration of graduate and undergraduate programs is characteristic at this institution.

At *Yale University* in most departments, the studies of senior year in Yale College and the Sheffield Scientific School are so correlated with the studies in the graduate school that provided the conditions specified are fulfilled, a student of honor grade holding the Yale B. A., Ph. B., or B. S. degree, may receive the master's degree after 1 full year of work in the graduate school. As the normal period of residence for the master's degree is 2 years, this is indicative of the value of definite articulation of the undergraduate and graduate levels of instruction.

The George Washington University plan integrates the master's degree program with that of the senior college, making possible a unified educational program 3 years in length, above the junior college. The work leading to the Ph. D. is under the control of a separate organization known as the graduate council which combines the functions of a graduate faculty and graduate council. Accepted candidates for the Ph. D. become fellows of the council. The president of the university is chairman of the council, and there is a secretary who is a member of the council. There is a small council

of three professors named yearly, which constitutes the chairman's council and also includes the secretary of the larger unit.

The University of Chicago plan is based on the autonomy of the departments within each of the major divisions which begin with the so-called "junior year" and end with the last year of the doctorate, or approximately 5 years. Each department's work is conceived of and organized as a whole and integrated with the general plan of the particular function of the division. The bachelor's or master's degrees are in neither case prerequisite to the degree or degrees above.

The Johns Hopkins plan does not emphasize a sharp distinction between graduate and undergraduate work. But the work of the school of higher studies of the faculty of philosophy presupposes at least 2 years of high-grade college work. With this preparation the student is ready to meet the requirements of such departments that must be included in his program leading through to the doctor's degree, the A. B. and A. M. being optional on the way to the doctorate. Each of the departments of the school has its particular sequence of courses and its own regulations.

The University of Wisconsin presents an excellent outline of the work for the master's and doctor's degrees required in the six major divisions—biology; chemistry; education, psychology, and allied fields; language and literature; mathematical and physical sciences; and the social studies—and for their constituent departments. This appears to be a modified form of the vertical plan.

10. SUMMARY

The articulation of the graduate school with other college or university units is primarily concerned with determining the status of the graduate student either as a candidate for an advanced degree or as one who is not. The practices indicate that a very liberal policy exists in most American universities with regard to the admission of graduate students. The selective process is becoming less formal and rigid in a large number of the best graduate schools although the holding of a bachelor's degree from an acceptable college of arts and sciences is still the principal norm for

selection. However, there are indications that the larger graduate schools are usually willing to accept from other schools of the same institution holders of technical bachelor's degrees. A certain amount of recognition of professional work in connection with the attainment of the master's or doctor's degree is sometimes permitted subject, of course, to proper approval.

The admission of graduate students to undergraduate courses when such courses are desirable in filling out an adequate program is a common practice; but the graduate student is expected to excel his undergraduate colleagues, either in quality or quantity of work. Equally common is the practice of admitting advanced undergraduates to graduate courses in anticipation of an advanced degree. However, in most schools there is a group of courses which are limited strictly to graduate students.

It is a common practice to recognize equivalent work from other graduate schools and to encourage in certain cases such migration as may better fit the student's research objectives. The amount of recognition for work done elsewhere may reach 2 years in the case of the Ph. D. degree, but in the case of the master's degree it is seldom customary to recognize more than 6 or 8 semester hours, in view of the 1 year minimum residence requirement.

In most institutions the summer session has the same status as the regular session so far as graduate work is concerned.

Extension work on the graduate level is recognized to a limited extent, but this recognition is subject to careful regulation. There is little recognition of correspondence courses by graduate schools. In fact, the tendency is not to recognize correspondence work on this level.

The liberal attitude of a number of graduate schools permits a number of other means of carrying on graduate study by more or less informal methods.

The articulation of the undergraduate and graduate units is facilitated in a number of institutions by a vertical type of organization.

CHAPTER VI

REQUIREMENTS FOR THE MASTER'S DEGREE

1. INTRODUCTION

Preparation of candidates for the master's degree in one or more of its numerous forms has been and still continues to be one of the principal functions of the graduate school or unit in universities and colleges in the United States. In the earlier years of graduate-school activity the question of standards for the master's degree was relatively simple. In many instances it was only necessary for the holder of a bachelor's degree who had carried on his professional work successfully over a period of no less than 3 years to make application for the master's degree of his alma mater, the application to be accompanied with the usual fee of \$5. In the few institutions that made formal subject-matter requirements we find the student was required to take an additional year of work, usually three or four advanced courses which merely served to top the undergraduate course of study. The master of arts degree principally served to round out the cultural program of the graduate, and in the earlier years had little connection with research or research methods.

With the growing popularity of the Ph. D. degree the master of arts degree and the master of science degree began to be considered not on their original merits but often in relation to the higher doctoral degree. The rapid development of scientific methods began to have its effect on the character of the master's degree. The question was increasingly raised as to whether the degree was a preparatory research degree or one primarily concerned with subject-matter expansion. The question is still a live one and doubtless never will be answered finally.

Other questions of secondary import have arisen which are of significance in their relation to the quality of the degree.

In consideration of these matters data have been assembled for 51 institutions more or less typical in character, 27 representing the Association of American Universities and 24 representing accredited institutions that are not members of the association.

The requirements and standards for the master's degree will be considered from the standpoint of the following topics: Admission to candidacy for the degree, minimum residence required, minimum number of hours required, the general character of the program of study or curriculum, modern language requirement, thesis, examination, and grades required. It has not always been possible to obtain complete information on every topic for each institution; however, there are enough examples of different practices to be of service in showing trends. But the presence of any particular trend in the question of graduate standards is not so important as the particular practices of individual schools which are developed as a result of the peculiar character or need of the institution concerned.

2. ADMISSION TO CANDIDACY FOR THE MASTER'S DEGREE¹

Admission to candidacy usually involves the attainment of full graduate status, the early application for admission to candidacy, the fulfilling of the language requirement, the acceptance of the program of study and the thesis subject by the appropriate authorities of the graduate school, the qualifying examination and final attainment of admission to candidacy.

GENERAL REQUIREMENTS

In the preceding chapter detailed attention was given to the requirements for graduate status. Among those reiterated as necessary for admission to candidacy for the master's degree are the demonstration of ability or proof of fit-

¹ Primarily the master of arts and master of science degrees.

ness for the work. Generally a quarter or a semester of demonstrated ability is sufficient to satisfy the professor in charge as to the scholastic or research ability of the candidate. This is usually shown by carrying out a part of the program which has been agreed upon and filed for final approval. The date of filing the application varies considerably. In a few cases application must be made very early in the year in which the student expects to graduate. Among practices are the following: Application to be made at the end of $3\frac{1}{2}$ months of the first semester; not later than 4 months before graduation; before starting on last half of the year ($4\frac{1}{2}$ months); not later than first week of second quarter of residence; not later than the fourth week of second quarter of residence; before the beginning of the quarter in which the final examination is to be taken; not later than the end of the second week of the semester in which the student expects a degree. In one institution where the requirement usually involves 2 years of residence, application must be made at least 1 year before the final examination.

Admission to candidacy may be obtained at different times in the different schools. In one case it must be attained not later than 1 month before graduation; in another case at least 2 months before graduation; in another case, at least 1 term, 3 months before graduation; in other cases at the beginning of the second semester; again, not later than 2 weeks after the opening of the quarter in which the degree is to be granted; in another case admission must be granted at least 5 months before graduation, and in another case at least 6 months in advance of graduation.

FOREIGN LANGUAGE REQUIREMENTS

Among the most essential requirements for admission to candidacy for the master's degree is the complete fulfillment of the foreign-language requirement. This does not necessarily mean that foreign language is an absolute requirement for the degree, but in those cases where it is required, whether a general or departmental requirement, it must be met before admission to candidacy can take place.

In at least 10 members of the Association of American Universities and in at least 11 other institutions admission to candidacy includes the fulfillment of the language requirements.

The nature of the foreign-language requirement for the master's degree will be discussed in a later section of this chapter.

ENGLISH LANGUAGE REQUIREMENTS

The *University of Georgia* requires master's degree candidates to show correctness and good taste in the oral and written use of English. The proper use of English in writing the thesis is emphasized by a number of schools. *Clark University* may require candidates during the first year of residence to appear before a committee to test their ability to speak, read, and write English. A candidate for a graduate degree after more than 1 year of graduate study must satisfy his major department in respect to his knowledge of English.

PROGRAM OF STUDY AND THESIS SUBJECT

The most important requirement for admission to candidacy is the presentation to the authorities of the graduate school a program of study approved by the major professor or adviser and such other department heads that have a part in the candidate's program. Usually this involves the entire program of the major field of study and of the minors or minor fields when required and such supporting work or prerequisite study as may be needed to fill out a unified program of study. In most cases the thesis subject must also be chosen and approved unless the thesis requirement is waived.

QUALIFYING OR PRELIMINARY EXAMINATIONS

In a few graduate schools a qualifying examination is also required for admission to candidacy. In certain institutions the qualifying examination is controlled by departmental requirements.

3. QUANTITATIVE REQUIREMENTS FOR THE MASTER'S DEGREE

MINIMUM TIME REQUIREMENT

The minimum length of time required to obtain the master's degree for the groups of institutions included in this study with possibly two exceptions is 1 academic or scholastic year. In 20 institutions of the Association of American Universities the time requirement is expressed. In 3 cases the requirement is 2 semesters; in 3 cases the requirement is 3 quarters; in 1 case, 1 semester and 1 summer session or 2 quarters spread over 4 summer quarters plus 15 hours of ad interim work; and in another case 1 semester plus 18 other weeks on a full-time basis.

In the institutions listed not members of the Association of American Universities the minimum requirement of 1 academic year is customary. In 11 cases this requirement is so stated, but in 1 case we find 3 quarters given; in another, 3 quarters or 30 weeks; 2 require 2 semesters; 1 requires 24 weeks and another 27 weeks.

This minimum requirement of 1 year was found to be true by Blose for a group of 118 schools, which includes the 51 schools of our list.² In a few prominent universities at least 2 years of full study beyond the bachelor's degree is required in order to obtain the master's degree. These include Yale, Johns Hopkins, and Princeton. In the latter institution, beginning after commencement day of 1935, candidates for the master's degree must also pass the general examination for the doctor's degree. In most cases the 1-year requirement is indicated as the minimum period of residence and that more time may be required for meeting departmental requirements.

RECOGNITION OF SUMMER-SESSION STUDY

The recognition of summer-session study is indicated in a number of cases. Among the group of the Association of American Universities we find the following requirements: 3 cases of 4 summer sessions of 6 weeks each; 1 of 3 summer sessions of 11 weeks; 3 cases of 3 regular summer quarters; 1

² Blose, David T. Standards for the master's degree. In unpublished dissertation, American University Graduate School, p. 22. Apr. 24, 1933.

case of 2 summer sessions plus a winter or spring quarter; 1 case of a semester plus 9 credit-hours; 1 case of 3 summer sessions plus 1 semester of work; 1 case of 4 summer sessions of 8 weeks each; and 1 case of 4 summer sessions of 9 weeks each. In the other group of schools we find the requirement of 4 summer sessions considered the equivalent of the 1-year regular residence requirement in 5 cases; in 1 case 5 summer sessions of 6 weeks is required, and in another 6 consecutive summer quarters.

MAXIMUM TIME LIMIT

The maximum time limit for completing the master's degree or the maximum time limit for the recognition of earned graduate credits that may be applied toward the master's degree is indicated in a number of institutions. In 3 cases a maximum period of 5 years is indicated and in 3 cases 6 years. In 1 school the master's degree must be gained within 3 years from the time of registration.

MINIMUM NUMBER OF CREDITS REQUIRED

In eight of the institutions under discussion the quantitative requirements for the master's degree are not indicated in the conventional terms of semester- or other form of credit-hours.

Graduate school of the University of Illinois.—Refers to its requirement as follows: Eight unit courses is the minimum program or equivalent. A unit course is defined as one that requires 10 hours of time through 1 semester, or a minimum of 180 hours irrespective of the mode of distribution of that time in class work, laboratory work, or in private study.

University of North Carolina.—The requirement is stated in terms of 9 full courses. By a course is meant, as a rule, a class meeting 5 times a week.

University of Chicago.—A specific number of courses are indicated by the departments, such as are considered necessary for the student to pass the final examination.

Harvard University Graduate School of Arts and Sciences.—Four full courses pursued for a year are required.

Princeton University.—The requirements are expressed in terms of courses.

Massachusetts Institute of Technology.—Ninety-six units are required, the unit referring to 15 hours of work including both class exercise and preparation.

New York University.—Five full courses are required, a full course referring to 2 hours a week of class work for a period of 30 weeks.

Bryn Mawr College.—Three unit graduate courses are prescribed.

In the majority of graduate schools or units the requirements for the master's degree are given in terms of semester- or quarter-hour requirements. Among the institutions of the Association of American Universities included in our list, 3 require at least 18 semester-hours plus a thesis or other evidence of research; 9 require at least 24 semester-hours in which cases a thesis may be required. In 6 cases 30 semester-hours are required, the thesis included, in at least 4 of these cases. One school requires 32 semester-hours, including also the thesis. Among the other institutions included in our study, 8 require 24 semester-hours in addition to a thesis in nearly all cases; 6 require 30 semester-hours, the thesis being included in at least 3 instances. Two institutions require 32 semester-hours, including the thesis.

THE PROGRAM OF STUDY: MAJOR AND MINORS

The program of study leading to the master's degree is a highly individual matter; however, certain practices are noted with respect to the proportion of courses that are limited to graduate students only, which must be taken, as well as to the distribution of the courses between the major and minor fields.

In 1 case three-fourths of all work for the degree must be in courses limited to graduate students; in another case the proportion is two-thirds; in another, three-fifths; in 5 cases, at least one-half; in another case, one-fifth. In 2 institutions at least 2 courses limited to graduate students must be taken, and in 1 of these cases at least 1 such course is required each semester.

In 14 institutions the major subject must constitute at least half of the work required for the degree; in 7 institutions at least two-thirds; in 1, three-fourths; in 6, at least

three-fifths; in 1, 22 of 32 semester-hours; in another, 20 of 32 semester-hours must be in the major. In 1 institution 3 plans are offered: All work in one field, or a major and a minor, or a major and 2 minors. In another school the work is restricted to a maximum of 3 departments. In 1 institution the work may be divided into 2 equal majors known as a joint major.

There is considerable freedom in the treatment of the minor subject. In at least 10 institutions a minor subject is definitely prescribed and the minimum credits assigned. In 2 cases it should constitute one-third of the program; in 3 cases, 6 semester-hours are indicated; in 1 case, 7 to 12 semester-hours; another, 9 to 12 semester-hours; others, 8, 10, and 12 semester-hours, respectively. In 2 cases, 2 minors are required with 6 semester-hours in each in 1 school, and 15 hours divided between 2 minors in a suitable way in another school. In 2 other schools a maximum of 2 minors may be permitted. Nevertheless, a large proportion of the institutions under consideration avoid definite requirements as to the major and minor. In such cases emphasis is placed on a unified and well-coordinated program based upon the students' needs and such treatment as the subject chosen may demand under the advice of the major department.

THE FOREIGN LANGUAGE REQUIREMENT

Attention was called to the fact that the foreign language requirement constituted one of the important requirements for admission to candidacy. At this point the character of the foreign language requirements for the master's degree will be considered.

In 7 institutions at least 1 foreign language is required; in 7 institutions either French or German are specifically indicated. In 4 of these cases substitutions of other languages may be made. In 11 institutions the foreign language requirement varies largely according to departmental requirements; however, at least 1 foreign language is usually required. Two foreign languages are required at 4 schools, 12 require both French and German, and additional languages if work requires them. One school, Bryn Mawr, requires 3 languages, French, German, and Latin.

In 1 institution the 10 semester-hours undergraduate requirement in modern foreign language is sufficient and in another the meeting of the undergraduate admission requirement in foreign language is sufficient.

In general, the tendency seems to show that the language requirement should have relation to the problems of study for that reason Latin, Greek, Scandinavian, and other languages may be accepted as a part of the foreign language requirement when one or more are essential to the program of study or research.

THE THESIS REQUIREMENT

In 44 institutions of our list a thesis or dissertation is required for the master's degree. In 5 of the larger universities the thesis is not required by all departments. In 1 institution 2 plans are available—1 which requires a thesis and 1 that does not. In the first case 20 semester-hours of work are carried out along a comprehensive supervised plan of research which leads to the thesis. In the other plan, course work amounts to 24 semester-hours, half of which are in strictly graduate courses. No thesis is required. In another school a summary course or laboratory course of a research type may be substituted for the thesis.

In general, the thesis must show ability to think independently and to carry forward a specific problem to its logical or scientific solution. It is not necessary that the thesis be a basically original piece of research. It must be presented in good form and in good English.

EXAMINATIONS

In only a few instances are preliminary examinations required for the master's degree, but final examinations are for the most part required. It is almost impossible to classify the types of examination that are required, as each institution combines one or more ways of testing the final results of the student's scholarship. A general statement such as the following may serve to indicate the practices. In at least 28 cases a final examination covering primarily the major is required; it may be written, oral, or both. In 10 cases regular course examinations are also indicated. In 5

cases, the examination may be waived by the authority of the department. In 17 cases final oral examinations are required covering usually the entire field of study, as well as the thesis. In at least 7 cases the oral examination is required in addition to the written final examination. In only 1 case is there a requirement for the defense of the thesis.

GRADES

As a part of the requirements for admission to candidacy the student must show by former record, as well as by a period of trial, that the quality of his work is above the average. In many cases are found specific requirements as to the grades that must be obtained in order to gain graduate credit for courses taken.

In 8 cases in which data are available we find 4 schools in which only B grades will be counted for credit toward the master's degree; in 2 cases an average of B must be maintained. In one school a minimum grade of C is required, and a grade of B or better must be obtained in courses primarily for graduates. In courses for graduates and undergraduates a minimum grade of B is required. In 1 case 80 percent at least must be obtained for all courses for graduates and advanced undergraduates, and in not less than two-thirds of all the courses primarily for graduates. In another school "Only courses in which the student is assigned grades A, B, or C are acceptable for the master's degree and an average of 2 grade points per unit in those courses and in all courses elected during the candidacy for the degree is required. Three points per unit are assigned to grade A; 2 points to grade B; 1 point to grade C; and none to grades below."³

4. SPECIAL TYPES OF THE MASTER'S DEGREE

THE MASTER'S DEGREE IN EDUCATION

In 1930, there were 139 institutions that offered graduate degrees in education. Of these 12 offered the A. M. in edu-

³ University of California, announcement of graduate division, p. 49. June 1931.

cation: 17, the M. S. in education; and 24, the master of education. At least 101 of the above-mentioned institutions also offered the A. M. degree and 56 the M. S. degree. In the most of these cases a major in education was permitted. Data giving the distribution of these institutions with the master's as well as the doctor's degree offered can be found in the Survey of the Education of Teachers.⁴

Other information regarding the development of graduate courses in education of different types is also given.

The requirements for the master's degree in education are not included in this study because, in 1931, Prof. J. Orin Powers, of George Washington University, made a careful investigation of these requirements, the findings of which were incorporated in the 19th Year Book of the National Society of College Teachers of Education.⁵

THE MASTER'S DEGREE IN ENGINEERING

Perhaps next in numerical importance are the master's degrees in engineering. The figures obtained by this office in 1932-33 indicated that in 145 schools of engineering 1,026 master's degrees in engineering were granted. These included the following types and their corresponding numbers: M. S. in electrical engineering, 227; M. S. in chemical engineering, 167; M. S. in civil engineering, 154; M. S. in mechanical engineering, 131; M. S. in engineering (general), 78; M. S. in metallurgy, 31; M. S. (naval engineering), 26; M. S. in chemical engineering practice, 23; M. S. in trades and industrial engineering, 23; M. S. in mining engineering, 18; M. S. (without designation), 17; M. S. in transportation, 14; M. S. in ceramic engineering, 13; M. S. in architectural engineering, 10; M. S. in business and engineering administration, 9; M. S. in industrial engineering, 8; M. S. in naval construction, 7; M. S. in aeronautical engineering, 6; master of mechanical engineering, 6; M. S. in hydraulics, 5; M. S. in railroad operation, 5; M. S. in fuel and gas operation, 5; M. S. in petroleum engineering, 5; M. S. in metallurgical engineering,

⁴ John, Walton C. Graduate work in the Education of Teachers. In the National Survey of the Education of Teachers. Vol. III, pt. VI. (U. S. Office of Education, Bulletin 1933, no. 10.)

⁵ Freeman, Frank N. Practices of American universities in granting higher degrees in education. Chicago. University of Chicago Press, 1931.

4; M. S. in engineering mechanics, 4; M. S. in sanitary engineering, 3; M. S. in agricultural engineering, 3; M. S. in electro-chemical engineering, 3; M. S. in railway engineering, 3; master of civil engineering, 3; M. S. in highway engineering, 2; M. S. in public health engineering, 2; M. S. in geological engineering, 2; master of electrical engineering, 2; master of chemical engineering, 2; M. S. in general engineering, 1; M. S. in shop practice, 1; M. S. in structural engineering, 1; M. S. in geology and mining, 1; M. S. in aeronautics, 1; total, 1,026.

In addition to these, mention may be made of several other types of master's degrees offered by the institutions listed in this study, including the LL. M., M. S. in commerce and finance, master of business administration, M. S. in agriculture, M. S. in home economics, M. S. in architecture, M. A. in social administration, master of music, master of forestry, M. A. in medicine, and M. A. in hygiene, etc. In the space permitted it is not possible to analyze the requirements for the aforementioned degrees, or even others that are not indicated. These different types of master's degrees have already been listed in chapter I, pages 17 and 18.

For a discussion of standards for the master's degree in agriculture and home economics see volume II of the Survey of Land-Grant Colleges and Universities, Office of Education Bulletin 1930, No. 9.

5. SUMMARY

There has been little change in the formal standards set up for the master's degree since 1900.

The quantitative standards and requirements for the M. A. and M. S. degrees are practically identical.

With the exception of three institutions that have endeavored to bring the master's degree to a level 2 years above the bachelor's degree, there is everywhere a general agreement of a minimum requirement of 1 scholastic year's work above the baccalaureate. The quantitative requirement of 30 semester-hours, including a thesis, or 24 semester-hours plus the thesis is a conventional practice.

In general, a foreign language requirement involving the knowledge of at least one foreign tongue is essential, but a

few institutions or departments in certain institutions may waive this requirement.

The thesis is still required in most schools. Only a few exceptions to this requirement have been observed. There appears to be little or no uniformity in the matter of the requirement of the final examination or in the method of conducting it.

The master's degree has come to be highly differentiated, as far as designation is concerned.

CHAPTER VII

THE REQUIREMENTS FOR THE DOCTOR'S DEGREE

1. INTRODUCTION

The degree of doctor of philosophy represents the highest academic goal of the university. It stands for the best that there is in original and independent scholarship. Its function is the discovery of truth; to reveal the unknown and to give more perfect understanding of that which is known. Other degrees more or less equivalent in character include the doctor of science and doctor of education. To these may be added cases of other specialized forms occasionally granted such as the doctor of engineering, doctor of letters, doctor of foreign language, doctor of the science of the law, doctor of medical science, doctor of public health, etc.

In the analysis of the requirements for the doctorate for the institutions included in this study, it is not the purpose to overestimate the importance of the more objective or quantitative requirements. The true requirements for the degree can only be estimated in terms of the spirit and the intellectual quality of the candidate and in the intensity as well as in the scope of the program of investigation. Nevertheless, because of the increase in the numbers of institutions offering the doctor's degree and the great increase in the number of such degrees granted in recent years, there have arisen many requirements and practices by no means uniform in character. It is hoped that the following analysis will prove helpful in establishing a better understanding of essential practices in their various relationships and thus be of some aid in the furthering of true scholarly achievement.

The standards and requirements for the doctor's degree are based on a study of the 28 institutions that are members of

the Association of American Universities in the United States and of 17 accredited institutions that are not members.

2. THE DEGREE OF DOCTOR OF PHILOSOPHY

The standards for the Ph. D. degree will be considered from the standpoints of admission to candidacy, program of study, the thesis, and the final examination.

ADMISSION TO CANDIDACY

Admission to candidacy for the Ph. D. usually involves the fulfillment by the candidate of each of the following requirements:

- A. The attainment of full graduate status.
- B. The approval of the study or research program.
- C. The demonstration of ability to read acceptably the literature of the field or fields of study in French and German or some substitute for one of the languages.
- D. The passing of a preliminary or qualifying examination usually a year before the time of receiving the degree.

Other requirements may be made by individual schools, but the above are recognized as being general.

THE ATTAINMENT OF GRADUATE STATUS.—Graduate status in the institutions considered is normally obtained by the presentation on the part of the candidate of the proper credentials showing that he holds a bachelor of arts degree or a bachelor of science degree or the equivalent of such a degree from an approved college. In addition the candidate must show, either by the grades he has already received or by a short period of residence or by some other measure of aptitude, that he is capable of pursuing graduate work with profit. The undergraduate program must indicate adequate support for such specialized study as may be desired. The details of practice in a large group of schools regarding the attainment of graduate status have been given in the first part of chapter V, and are therefore omitted here.

APPROVAL OF CANDIDATE'S PROGRAM OF STUDY.—The program of study must have the approval of the proper authorities. This includes the approval by the candidate's major professor, and in most cases by the students' advisory

committee. Significant practices of individual institutions follow:

University of California.—The approval of the proposed comprehensive plan of study is made by the department or departments concerned and by the graduate council.

Stanford University.—The application giving the proposed program of study and dissertation subject is filed, approved in writing by the executive heads of the schools or departments concerned² who certify to the candidate's ability.

Georgetown University.—The faculty must approve the course of study.

Indiana University.—The requirements of the student's special advisory committee must be met. This committee usually consists of five members representative of the major and minor fields, and sometimes includes someone entirely outside of these fields. This committee is named by the dean on recommendation of the head of the student's major department.

University of Chicago.—The requirements vary somewhat according to the division in charge. In the division of biological sciences the student must have a definitely formulated program of work approved by the department and filed in the office of the dean of students. In the division of the humanities, the subject of the dissertation must be approved by the department at least 12 months before the date of the final examination.

The departmental and group counselors will provide programs of work leading to the tests for the doctor's degree to occupy the working time of the student for not more than 15 quarters after his entrance into the division and in which at least two-thirds of his working time shall be devoted to the intensive study of his special field or fields. * * * Not later than his tenth quarter of residence, a candidate for the doctor's degree must prove his capacity for research work, either by the successful completion of the work described * * * or by some equivalent tests. Failure to pass such a test of his capacity will disqualify the candidate from taking the comprehensive tests for the doctor's degree.³

³ The University of Chicago. Announcements, arts, literature, and science, 32: 32, Feb. 15, 1932.

In the division of the social sciences, fulfillment of the special requirements of the department or interdepartment committee on specialization is required.

Johns Hopkins University.—The program of study is prescribed by the department in which the candidate is specializing, and may "represent work done wholly within the department or may include such supplementary work in another department as the committee in charge of the candidate's study may direct. In any case this program must be so unified as to contribute to the highly specialized study which is characteristic of work leading to the doctor's degree."²

Harvard University.—The student's program is adjusted in consultation with the chairman of the division concerned.

University of Michigan.—The student is placed by the dean of the graduate school under the supervision of a special committee. The dissertation subject is chosen and approved by the committee concerned at least two semesters before the candidate is to present himself for examination.

University of Minnesota.—The program for the first year's work must be approved by the student's chosen adviser and by the dean of the graduate school. At the beginning of the second year's work approval is secured for a tentative outline of the remainder of the 3-year graduate program. During the second quarter of the second year, the dissertation subject is approved by the student's adviser to be placed on file. At the close of the second year's work, written recommendation is obtained from the major department members of the graduate faculty.

University of Nebraska.—The candidate's program of studies and dissertation subject is subject to the approval of a supervisory committee consisting of 9 members, 5 from departments in which the student works and 4 from outside departments. This body serves as the committee for the final examination.

Columbia University.—Before admission to candidacy the student must have pursued graduate studies in residence

² The Johns Hopkins University Circular. School of higher studies of the Faculty of Philosophy, April 1931, p. 24.

in that university or in some other institution approved by it for the equivalent of at least 1 academic year as defined by the regulations of the university. In some departments the requirement is different. The department of physics requires 45 points or about a year and a half of work to be completed before matriculation. The department of geology finds 2 years of preparation necessary in most cases. In the division of history, economics, public law, and social sciences, the student's ability to make researches and to express himself in correct English must be demonstrated in an essay submitted for this purpose. In mathematics, some definite research work must be completed prior to matriculation. In the division of chemistry, certain specified courses must be covered before a student is matriculated and admitted to research for a dissertation.

Western Reserve University.—The proposed plan of work must be approved by a special committee of three appointed by the dean and finally by the administrative board of the graduate school.

University of Oklahoma.—The report of the committee to the graduate council must include (1) a statement of the nature and scope of the examinations and results, (2) the plan of further graduate study, (3) the subject of the thesis and plan for the completion of the research, (4) certification that the language requirements have been met.³

University of Pittsburgh.—Approximately 2 full years of work in the graduate school are required. An informal advisory committee of three members, including the student himself, is responsible for outlining the course of study. The major field must be selected after the student has earned approximately six credits. The dean passes judgment on all programs.

Bryn Mawr College.—The committee on graduate study must approve the student's preparation in the proposed major and minor fields.

University of Pennsylvania.—A prospective candidate shall designate his major subject and shall obtain the ap-

³ University of Oklahoma. Bulletin, graduate school announcements, 1931-32. March 14, 1931, p. 17.

proval of the chairman in that subject for all work taken toward that degree.⁴

University of Virginia.—The committee on rules and courses considers the candidate's program of studies and upon final approval leads to admission to candidacy.

The University of Wisconsin requires that the student's program be under the direction of the major professor. As a part of the application for admission to candidacy the student must show the scope of the proposed minors with the approval of the professor in charge of each minor. The title of the thesis, subject to future verbal change, approved by the major professor, must also be submitted.

ABILITY TO READ FRENCH AND GERMAN.—Usually the third step in obtaining admission to candidacy for the Ph. D. degree is the demonstration of the candidate's ability to read acceptably the literature of his field or fields in both French and German. This language requirement is in force in most of the institutions under consideration. In a great many cases another language may be substituted for either French or German. Other exceptions and special features of interest are given herewith.

University of California.—A reading knowledge of French and German is required. This requirement must be satisfied before advancement to candidacy for the Ph. D. degree. The applicant must pass an examination consisting of translation of a passage from each language of at least 250 words, so chosen as to be typical of the literature of the proposed field of study. The examination shall be under the charge of the committee appointed to conduct the qualifying examinations, which shall be responsible for reporting the results. This committee may itself set the examination or may delegate the conduct of the examination to a committee or to a department. The translation must be made without the aid of a dictionary. Copies of the original passages and the translations shall be filed with the dean of the graduate division. The department or group of departments primarily concerned with the applicant's field of study may, with the approval of the graduate council, substitute the requirement of another foreign language for either French or German if in any specific case such a substitution is deemed desirable. In exceptional cases, foreign Oriental students may on recommendation of the committee conducting the qualifying examinations, substitute English for either

⁴ University of Pennsylvania. Bulletin of the graduate school, 1932-33, p. 26.

French or German in the following departments: Agriculture, economics, education, political science, psychology.⁵

Yale University.—The candidate must have a certification of proficiency in whatever foreign language or languages the student's department requires. The general and specific requirements are summarized as follows:

1. General requirement, a knowledge of both French and German. Substitution of another language (as in American History, where Spanish may be substituted for German) is sometimes permitted by the committee on the Ph. D. degree. This rarely happens, however.
2. In several departments of study (as in the division of language and literature, in history, and in some sections of religion) a knowledge of Latin and other languages is required.
3. In some departments (as in chemistry, physics, and psychology) the student must possess a knowledge of 2 foreign languages 2 academic years before the degree is to be conferred.
4. In chemical engineering the student is required to possess a knowledge of either French or German 2 academic years before the degree is sought, and a knowledge of both French and German 1 academic year in advance of his degree.
5. In English a knowledge of French, German, and Latin is required 2 academic years before the degree is to be conferred.

Evidence of sufficient attainments in one of the required languages must be given by examination, written or oral, or both, at the stated language examination period of the first semester of graduate work. The second language examination should be taken within 12 months after the first. The examination in the second language may be postponed until the stated language examination period of the semester in which the candidate expects to take the written examination in his major subject. But the candidate will not be admitted to this written examination until he has fulfilled all language requirements. The written examination must be passed 1 year before the candidate presents himself for the degree.

Catholic University of America.—No substitutions are allowed for either French or German, and other languages may be required.

University of Illinois.—Ability of the student to read one of these two languages (French or German) or other lan-

⁵ University of California Bulletin. Announcement of the graduate division for the academic year 1932-33, pp. 58-59.

guages needed in his work is required before being permitted residence credit toward the second year of graduate study. Ability to read both French and German is required before the student can be admitted to the preliminary examination in major and minor subjects.

University of Chicago.—The division of the biological sciences may under certain conditions admit the substitution of other languages for French and German. The division of the humanities requires demonstration of reading knowledge in French and German at least six quarters before the final examination for the degree. The division of the physical sciences requires a reading knowledge of German and an approved romance language, and the division of the social sciences requires demonstrated the ability of the candidate to read in French or German and one other modern foreign language approved by the department or interdepartmental committee of specialization.

Northwestern University.—The application for admission to candidacy cannot be made without the certification of the candidate's ability to read the literature of his primary subject in both French and German.

Purdue University.—An oral examination must be passed to meet the foreign-language requirement. Candidates majoring in engineering must qualify in either French or German; others in both.

State University of Iowa.—The reading knowledge of French and German is preferably certified at the time of registration; otherwise the student must enroll immediately in a language course that carries no credit.

Johns Hopkins University.—The student must show that he can translate at sight not less than two modern foreign languages as determined essential by the department in charge. The language examinations are conducted by the language departments concerned.

Harvard University.—A reading knowledge of German and French is required. This knowledge is tested by the division concerned.

University of Minnesota.—The foreign-language requirement must be met by examination before the candidate can be admitted to the preliminary examination. A knowledge

of other languages may be required in certain cases by the head of the department. However, the substitution of other languages than French or German is made with the permission of the executive committee of the graduate school, upon recommendation of the student's group committee if it is thought that such substitution will be of greater service in the study of the major field.

University of Missouri.—Ability to translate French and German readily at sight must be shown. A substitution for either French or German is rarely permitted. In the case of a candidate for the doctorate majoring in French or German, some other language, modern or ancient, shall be substituted for the language of the major.

Princeton University.—The candidate must show ability to use one foreign language—French or German—by the end of the first year and ability in both by the end of the second year.

Columbia University.—The faculties of political science, philosophy, and pure science through their respective departments require that the applicant must have satisfied the department concerned that he is proficient in such languages as it may under the rules of the faculty prescribe. The requirement most often made is the traditional one—a reading knowledge of French and German. Those specializing in English and comparative literature must show ability to read Latin. Those specializing in history may have the language requirement modified to meet the student's special needs. Ten languages are listed and definite suggestions are published.

Cornell University.—A working knowledge of French and German must be evidenced before the second year of residence is begun, and preferably earlier.

Duke University.—French and German are ordinarily required, the requirement of one to be satisfied at the beginning of the second year and the other at the end of the second year. Examinations are held by the appropriate language department in conjunction with the student's major department.

Ohio State University.—A reading knowledge is required of at least two foreign languages, usually French and Ger-

man in which there is a substantial body of scholarly literature pertaining to the student's field of specialization. This general requirement may be made more specific or enlarged in scope by any given department subject to the approval of the council.

University of Pennsylvania.—With the approval of the group committee in the major subject, some other foreign language may be substituted for either French or German. Language tests are made by the corresponding language departments, and must be passed before admission to the preliminary examination and, in case of students who have enrolled in the graduate school since June 1927, at least 2 years before the final examination.

University of Pittsburgh.—Evidence of a reading knowledge of French and German is required, but some other combinations of modern languages may be submitted. Also an important instrument of research such as advanced statistics may be offered for one of the languages.

Bryn Mawr College.—The committee on graduate study must approve the candidate's equipment in French, German, and Latin.

University of Wisconsin.—Does not permit any substitutes for French and German and certificates of such reading knowledge from other institutions are not accepted. Certificates of ability to read French and German must be secured from the departments of French and German of the university before the candidate can take the preliminary examination. The university, in addition to these, may require the use of any other foreign language essential to the work of the major subject.

THE PRELIMINARY OR QUALIFYING EXAMINATION.—The fourth and doubtless the most important of all the requirements for admission to candidacy for the Ph. D. degree is the preliminary or qualifying examination. This is usually taken after all other requirements for admission to candidacy have been met, although some of these requirements such as that in foreign language may be considered a part of the examination. In very few cases is this examination optional with the department concerned, and in only one school is there an indication that it may be waived.

Because of differences in method of administering this requirement as well as variations in the requirements themselves, practices of a considerable number of universities will be described.

University of California.—In order to be admitted to candidacy a student must have attained full graduate standing, and must have passed a series of qualifying examinations. These include the foreign-language tests.

Stanford University.—In order to determine fitness to fulfill the major and minor requirements the candidate is examined orally or in writing by the schools or departments in which he proposes to work for a degree. This examination is required in order to apply for candidacy during the second year of study and not later than the fourth week of the last year of candidacy.

Yale University.—Qualifying tests may be required subject to the will of the department and are usually given about a year in advance of the expected conferring of the degree.

Catholic University of America.—The candidate at the end of 2 years of graduate study or 1 year before presenting himself for the degree must pass a written examination of broad and intensive character in his major subject. The papers after being passed on by the professors concerned are reviewed by the graduate council.

University of Illinois.—Toward the end of the student's second year of study or by special permission not later than the first Saturday in October, in the third year, he must take a preliminary examination in the fields of his major and minor subjects only. The examination is partly oral and may be entirely so. The student must have finished substantially 2 years of graduate work before this examination and he must do a full year's work between this examination and the completion of his work for the degree.

University of Chicago.—Preliminary examinations are specified as follows: Division of the biological sciences, school of business, division of the humanities (the test for this division must be taken not later than the student's tenth quarter of residence, and must prove the candidate's capacity for research work); the division of the physical sciences may require a preliminary examination to demonstrate the can-

didate's factual and theoretical knowledge in his major field; the division of the social sciences likewise requires a preliminary examination covering the general fields of study required for the degree.

Purdue University.—A preliminary examination both oral and written is held toward the close of the second year of work. It is designed to test the student's progress and determine the probability of his success in the work remaining, as shown by his accomplishments and attitude. In case of an unfavorable report a second examination may be permitted after an additional semester of work has been completed.

State University of Iowa.—At least 1 academic year before the degree is to be conferred, a qualifying examination which shall be at least in part written, shall be prepared and given to each candidate by a committee of 5 appointed by the dean. If in the judgment of the major department a test of the candidate's fitness to do the work for the doctorate can wisely be determined at the time of the master's examination, this examination may, at the request of the student and upon recommendation of the major department, be designated as the qualifying examination.⁶

Johns Hopkins University.—No mention is made of a preliminary examination for admission to candidacy; however, it is stated, "The candidate shall be subject to such written and oral examinations as may be prescribed by his department. These examinations may be taken at any time during the candidate's residence."⁷

University of Michigan.—After a candidate has completed all work except the dissertation, he may be given a preliminary examination covering this work. Many departments have recently decided to require preliminary written examinations. This type of examination is conducted by the special committee in charge of the candidate's work as well as by others appointed by the dean.⁸

University of Minnesota.—A preliminary examination must be taken, after the language examination, at least 7

⁶ State University of Iowa. Bulletin. Catalog number for the sessions of 1931-32, including announcements for the sessions of 1932-33, pp. 98-99.

⁷ The Johns Hopkins University Circular. School of higher studies of the faculty of philosophy. Announcements of courses, 1931-32. Baltimore, April 1931, p. 25.

⁸ University of Michigan. Graduate school announcements, 1931-32, p. 18.

months before the degree is conferred. The examination is given by a committee appointed by the dean of the graduate school and includes the student's adviser who is chairman, a representative of the group committee other than the adviser, the chairman or head of the major department, a representative of the minor department, and such other members as the dean may name. This examination may be written or oral or both and shall cover graduate work previously taken by the student and may include any work fundamental thereto, except the thesis and the field of definite specialization. This examination is in addition to the usual course examinations. Students failing to pass this examination may be excluded from candidacy for the degree and in any case shall not be reexamined until at least one-quarter has passed.⁹

Washington University.—The student is required a satisfactory passing, at the option of the departments concerned, of a written preliminary examination not later than 1 year previous to the conferment of the degree. This examination comprises a summary of course-work and general attainments in which the various subjects are reviewed and the student's grasp of facts and principles is measured. This test takes the place of all written work at the time of the final Ph. D. examination and is designed in certain departments to give the student greater freedom for research and readings during his final year of candidacy.¹⁰

University of Nebraska.—A student is formally admitted to candidacy when he has passed the comprehensive examinations in major and minor subjects and when his candidacy has been approved by the supervisory committee. These examinations are taken toward the close of the second year of study or at the beginning of the year in which the degree is to be taken. This examination is not to cover courses already taken but covers thoroughly the candidate's special subjects and the broader fields of knowledge of which these subjects are a part. This examination is conducted by the supervisory committee of the student.

⁹ University of Minnesota. The graduate school announcement for the years 1929-31. p. 18.

¹⁰ Washington University, Handbook of the School of Graduate Studies, September 1930, p. 11. St. Louis, Mo.

Princeton University.—The examination for the degree of doctor of philosophy consists of two parts, known as the first part and the second part. The first part of the examination for the doctor's degree is designed to test the student's mastery of his subject of study and is to be held not earlier than toward the close of the second year of graduate study, 1 year of which shall have been spent at Princeton.¹¹

No graduate student shall be enrolled as a candidate for the degree of doctor of philosophy until he has satisfactorily sustained the first part of the examination for the doctor's degree as described above.¹² This examination may be oral or written or both. See page 185 regarding second part of the examination.

New York University.—At least 7 months prior to date of graduation the preliminary examination prescribed in each department must be passed.

Columbia University.—The candidate must have satisfied such preliminary examinations or requirements as the department of study may demand. In most departments, matriculation is conditioned upon the passing of a definite test or series of tests on departmental subject matter, taken ordinarily near the close of the first year of work.

- (1) In the division of modern languages and literatures, a preliminary test is given during the registration period to determine the fitness of the prospective candidate for proposed studies, the regular matriculation examination being given later as in other departments.
- (2) In the division of history, economics, public law, and social science, 6 months is to intervene between the fulfilling of the language requirement (including satisfactory English expression) and the qualifying examination.
- (3) By two departments the provision is stated that a reexamination is permissible, but not a third trial.

Cornell University.—A qualifying examination is required of each Ph. D. candidate which is held usually not later than the close of the second year of residence. This examination must precede by at least two terms the final examination. The special committee in charge of the student may waive the qualifying examination in whole or in part;

¹¹ Princeton University, Official Register, Catalog Issue, 1931-32. November 1931, pp. 292-293.

¹² Ibid.

but the committee must report to the dean as to whether the candidate is qualified to proceed in due order to complete the requirements for the degree. If the candidate fails in this examination, he may be reexamined only on recommendation of the special committee.

University of North Carolina.—The student must pass a preliminary oral examination given by the special advisory committee in charge of the candidate's work and all members of the staff of the major and minor departments. This examination shall cover all the work of the first 2 years of study and shall be held at least 1 academic year prior to the time of the granting of the degree.

Ohio State University.—The candidate must take a general examination not later than the middle of the third quarter prior to the date at which the candidate hopes to come up for his degree. The examination is written but may be supplemented by an oral examination at the will of the committee in charge, which consists of the candidate's adviser, the chairman of the major department, other examiners designated by the dean including two not members of the department concerned. The examination covers the fundamentals of the entire field of specialization and is not limited to the particular courses pursued.

Western Reserve University.—A preliminary examination, oral and written, must be taken as the departments may prescribe not later than November 15 of the year of graduation.

University of Oklahoma.—Recommendation to candidacy depends upon the previous record of the student and the result of formal written examinations and an oral examination before the student's committee. The examinations cover the major and minor subjects as well as the cognate fields required.

University of Pennsylvania.—A preliminary examination based upon the field of the major subject is required. The form of this examination is determined by the student's group committee. This examination cannot be held until the foreign-language examination has been passed, and at least 1 year before the final examination.

Brown University.—The preliminary examination is to be held ordinarily not earlier than toward the close of the sec-

ond year of work and ordinarily not later than the fourth Wednesday of the academic year in which the student expects to be a candidate. Upon failure to pass this examination, a second examination may be permitted by the council not earlier ordinarily than 5 months after the first. If the second examination proves unsatisfactory no further examination will be set.

University of Texas.—The candidate may be required to pass a preliminary examination before admission to candidacy at the option of the department.

FILING OF PETITION FOR ADMISSION TO CANDIDACY FOR THE PH. D. DEGREE.—The formal filing of a petition to the dean of the graduate school is generally the concluding procedure in obtaining admission to candidacy for the Ph. D. degree, and in most institutions is conditioned on the complete fulfillment of the requirements for candidacy already listed. The essential features of the procedures used are as follows:

University of California.—Approximately 2 semesters of resident study shall intervene between the date of formal advancement to candidacy and the date of the final examination. The candidate reports in person to the dean who determines whether all formal requirements have been met. The candidate must file his application properly approved by the committee who conducted the qualifying examinations.

Stanford University.—If the candidate passes the preliminary examination in the major and minor subjects in addition to the foreign language requirement, he may file an application for admission to candidacy, approved in writing by the executive heads of the schools or departments concerned, certifying that the candidate is qualified to undertake work for the Ph. D. degree. Applications are usually made during the second year of graduate study and not later than the fourth week of the last academic year of candidacy.

University of Colorado.—The formal application must be made not later than the beginning of the student's last year of residence.

Catholic University of America.—No formal application for an advanced degree will be given final approval by the council until such application bears on its face that all language requirements have been met.

University of Chicago.—The division of the physical sciences requires that admission to candidacy should take place not fewer than 8 calendar months before the date of the final examination for the degree. This requirement is also indicated by the division of the social sciences and implied by other divisions.

Northwestern University.—Application for admission to candidacy should be filed with the dean of the graduate school a year before the date of the final examination and must be filed at least 7 months before this date.

Purdue University.—The formal application must be filed during the latter half of the second year of resident study.

University of Kansas.—As early as possible in the course of his graduate study the student should file an application for the approval of his candidacy with the dean of the graduate school. In this application the major field and the first and second minor fields must be stated.

Johns Hopkins University.—The school of higher studies of the faculty of philosophy requires that in order to be enrolled formally for a degree the student must make written application at least 1 academic year before he expects to present himself for his final examination. Prior satisfaction of the foreign-language requirements is essential before making this application.

Harvard University graduate school of arts and sciences.—Not later than January 15 in his final year of preparation for the degree the student shall file at the office of the graduate school a formal application to be placed on the list of candidates having the written approval of the chairman of the division concerned.

Clark University.—Application for admission to candidacy must be filed not later than November 1 in any academic year by students who hope to receive the degree at the end of that academic year.

University of Michigan.—A student wishing to become a candidate for the doctor's degree must make a formal application to be so enrolled at least two semesters prior to the time for presenting himself for examination. At this time the dissertation must be chosen and approved by the committee concerned.

University of Missouri.—The student must declare his candidacy by filling out, not later than the beginning of his second year of graduate work, a blank form provided for the purpose, secure the signature of his adviser and present it to the dean of the graduate school for approval. If approved the dean, in consultation with the student's adviser, appoints an advisory committee to confer as to the future work of the candidate.

Duke University.—The application is made at the beginning of the second year's work.

Ohio State University.—The formal report of the committee on the candidate's general examination, if favorable, and when properly signed, constitutes the candidate's petition for admission to candidacy.

University of Texas.—The candidate should not make formal application for candidacy until he is sufficiently known by his instructors. The application must be endorsed by the students' supervisory committee, showing his status and other necessary qualifications.

University of Virginia.—The application for advancement to candidacy should be submitted to the dean not later than October 15 of the session school year preceding the final year of candidacy for the degree, and must be submitted by October 15 of the final year.

University of Wisconsin.—When the preliminary examinations have been taken the candidate shall file with the dean a formal application to be admitted to candidacy for the doctor's degree. The application also contains the statement as to the fulfillment of other prerequisites for candidacy.

THE QUANTITATIVE REQUIREMENTS FOR THE PH. D. DEGREE

The principal quantitative requirements relating to the Ph. D. degree include the number of years of residence, the number of credit hours, and the amount and proportion of the major and minor subjects.

YEARS OF RESIDENCE.—In general the minimum period of full and continuous residence required at any graduate school for the attainment of the doctorate is 3 academic years if

the candidate holds an approved bachelors degree. Of these 3 years the last year must be in residence at the institution where the degree is granted although in several cases a year's residence during the first 2 years of the 3 may be acceptable. At Bryn Mawr College the student must reside at the college at least 2 of the 3 years required. At Iowa State College the minimum period is from 1 to 1½ years. Even these residence requirements may be subordinated to the needs of research if the interest of the problem demands it. In a few institutions the minimum total residence requirement may be reduced to 2 years; among this group we find the University of California, State University of Iowa, Johns Hopkins University, University of Chicago, Harvard University, Princeton University, Columbia University in certain departments, and the University of Rochester.

The maximum time allowed for completing the work for the Ph. D. degree varies somewhat in the few cases at hand; credit is not granted for work that was done 6 years prior to time of graduation at Georgetown University, 7 years at the University of Pennsylvania, and 10 years at the University of North Carolina and New York University. At Duke University work that has been scattered over a long period, or that is fragmentary in character, is not accepted toward the Ph. D. degree.

CREDIT REQUIREMENTS.—With very few exceptions the statement of the semester-hour credits or equivalent that are required for the Ph. D. degree are conspicuous by their absence in graduate school catalogs. Even in the few cases where a minimum requirement in hours is indicated all join in emphasizing the fact that the exact number of hours or courses is a very subordinate matter to the one aim of scholarly endeavor of a high order in carrying out such a program as may be deemed suitable for the problem at hand. At the University of Illinois after the first year of residence for the doctorate, credit is not recorded in units. It is possible for a second-year student to devote all his time to one course and his research and during the third year to devote all his time to his research. In general the University of Minnesota uses 15 credit hours a week as the basis for estimating the program. At the Catholic University of America

the first year is equivalent to that for the A. M., but during the second and third years the candidate may follow the same plan as that of the University of Illinois given above. The University of Colorado, the American University, University of Pittsburgh, each indicate a minimum requirement of 72 semester-hours plus the thesis.

THE PROGRAM, INCLUDING MAJOR SUBJECT AND MINOR SUBJECTS.—All programs of study leading to the Ph. D degree as represented by the institutions under consideration emphasize, first, a logical, unified program whatever the combinations of courses may be. The exigencies of the research problem or the thesis based upon it are important determining factors bearing on the concentration and distribution of courses or other forms of study necessary for successful results.

The advice of the major professor and of those professors concerned with the minor or subordinate subjects is required in setting up the program and their approval as well as that of the dean of the graduate school or unit is necessary. In a number of cases the program must receive the approbation of the graduate council.

As implied above it is the general practice to require a principal subject or field usually known as the major and at least one minor in a related field. In many cases the second minor is required and in certain cases it is optional. In special cases the student may concentrate in one field. Totally unrelated fields or subjects are not usually included in the doctoral program, in fact they are generally prohibited.

The amount of work in courses or credits in the major and minor subjects varies considerably and is difficult of accurate summarization; consequently the essential details of the major and minor requirements for the doctorate are given for the following institutions:

Members of the Association of American Universities—University of California.—The field of study may be in one department except for essential related subjects, or may represent combinations of departments. Each department is permitted to adopt regulations concerning requirements provided they are submitted to the dean and approved by the graduate council.

Stanford University.—Approximately two-thirds of the program should be devoted to the major subject. But in exceptional cases both minor subjects may be waived by the committee on graduate study upon recommendation of the department concerned.

Yale University.—No general statement is given but some departments require a major and two minors. Each department publishes its specific requirements as to program, choice of specialization, and minors, etc.

Catholic University of America.—A second-year student may devote all his time to one study and his research, and his third year to research alone. A major study is required to be pursued for 3 years, tested by special examination; a first minor which may ordinarily be absolved in 2 years and tested by comprehensive examination; a second minor, ordinarily absolved in 1 year and similarly tested.

University of Illinois.—The student chooses a major and one or two minors. If two minors are chosen one must be closely related to the major. It may be a division of the major. The other minor must then be taken in a department other than that of the major.

University of Chicago.—In the division of humanities the departmental requirements vary. There are differences also in the other major divisions. In the department of history the candidate must offer a program of study in 5 fields 4 of which must be in history and 1 in a related discipline. The program must be logical and approved by three members of the department who superintend the work of the candidate when the qualifying examination has been passed.

Northwestern University.—The candidate must give at least two-thirds of his time to advanced work in one department of study in the primary subject. In addition at least 15 semester-hours must be taken in courses outside of primary subject and as advanced as those of the C group (primarily for seniors) subject to advance approval of primary subject department and by board of graduate studies.

Indiana University.—The program may involve two or three departments. Both minors may be taken in departments related to but distinct from that of the major subject.

or one minor within the department of the major subject and the other in a department related to but distinct from that of the major.

State University of Iowa.—The student may select one major or one or two minors in a field so closely allied that the group constitutes a unity. *Special plans.*—Students duly recommended may pursue the individual plan, enjoying certain exemptions and exercising considerable initiative. Also a projected registration plan whereby, after establishing residence, students may pursue studies away from the university subject to detailed regulations and supervision.

University of Kansas.—A major and minors are required, the latter to be closely related to the major field. About one-sixth of the student's time to be devoted to the first minor and somewhat less to the second minor.

Johns Hopkins University.—The program is prescribed by the department and it may or may not include supplementary work in another department. The program must show unity appropriate to work leading to the doctorate.

Harvard University Graduate School of Arts and Sciences.—Ordinarily a year's work for a resident student consists of four full courses of advanced grade passed with distinction or an equivalent amount of research or special study under the direction of a member or members of the faculty. The curricular distribution is adjusted in each individual case. Acquaintance with his subject in general is required by the division committee and preparation in some special field of study within the candidate's chosen subject.

Clark University.—The student pursues with approval of his major department one major and one minor.

University of Michigan.—The practices vary according to different departments in which advisers and supervising committees direct the student in accord with their established policies, modified by his needs and interests.

University of Minnesota.—The program usually involves two departments. The major subject must be supported by 18 semester- or 27 quarter-credits of undergraduate work if the work was open to freshmen or 12 semester-hours or 18

quarter-hours if not open to freshmen. Not less than two-thirds of the student's time shall be spent on the major subject including the work on the thesis. During the last 2 years an average of one course per quarter in his major is required in addition to work from which thesis is developed. Not less than one-sixth of the total work of the 3 years shall be devoted to minor subjects. The minor must be taken in courses advanced enough to be included in those open to undergraduate and graduate students. The minor must be logically related to the major.

University of Missouri.—Studies shall be chosen from one or more departments; but shall in any case constitute a definite plan of training for research or scholarly investigation in some particular field.

Washington University (St. Louis).—A major and a minor or two minors logically related to the major subject are required.

Princeton University.—The program is planned for the individual student; a broad general knowledge of the chosen subject, with comprehensive and detailed knowledge of one main division is required for the candidacy examination. Work outside the subject chosen may be elected or required, subject to faculty committee's desire or approval.

Columbia University.—The following holds true with respect to graduate study.

Curricular distribution: No general faculty regulations on this point. Little use made of terms "major" and "minor."

- (a) In mathematics, student is required to offer 60 points in that department, except that a limited amount of work in mathematical physics may be accepted.
- (b) In history, at least 6 points must be taken in research courses. In philosophy, seminars are required.
- (c) The department of psychology calls for completion of 30 points of work subsequent to matriculation, 18 of which are prescribed courses. (Exceptions noted.)
- (d) Some departments encourage candidates to include in their program work in other departments. The division of chemistry requires a fixed amount of such work and publishes definite recommendations on this matter.

Cornell University.—A major and two minors are required.

Ohio State University.—It is required that the program should be designed so as to secure both a reasonable concentration and reasonable breadth of study.

University of Pennsylvania.—A major subject is required, approved by the chairman in that subject for all work taken toward the degree.

Brown University.—A major subject is required and one or two minor subjects may be taken. The selection of these is planned in consultation with the departments concerned with the approval of the graduate council. This work must be practically completed before the preliminary examination can be taken.

University of Texas.—A major subject and two minors are required. Three years of study is in the major field, and comprises two-thirds of the entire program. The minor requirement involves a first and second minor, which combined amounts to 1 year of work. Three-fifths of the time goes to the first minor, which is closely related to the major, and two-fifths to the second minor.

University of Virginia.—A major subject must be pursued for at least 3 years. A minor subject for at least 1 year and which must be closely related to the major. Regulations vary somewhat in the several departments.

University of Wisconsin.—The course must be unified and include the major and one or two minors. The major may be coextensive with the work of a single department, or with one of the subjects under which certain departmental plans of courses are arranged, or which may be constructed from two closely interrelated departments.¹⁸ The minor or minor subjects lie out of the field of the major but are cognate with it. In general the minor shall aggregate from a fourth to a third of the time of the entire program.

Nonmembers of the Association of American Universities.—*University of Colorado.*—The studies are divided into three groups, a major and a first and second minor. The first minor must include at least 18 credit-hours (12 semester-hours) of work, and at least 9 credit-hours (6 semester-hours) must be devoted to the second minor. At least one minor shall be in a different department from the major.

¹⁸ University of Wisconsin, The Graduate School Bulletin: 1931-33, p. 21.

George Washington University.—The consultative committee designates five or six fields of learning for which the applicant will be held responsible and will furnish an outline of the work to be done. Intensive study in a major subject is required.

Georgetown University.—The major subject must be pursued at least 3 years, 24 units required. The minor subjects to be divided between the first requiring usually 2 years, and the second, usually 1 year.

University of Kentucky.—One major and at least one and not more than two minor subjects are required. The candidate's principal work is in the major subject, which in general should represent two-thirds of the student's entire time for the doctorate. The minor fields must be of value in the major work and have the approval of the major department.

Purdue University.—In general, about one-half of the program is devoted to a scientific investigation, the remainder to course work. The major subject should receive approximately one-half the time and each minor subject one-fourth. One minor must be outside of the major field.

Iowa State College.—Major work in one department or subdivision of a department is required or, in exceptional cases, in two closely related subjects. The minor work should total one-fourth to one-third of the work for the degree. A first and second minor should be chosen, one from a department other than that of the major. Only one minor should be chosen if the major is divided.

Tulane University.—A major and one or two minors are required.

University of Maryland.—Thirty hours of minor work is required, and the remainder is in intensive study and research in the major field. The amount in major varies with departments and with individual needs.

Boston University.—A high degree of concentration is required. At least 24 hours in a major subject is required; the remainder may not be in more than two minor fields.

Massachusetts Institute of Technology.—The work for the degree consists mainly of scientific research and the preparation of a thesis describing it. This is supplemented by systematic advance in some branch of science or engineering

known as the major. A minor must also be taken in one other branch of engineering or science. Usually only one is required, and consists of 25 units (M. I. T.) of work more advanced than that required in the undergraduate curriculum. Under the advice of the committee on graduate students of the department concerned other combinations may be made if they can be defined and show a logical program.¹⁴

New York University.—Courses are usually divided between a major and minor, or minors, the proportions varying from group to group. At least half the work taken in residence must be in courses open to graduate students only. The candidate must have attended a seminar conducted exclusively for candidates for higher degrees.

University of Rochester.—One principal subject and one or two related subordinate ones are required. The prerequisite for the principal subject is not less than 18 hours of undergraduate credit, the prerequisite for the subordinate subject to be determined by the head of the department of the principal subject and the head of the department of the subordinate subject.

Duke University.—The student elects a major and one or two minors. A major and one minor in one department may be permitted on occasion by the graduate council.

University of Cincinnati.—Thirty of the forty-eight units must be given to the principal subject.

University of Oklahoma.—The course must be selected from groups embracing one principal subject—the major, and one or two subordinate and closely related minor subjects approved by the graduate council. Approximately two-thirds of the work must be in the major department. Usually one minor must be in a department other than the major. The research for the thesis will usually take one-half of the time devoted to the major department.

University of Pittsburgh.—The major field is selected after the student has earned approximately six credits. Fields totally unrelated to the major field are not acceptable.

Bryn Mawr College.—The program includes 1 principal

¹⁴ Massachusetts Institute of Technology. Graduate School Bulletin, May 1932, pp. 40-41

and 2 subordinate subjects, and to be divided between at least two departments. A series of approved combinations are set up by the council. A unit graduate course requires approximately one-third of the student's time; three such courses constitute full-time work in addition to the thesis.

Vanderbilt University.—The curricular program must cover three fields. The major requirement includes one-half of the program, the first minor, at least one-fourth, the second minor two or three courses.

University of Washington.—There is required normally a major and one or two minors. By action of the council, the candidate may be allowed to work in one field only. Departmental requirements vary.

THE DISSERTATION OR THESIS.—The dissertation or thesis is required by all institutions as part of the requirements leading to the doctorate. In general, it is stated that the thesis must have the following qualities: It must give evidence of original research and independent thinking; the methods used must be adequate; the conclusions must be logical and sound; it must be in excellent literary form; and, finally, it must be a contribution to knowledge worthy of publication. The thesis represents the results of research within the field of the major subject. The subject is required to be selected by the student subject to the advice and approval of the professor in charge, and finally the approval is given by the dean of the graduate school and the graduate council when the student is admitted to candidacy. This brings the final selection of the thesis subject nearly a year before graduation, although in one case only a minimum period of 6 months may intervene between the selection of the thesis subject and the final examination.

The publication of the thesis.—The publication of the thesis is generally required, but there are a great many ways in which this requirement may be satisfied. The most common practice is the publication of abstracts or of essential portions. These abstracts may vary in length from 1,200 to 3,000 words. The greatest number of printed copies of the abstract or thesis usually required is 100. In a few cases 150 copies of the thesis are requested. In one institution only 50 abstracts are required and in another only 35.

In at least five cases a guarantee deposit of \$50 for the delivery of published abstracts is required.

Only one institution absolutely requires the publication of the entire thesis in a standard printed form before the degree can be granted—the Catholic University of America. At this institution 200 copies must be first deposited in the university library. But the University of Pennsylvania also requires the printed thesis—150 copies before graduation—but may accept in lieu of immediate publication a printer's contract or an agreement with a reputable publishing concern guaranteeing delivery of the required number of copies.

Other examples of publication procedure are presented as follows:

University of Illinois.—A digest in condition for publication at a cost not exceeding \$75 is submitted with the thesis. Publication must be arranged for within 1 year by the author; otherwise the university publishes at the student's expense the aforementioned abstract.

University of Chicago.—The dissertation may be published in any one of the three forms, namely: (1) Printing as a monograph or book; (2) reproduction by some other method, such as lithoprinting; or (3) printing in a standard journal or similar publication.

“The publishing or printing agency selected by the candidate must be approved as to its technical efficiency by the University of Chicago Press and as to its professional responsibility by the department concerned.

“No department shall expect a student to spend more than \$100 on the publication of his dissertation.

“Publications under joint authorship are not acceptable as dissertation.”¹⁵

Indiana University.—Publication is required in one of the following methods: In form of a magazine article or book, 5 copies to go to the library; in mimeographed form, 150 copies required; or 200 copies of the work printed in abstract. In any case the candidate files a bond for \$100 with the bursar for publication of the thesis.

¹⁵ Handbook of Divisions and Professional Schools, June 1932. University of Chicago.

John Hopkins University.—One hundred and fifty copies are required, but if the cost is more than \$100 an abridgment of not less than 24 octavo pages is permitted if accompanied by an extended analytical abstract of the dissertation as a whole.

University of Minnesota.—The university arranges for the publication of the thesis at the student's expense. Reprints if bound may be accepted. In any case 100 copies are required.

University of North Carolina.—Publication is not expected except as opportunity is offered.

University of Oklahoma.—One hundred printed copies of the thesis or approved abstract must be presented to the University before the degree can be granted; but if the candidate files a bond of guarantee for required publication within 2 years the degree will not be withheld.

Bryn Mawr College.—The candidate cannot use the degree until the thesis is published. It must be published within 3 years after commencement. It shall be written in English or Latin or by special permission in the language of the candidate, but if this is in other than French or German an English translation is also required. One hundred and fifty copies must be supplied the institution.

THE FINAL EXAMINATION.—A final examination, usually oral, is required by all institutions for the completion of the work for the Ph. D. degree. A great many schools leave the details to the departments concerned and in many cases the examination is written, or it may be written or oral or both. The final examination usually is conducted immediately following the acceptance of the dissertation, and within a period of 2 weeks before the close of the year, by a faculty committee composed of professors whose departments are included in the candidate's program; the committee may also include other faculty members, or even outside experts. The committee is appointed by the dean usually with the advice of the professor who is in charge of the candidate's work.

The length of the examination varies from 1 to 3 hours for the oral examination, and if a written examination is given it may cover a longer period.

In most cases the examination is concerned with the major field of study including the dissertation, although in many cases the entire field of the candidate's program may be subject to review. A majority vote is generally required in order to pass.

The practices of a group of institutions with respect to the final examinations are given as follows:

University of California.—The final examination deals primarily with questions arising out of the relations of the dissertation to the general field of study in which the subject of the dissertation lies. The committee of five who pass on the thesis conduct the final examination, and admission to the examination may be limited to the members of the committee, members of the academic senate, and guests of equivalent rank at other institutions.

Stanford University.—After acceptance of the candidate following the preliminary examination an oral examination is required in order to test his command of the major and minor fields and fitness for scholarly pursuits. This is held not later than the eighth week of the last academic year of candidacy. It is conducted by a special committee; five required for a quorum and three-fourths vote required for a decision. The final examination is optional with the committee examining the dissertation; a majority vote is required for a decision.

Yale University.—A general oral or written examination is required and covers the whole major subject and such subordinate subjects as may be required by the department concerned.

University of Colorado.—The final examination is oral and conducted by a committee consisting of the heads of the departments interested and two other professors appointed by the dean from the university at large. It is open to visitors.

Catholic University of America.—One year before the degree is to be conferred, a broad, intensive, written examination is required in the major subject. Before the dissertation goes to press, an oral examination on the whole field of graduate work is required.

George Washington University.—The final examination is conducted by a committee composed of members of the division and experts outside the university. The professor in charge of the candidate's research will be chairman of the committee.

Georgetown University.—Proficiency in minor subjects is tested by semester examinations. After approval of the dissertation a written examination is required in the major subject. After success in these examinations, an oral final is required, 2 hours in length, principally on the major, minor, and thesis.

American University graduate school.—The faculty (graduate board) conducts the final oral examination, usually 2 hours in length, covering the major and minor fields and the thesis.

University of Illinois.—The final examination is concerned with the research work of the student as embodied in the thesis, and also should show the student's grasp of the major subject as a whole, and general acquaintance with the fields represented by his course of study. It is conducted at least 2 weeks before the degree is conferred by a committee appointed by the dean. The examination may not be divided, but must be taken all at one time even though it requires several sessions. The examination may be denied if the scholarship of the third year falls below the standard.

Northwestern University.—The final examination, both written and oral, is usually held about May 20, and covers the major subject including the dissertation. The secondary subject or subjects may be discontinued when the candidate has fulfilled the regular course requirements including the examinations.

University of Chicago.—A final examination is required by each of the several divisions, oral or written or both.

Indiana University.—The final examination is conducted by the candidate's committee. It may be divided into a general examination and a special if major department so requires. Interested members of the graduate faculty may attend.

Purdue University.—Oral and written tests are given on the major field and an oral test on the thesis. These are held

at the close of the period of study. The examinations are conducted by a committee appointed by the dean including professors in charge of the research and the major and others representing the minors and the graduate council.

State University of Iowa.—The final examination is comprehensive and both written and oral.

Iowa State College.—The final examination covers all graduate work, including the thesis. It may be written, oral, or both. It must be completed at least 1 week prior to the close of the quarter in which the degree is granted.

University of Kansas.—The final examination takes place at least 10 days before commencement; and must be partly or wholly oral. Includes defense of thesis but not limited necessarily to thesis or major field.

University of Maryland.—The final examination is oral and covers the thesis, major and minor subjects.

Johns Hopkins University.—Departmental examinations, written or oral, are taken at any time during the candidate's residence. No session in a written examination shall last longer than 5 hours. The oral examination is conducted by a committee of examiners selected by the president from four departments in addition to the department presenting the candidate. Other board members may be present and vote. Time: 1 hour.

Harvard University.—The final examination is given after the acceptance of the thesis. The number, time, and precise character of the examinations rest with the various division committees. But they include a minute examination in the special field chosen and a more general examination on the field in which it lies.

Boston University.—The final examination is oral and based on the dissertation. It is held by a special committee. Written examinations may also be given at the discretion of the department concerned.

Clark University.—A final oral examination 2 hours long is required. The thesis must be defended and candidate may be questioned over his entire field of study.

University of Michigan.—The final examination is oral and primarily on the dissertation if a preliminary examination has been held; otherwise it is made more comprehensive.

It is conducted by a special committee which has had charge of the student's work augmented by such others as the dean may appoint.

University of Minnesota.—There is a final written examination given by the graduate faculty members in the major department, after the thesis is presented and at least 4 weeks before the final examination. It includes all the work in the major and may include work fundamental thereto. The final oral examination is given by a special committee after acceptance of thesis, not less than 2 weeks before graduation.

University of Missouri.—The final examination may be written or oral or both. If oral, it may be conducted in the presence of the faculty. All candidates' examinations are in charge of a committee consisting of the advisory committee and such others as the dean may select.

Washington University (St. Louis).—A final oral examination is required.

University of Nebraska.—The final examination is oral and public, and is held after the dissertation has been accepted. The character and duration of the examination is determined by the supervisory committee; it may cover primarily the special field of the dissertation; it may test candidate's general knowledge of his subject; and may test his judgment and critical faculty.

Princeton University.—The final examination is public and oral and deals with the more comprehensive aspects of the subject.

Columbia University.—The final examination is held after the dissertation has been examined. Some departments require a departmental comprehensive examination after the completion of the dissertation and before the final examination. The final examination is conducted by a committee appointed by the dean upon recommendation of the department concerned.

Cornell University.—The final examination may be oral, written, or both; open to all members of the faculty. However, it is expected that a written examination should be required at some time during the student's period of candidacy. In the event of failure in final examination, no re-

examination may be held until a period of 3 months has elapsed.

New York University.—The final examination is oral, written, or both, conducted after the acceptance of the thesis. The examining commission comprises at least five faculty members including instructors of the department concerned. The faculty takes final action on the recommendation of the commission.

University of Rochester.—A special examining committee is appointed for each student by the dean; it must include at least two representatives of the general interests of the university.

University of North Carolina.—The final oral examination takes place at least 1 week before commencement. The major and minor taken separately if the candidate prefers, provided that no more than 3 months intervene. The examination is conducted by the dean, head of the major department, other members of the major and minor departments, and by any member of the graduate faculty who desires to participate.

Duke University.—The final examination is oral. Emphasis is usually placed on the thesis and the special field in which it is written. It also covers the minor fields.

Ohio State University.—The final examination is usually oral, but a written examination may be required at the discretion of the committee. The examination is intensive, dealing with that part of the field in which the dissertation falls, and also may include any portion of the student's work in which the general examination showed his knowledge to be defective. This examination is given after approval of the dissertation and not later than 5 days before commencement day. The examination is conducted by a committee consisting of the candidate's adviser and such other examiners as the dean shall designate, including two who are not members of the department directly concerned.

Western Reserve University.—The final examination is held at least 6 months after the preliminary and 1 week before the degree is granted. It is oral and covers the field of the investigation as well as the dissertation. It is given

by a special committee and such other faculty members as the committee may invite.

University of Cincinnati.—The final examination is oral and is held after the thesis has been accepted.

University of Oklahoma.—The final examination includes a written examination and one that is oral. Both are in charge of a final examining committee of five, with the major professor as chairman, appointed by the dean. The written examinations must be taken at least 3 weeks before the end of the period of study. The oral examination is on the thesis and the general field of major and minor studies.

University of Pennsylvania.—A final examination, based on the major subject and other subordinate subjects as have been approved, shall be held when all required courses have been completed. It may be oral, written, or both. At least 1 year, but not more than 3 years, shall intervene between the preliminary and the final examinations.

University of Pittsburgh.—The final examination is oral; it is conducted by a committee of which major professor is chairman, covering both subject matter of courses taken and the dissertation.

Bryn Mawr College.—The final examination is given after the dissertation has been accepted and all course work completed. The form of examination is largely determined by the major department. It may be oral, from 1 to 3 hours in length; or oral, from 1 to 3 hours, and written, from 6 to 9 hours. It may cover a general field or may be searching in character on a delimited portion of the major subject.

Brown University.—After the acceptance of the thesis the candidate must pass a public examination conducted by the dean or his representative, the officers of professorial rank in the departments concerned, and such other members of the faculty as may be appointed. The examination is mainly on the thesis.

Vanderbilt University.—The final examination covers the entire field of study and thesis, and may be written or oral or both.

University of Texas.—The final examination is required but details are regulated by the departments concerned.

University of Virginia.—The final examination is held ordinarily after the thesis has been accepted. It may be oral, written, or both. It is conducted by a special committee which the dean appoints upon nomination of the school (department) concerned, and it covers such phases of the major subject and of allied subjects as shall be prescribed.

University of Washington.—The final examination may be oral or written, or both, and covers, if the preliminary examination was satisfactory, the thesis and courses taken subsequent to that examination.

University of Wisconsin.—A final examination is required. The candidate must submit to an oral examination upon the thesis and on the general field of majors and minors. But the preliminary examination may be construed as final if the professors in charge are satisfied with his preparation. The examination is conducted by a committee, usually of five, with the major professor as chairman.

3. OTHER FORMS OF THE DOCTOR'S DEGREE

There are a number of doctors' degrees that correspond or that are similar in character to the Ph. D. degree. Among these may be mentioned doctor of education, doctor of science, doctor of engineering, doctor of juridical science, doctor of science of law, doctor of law, doctor of jurisprudence, doctor of canon law, doctor of both laws, doctor of medical sciences, doctor of public health, doctor of science in hygiene, doctor of theology, doctor of sacred theology, doctor of letters, doctor of modern languages, doctor of religious education, and doctor of commercial science.

In the following section the principal characteristics of these degrees are shown.

One of the features which characterizes a number of these degrees is the requirement of practical experience in the field or profession which the degree aims to serve. This is true for the doctor of education, the doctor of religious education, doctor of modern languages, and in cases of the doctor of public health, doctor of medical sciences, and doctor of the science of law.

Another distinction is that the doctoral degrees in medicine, public health, law, and theology, while based in most

cases on the bachelor's degree, require 3 or 4 years of professional training in addition to the specialized graduate work. Thus the doctoral requirement on the added background of professional study may be met in 2 years instead of 3.

Aside from these differences, there is much in common between these degrees and the Ph. D. degree in all fundamental requirements.

THE DOCTOR OF EDUCATION ¹⁶

The degree of doctor of education is offered by 21 universities and colleges, or in one-third of all the colleges and universities, excluding teachers colleges, that offer the Ph. D. degree with specialization in education. The Ed. D. degree is not offered as the only doctor's degree in the 21 institutions mentioned, but it is offered parallel with the Ph. D. which is also offered in the same institutions.

These institutions are as follows: University of California, Stanford University, University of Southern California, George Washington University, Indiana University, Harvard University, Boston University, Boston College, Johns Hopkins University, Columbia University, Washington University (St. Louis), Rutgers University, University of Buffalo, University of North Dakota, Western Reserve University, University of Oklahoma, University of Oregon, Pennsylvania State College, University of Pittsburgh, Temple University, and University of Texas.

The characteristics of the Ed. D. degree may be summarized as follows:

1. It gives major emphasis to the constructive solution of difficult practical problems by well-proven methods or techniques.
2. It gives great emphasis to the mastery of educational subject matter in specialized fields rather than in prosecuting original research.

¹⁶ Attention is called to the study by Dr. Frank N. Freeman entitled "Practices of American Universities in Granting Higher Degrees in Education." Published by the University of Chicago Press.

Also attention is called to the Survey of the Requirements for the Degree of Doctor of Education, by Theodore R. Reller of the University of Pennsylvania as reported in *School and Society*, Apr. 21, 1934. Science Press, Lancaster, Pa.

The emphasis of the Ph. D. with a major in education tends in the direction of historical or scientific studies of education, including the development of new theories and new techniques.

As yet there is no complete agreement of authorities as to the different functions of the Ed. D. and Ph. D. degrees, as we find many cases in which the Ph. D. includes all of the functions indicated for both degrees.

From the standpoint of administration the control of these degrees tends to be almost entirely separated. The Ph. D. with major in education comes under the control of the graduate school of arts and sciences or equivalent, and the Ed. D. comes under the control of the school of education.

Types of Ed. D. degrees.—Four institutions of the 21 under consideration have set up two types of Ed. D. degree.

At Stanford University, are found the school-administrator type and the master-teacher type; at the University of Southern California, the administration-supervision-counselor type; and the master-teacher type; at the University of Oklahoma we find the master-administrator type and the master-teacher type; and at the University of Oregon we find the school-administrator type and the high-school principal type. In each case one of the main objects is the preparation of school administrators, and the other objective in three cases is the preparation of master teachers.

Admission to candidacy.—The procedure in obtaining admission to candidacy to the Ed. D. degree compared with the corresponding procedure related to the Ph. D. differs primarily with respect to the emphasis on foreign-language requirement, the requirement of teaching experience, special knowledge of the technique of education research, and, in certain cases, preliminary demonstration of ability to undertake graduate work.

The foreign-language requirement.—In general, the foreign-language requirement for the Ed. D. degree is contingent upon the need for one or more languages in connection with the study of the problem at hand. Sixteen of the seventeen institutions giving information on this topic reserve the right to require an examination in foreign language if

necessary. In only 1 of the 17 are two foreign languages required. One of these may be French or German. Three institutions prescribe one foreign language. In two institutions a language is optional with one or more tool subjects such as statistics, educational methods, or research methods. For the Ph. D. degree with major in education, a reading knowledge of French and German is required in all but three institutions, in two of which two languages are required, one of which must be French or German. In one case statistics or other tool subjects of research may be substituted for the language requirement.

Teaching experience.—Eleven institutions of this group indicate that teaching experience is required before the candidate can obtain the Ed. D. degree. In three cases a record of successful teaching experience is required before the student can take up work in the graduate school toward the Ed. D.

In one school 1 year of successful teaching experience is required. In two schools 2 years of successful classroom or administrative experience is expected, and in one case one of these years of experience must have been enjoyed after having received the A. B. degree. Two other institutions require at least 3 years of experience in teaching or educational administration. In one of these institutions, at least one of these years must follow admission to candidacy and 1 must follow the completion of the normal or college course, that is, before admission to the Ed. D. course of study. In another school at least 4 years of teaching or equivalent educational service is prerequisite, and in another, at least 6 years of teaching or administration is necessary.

Program of study.—The programs of study for the Ed. D. in those institutions which do not have two types of doctor's degrees in education do not differ to any great degree in their organization from the program set up for the Ph. D. with major in education. However, in the case of the specialized forms of the Ed. D. degree, the programs follow closely the professional objectives indicated. In certain cases the professional program of study for the Ed. D. is considered to be of equal if not greater importance than the dissertation.

The following detailed comparison of the requirements for the Ed. D. and the Ph. D. with major in education is given herewith for Stanford University, Harvard Graduate School of Education, and the University of California.

The Ph. D. and Ed. D. degrees compared at Stanford University

PRELIMINARY PREPARATION

Ph. D.	Ed. D.
A bachelor's degree from this institution or equivalent.	Application for admission to candidacy will not be considered until after the candidate has completed the work for the master's degree at this university or submits evidence of equivalent preparation from a recognized institution.

SPECIAL OBJECTIVES AND REQUIREMENTS

<p>A. The Ph. D. degree is primarily a research training degree and is intended for giving special training for</p> <ol style="list-style-type: none"> 1. The direction of research work in training schools and public-school systems. 2. And teaching education in colleges and universities where the candidate prefers the Ph. D. degree. <p>Admission to candidacy rests with the division or school concerned, but the oral examination, approval of thesis, and thesis examination are under the committee on graduate study of the university.</p> <p>B. For the Ph. D. with major in education one of the following eight divisions in education must be chosen as the major field and the field of thesis investigation:</p> <ol style="list-style-type: none"> 1. History and principles of education. 	<p>The Ed. D. degree is of two types:</p> <p>A. <i>The school administrator type.</i>—Primarily for those who desire to become—</p> <ol style="list-style-type: none"> 1. Teachers of education in normal schools or colleges. 2. Supervisors and administrators in public-school systems. <p>B. <i>The master teacher type.</i>—Primarily for those who desire to become master teachers of subject matter in secondary schools, junior colleges, or colleges.</p> <p><i>Special requirements for type A.</i>—In addition to professional requirements candidate must take one teaching major and one teaching minor in the school of education and in fields of study outside of education proper. If a technical teaching major, such as law or psychology, is chosen, two teaching minors in regular high-school subjects must be com-</p>
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Ph. D.

2. General theory of education.
3. Administration and supervision of education.
4. Educational statistics and measurements.
5. Educational psychology.
6. Elementary education.
7. Secondary education.
8. Educational and vocational guidance.

A minor composed of 1 or 2 other subjects combined as first minor, and by the end of the second year of graduate study should be completed in large part the required work in a second minor outside of the department.

Ed. D.

pleted; largely before time of admission to candidacy and before the general examination.

Also 45 units (or 30 semester units) is required in advanced education courses each of the last 2 years, but 15 units of total may be required to be in collateral work outside the school of education and as much as 25 units may be assigned to thesis study.

Special requirements for type B.—The requirements for this type of the Ed. D. are in all respects the same as for type A, except for the following:

A reading knowledge of one modern language is required.

A minor, equivalent to the minor for the Ph. D. in a field commonly taught in high schools or junior colleges will be required and a total of 45 units (30 semester units) of professional courses in education will be waived in lieu of this.

AGE LIMITS

Should complete requirements preferably before 35, and better still at 30. It is contrary to the policy of this school to accept candidates for this degree with a major or a minor in education who have passed the age of 40. Exceptions are only made in case of outstanding ability and academic training.

No age limit has been set for the Ed. D. degree. Selection of candidates from the number applying will be made in part on a basis of age.

RESIDENCE

A minimum of 3 years (9 quarters); at least 1 of these years, usually the last, must be in residence at this university.

Six quarters of residence study beyond the M. A. degree is the minimum.

FOREIGN-LANGUAGE REQUIREMENT

Ph. D.

A reading knowledge of French and German.

Ed. D.

The candidate may be required to present evidence of a reading knowledge in a language or languages, if the field of the proposed thesis is such as to call for language ability.

For the B type of the degree a reading knowledge of one modern language will be required, to be evidenced before the general examination.

ADMISSION TO CANDIDACY

Based on examination orally or in writing by the schools or departments in which the candidate plans to work in order to determine his fitness to fulfill his major and minor requirements.

Application should also show that the foreign-language requirement has been passed. The selection of the thesis subject must be determined at the time of filing the petition for admission to candidacy.

For either type of the degree, admission to candidacy is made on the basis of an oral and written examination. Candidate must first have completed the work for the master's degree at this institution or equivalent.

The selection of thesis subject may be postponed until the middle of the second year of graduate study.

EXAMINATIONS

After admission to candidacy each candidate must pass an oral examination and in certain cases pass a second oral examination.

The oral examination is given when the student has shown special ability in his field of study and proved his capacity for independent investigation.

Purpose: To test the candidate's command of his major and minor fields and to confirm his fitness for scholarly pursuits. Is 3 hours in length and is held not later than the eighth week of the last academic year of candidacy.

When candidate has substantially completed his approved preparatory study and other requirements laid down by faculty at the time of the conference the student is ready for the departmental examination (written and oral) given the second week of each quarter. The written examination is 3 hours in length.

The general examination should come at the close of the second year of graduate study or at latest at the beginning of the third year.

REQUIREMENTS FOR THE DOCTOR'S DEGREE 195

Ph. D.

The special committee on the dissertation may in its report recommend that the student be required to pass a second oral examination.

Ed. D.

An oral examination approximately 1 hour in length will be required in the field of the thesis.

TEACHING EXPERIENCE

Teaching experience not required.

Evidence as to at least 2 years of successful classroom teaching or school administration, one of which must have been subsequent to the A. B., is required.

DISSERTATION

Essentially the same as for the Ed. D., except that \$35 deposit is required for covering the cost of the publication of the abstract of the thesis.

For both type A and type B.—The thesis, which in form must be a contribution to knowledge and the result of independent work.

Three typewritten copies of the thesis unbound and approved by the candidate's committee should be deposited with the secretary at least 4 weeks before the last day of instruction in the quarter in which the degree is conferred.

An oral examination of approximately 1 hour will be required on the field of the thesis, and if approved by the faculty, the thesis must be bound and returned to the secretary before recommending the candidate for the degree.

An abstract of the thesis 500 to 2,000 words in length should be filed with registrar for publication in the annual volume published by the university. The student part of the expense of publication is a deposit of \$25.

Harvard University

ADMINISTRATION

The Ph. D. degree with specialization in education is administered by a body known as the

The Ed. D. degree is administered by a body known as the

Ph. D.

tered by a committee of the faculty of arts and sciences of which a majority are members of the faculty of the graduate school of education. It is not conferred on women at Harvard but is conferred on women at Radcliffe College.

Ed. D.

committee on doctorate study of the graduate school of education.

OBJECTIVES

It is intended for students whose interest centers in pure scholarship, presumably research in the scientific or historical aspects of education.

This degree rests on the ground of high attainment in the constructive study of educational problems.

GENERAL REQUIREMENTS

The student must present satisfactory evidence of ability to pursue graduate work with profit. Such evidence may be graduation with distinction or in the upper third of the class of a recognized college or scientific school. This evidence may also include election to Phi Beta Kappa, or records showing distinguished work in a special field either as undergraduates or as graduate students in other institutions.

1. *Preliminary consultation* of candidates with chairman of committee on doctorate study for preliminary guidance.

2. *Conference* with committee on doctorate study in which candidate submits

(a) Plans of his work for the degree.

(b) Entire record as to study and experience.

(c) Special inquiry may also be made regarding any phase or aspect of education to which the candidate has given attention. And the preparation of a paper or discussion of a problem may be requested as final evidence of ability to do doctorate work.

(d) *Time of conference.*—For applicants whose preliminary graduate work was done elsewhere—after their first half year of study in this school. For those already in residence in this school—at the end of the first year of study.

REQUIREMENTS FOR THE DOCTOR'S DEGREE 197

Ph. D.

Language requirement: A reading knowledge of French and German is required.

No teaching experience required.

Ed. D.

(e) *Language and other requirements.*—The committee may require candidate to submit to special tests or to take courses in a language or languages or in other fields or subjects.

(f) *Teaching experience.*—One year of successful teaching.

ADMISSION TO CANDIDACY AND OTHER REQUIREMENTS

Same as for other subjects under the graduate school of arts and sciences.

After admission to school the prospective candidate must consult the chairman of the division or committee under which he plans to study. He should receive, preferably in writing, a statement as to the conditions under which he may be accepted. The requirements of the school as well as division or committee must be met.

Not less than 2 years—at least 1 of which must be spent in residence at this university—of advanced study is required. A year's work for a resident student consists of four full courses of advanced grade passed with distinction or an equivalent amount of research or special study under member or members of faculty.

Admission of candidacy is based upon evidence of promise in the constructive treatment of educational problems of general significance.

Student must first spend at least a half year in residence and study at this school. But those who have had graduate training elsewhere may be granted full credit for such residence by the committee of doctorate study. If not accepted they may have to fulfill the one half-year study requirement.

The normal course of work for this degree involves:

1. At least a year of graduate study, broad in scope, to give a general understanding of the opportunities and problems of education and to establish competence.
2. Formal application for admission to candidacy and a conference with the committee on graduate study.
3. A further period of graduate study of more specialized character on a plan approved by this committee.

Ph. D.

PRELIMINARY EXAMINATION

Candidate must pass a group of tests called the "preliminary examination", taken usually 1 year before the thesis is submitted. Examination is both written and oral. Tests candidate's grasp of principles and breadth of general preparation.

Ed. D.

GENERAL EXAMINATION

The general examination is the first formal test in the program for the Ed. D. degree. Is in writing and may be oral also. Is usually taken at the end of the second year of graduate work.

THESIS

Subject should be selected before final year of graduate study and thesis should be deposited on or before May 1 of the year of graduation.

Thesis may be published.

Same as for Ph. D.

FINAL EXAMINATION

Upon acceptance of thesis candidate is examined by the committee, particularly on the thesis and the candidate's special field.

Upon acceptance of thesis by committee on doctorate study. Final oral examination is held, bearing mainly on the thesis.

University of California

PRELIMINARY PREPARATION

Bachelor's degree.

Bachelor's degree with major in education.

OBJECTIVES

The degree of doctor of education is a professional degree conferred in recognition of: (1) A highly satisfactory command of a comprehensive body of technical knowledge peculiar to education; (2) proven ability to initiate, organize, and prosecute the investigation of significant problems in the field of education.

Emphasizes the practitioner's interest rather than that of the pure scientist.

RESIDENCE

Minimum of 3 years, 1 of which must be at the University of California.

Same as for Ph. D.

REQUIREMENTS FOR THE DOCTOR'S DEGREE 199

FOREIGN LANGUAGE REQUIREMENT

Ph. D.

Reading knowledge of French and German.

Ed. D.

No foreign language required unless the preparation of the thesis requires it.

ADMISSION TO CANDIDACY

Candidate must have passed qualifying examinations, including tests of reading knowledge of foreign languages. He must report to the dean of the graduate division who determines whether formal requirements have been met.

Professional experience is not required.

Candidates are admitted to candidacy by graduate council on recommendation of the school of education. Formal application is filed with the dean of the school of education showing:

1. Official transcript of undergraduate and graduate work.
2. Record of professional experience.
3. Choice of four divisions of the field of education in which candidate proposes to pass the qualifying examination taken from the following: History of education, educational psychology, theory of education, educational administration, secondary education, elementary education, vocational education, and child development.
4. Division of field of education in which he plans to write the thesis.

EXAMINATIONS

Final oral.—This examination shall deal with questions arising out of relations of the dissertation to the general field of study in which the subject of the dissertation lies.

Preliminary.—Not later than a half year before final examination, the committee shall satisfy itself as to the candidate's fitness.

Final oral.—This examination is designed to test the candidate's special knowledge of his chosen field and his familiarity with present tendencies in education.

The Degree of Doctor of Education at Columbia University.—Of special interest is the new plan for granting doctor's degrees in the field of education as adopted by Columbia University, March 5, 1934.

Under the plan of reorganization of Teachers College through its Advanced School of Education and its institutional relationships there exist three ways in which the doctorate in education may be obtained: The Ph. D., through the Faculty of Philosophy, for the research worker in education; the Ph. D., through the joint committee on graduate instruction, for research workers in practical science; and the Ed. D., through the faculty of education for the professional worker in the fields represented in Teachers College.

Regulations for the degree

(1) Graduates of recognized colleges who wish to be accepted as candidates for this degree must, as early as possible in the program, and in no event less than one year before the degree is to be granted, give evidence of thorough academic training and high professional promise.

(2) A period of study beyond the bachelor's degree of not less than three years in the University, or in universities or colleges recognized by it, at least $1\frac{1}{2}$ years of which must be spent in Columbia University.

(3) Such intensive graduate training in the sciences and disciplines fundamental to education, such as biology, anthropology, psychology, philosophy, history, economics, political science, sociology, and statistics, as shall be recommended by the faculty of education.

(4) Such intensive graduate training in the foundations of education as shall be recommended by the faculty of education.

(5) Such intensive professional training as may be required to prepare the individual specifically for the posts of superintendent of schools, principal of high schools, etc.

(6) An active experience in practical work either in the field or in laboratories or schools connected with Teachers College. If the candidate has had no experience in the field for which he is preparing himself, this experience must be under supervision of the college and in addition to the three-year requirement stated above.

(7) So far as is possible under present university procedures, the tests for successful fulfillment of the requirements for the degree will depend not so much on the addition of points nor upon the completion of courses, as upon the attainment of a high degree of professional competence. Therefore the student must pass a written and oral examination covering the broad scope of his training and fitness for professional leadership. As a part of this examination there would be a practical test of his work which might include an extended

demonstration in the field, a study or survey, the preparation of materials of instruction, or any one of a variety of practical achievements."¹⁷

DOCTOR OF RELIGIOUS EDUCATION

The requirements for the degree of D. R. E. at Boston University include the following: The candidate must give evidence of having received a bachelor's degree from an accredited college; that he has had successful practice in religious education; that he has a comprehensive knowledge of human nature, an insight into the nature of society, knowledge of the history, philosophy, and psychology of religion, and knowledge of the church as an institution, including its history, agencies, and activities; that he has a working knowledge of the language, or languages, or statistical laboratory, or other technique which may be required for his doctoral work. Three years beyond the bachelor's degree is usually required. A minimum of 1 year's residence at the School of Religious Education and Social Service is required. The other details, such as refer to the dissertation and examination, follow the general practices followed for the Ph. D. degree."¹⁸

THE DOCTOR OF SCIENCE

The degree of doctor of science is offered as a degree in course by the following institutions: University of Michigan, the Catholic University of America, Georgetown University, Western Reserve University, Massachusetts Institute of Technology, Harvard University, Colorado School of Mines, Worcester Polytechnic Institute, Carnegie Institute of Technology, University of Nebraska, and University of Pennsylvania.

Massachusetts Institute of Technology.—The Sc. D. is given only when the course of study is in the department of either science or engineering; the Ph. D. is limited to the departments of pure science or mathematics; otherwise the requirements for these degrees are the same.

¹⁷ From the Report of Dean William F. Russell in Teachers College Bulletin, Twenty-sixth Series, No. 1. November 1934. Columbia University, pp. 30-35.

¹⁸ Boston University, catalog, May 1, 1931, pp. 690-693.

University of Michigan.—The Sc. D. is optional with the Ph. D. if the candidate has pursued studies principally in science or engineering.

Georgetown University.—The Sc. D. is ordinarily restricted to the fields of the natural sciences.

Catholic University of America.—The Sc. D. is granted when the student's majors and minors lie in the fields of mathematics and the natural sciences.

Western Reserve University.—The doctor of science may be granted, provided the candidate makes application for the special degree and provided the plan has the approval of the department concerned.

Harvard University.—The Sc. D. degree is offered by the engineering school. The candidate must have taken a degree in applied science in a scientific school, college, or university of high standing. The fields open for this degree are in engineering, metallurgy, sanitary chemistry, or industrial chemistry. In general the requirements are similar to those for the Ph. D. degree.

Colorado School of Mines.—Candidates for the Sc. D. degree must complete at least 120 credits of work in course and research over and above that required for the master's degree in addition to the doctor's thesis. The major work may be selected in mining, metallurgy, geology, geophysics, or petroleum engineering. A minor subject shall consist of the completion of not less than 30 credits. More than one minor may be required. French and German are required and possibly other modern languages. At least 6 months before granting of the degree all work excepting the thesis problem must be completed, in order that all the time remaining may be devoted to the research problem. The other requirements are similar to the usual Ph. D. requirements.²⁰

Carnegie Institute of Technology.—The departments of chemistry and metallurgy, the bureau of metallurgical research, and the coal research laboratory offer work leading to the Sc. D. degree.

Worcester Polytechnic Institute.—This degree is offered on the basis of 3 full years of graduate work, including an acceptable thesis and an oral examination.

²⁰ Colorado School of Mines, catalog, 1933-35, pp. 27-28.

DOCTOR OF ENGINEERING

The degree of Eng. D. is offered by Johns Hopkins University and by the Catholic University of America in the school of engineering. It is in all respects equivalent to the Ph. D. degree. At Rice Institute this degree is also offered. The requirement is 3 years of graduate study above the A. B. degree. In addition to the Ph. D. degree, Rensselaer Polytechnic Institute offers the doctor's degree in engineering designated as D. C. E., D. E. E., etc.

GRADUATE DOCTORS' DEGREES IN LAW

The following examples are given of doctors' degrees in the law offered on the graduate level.

Doctor of juridical science.—The requirements for the degree of doctor of juridical science at Harvard University Law School are as follows: The candidate must be qualified to enter the Harvard Law School and must have completed with high rank the course for the first degree in law in an approved school. The college course and the law course combined must have occupied 6 years. To be admitted to candidacy for the degree of S. J. D. the applicant must hold the degree of master of laws²⁰ from Harvard Law School or an equivalent degree, or (having the general qualifications for graduate work * * *) must have taught law for 3 years, and by published writings have shown his fitness for legal research, or (having the qualifications for graduate work * * *) must have been admitted by the faculty specially as a candidate for that degree.²¹

Other requirements for the degree.—“(1) A general oral examination by a committee of the faculty to be passed with distinguished excellence. (2) Two written examinations which may be the regular examinations graduate courses or special written examinations in other subjects that the candidate may elect and a committee of the faculty approve. In either event the examinations should be passed with distinguished excellence; (3) a thesis embodying the results of research.”²²

²⁰ The master's degree in law at Harvard is based on the successful pursuance with high rank of 5 courses, 3 of which must be graduate courses, and 3 of which must involve examinations.

²¹ Harvard University, 'catalog 1931-32, p. 507.

²² *Ibid.*

The S. J. D. degree (Scientiae Jurisprudentiae Doctor) at the Catholic University of America is granted subject to the following conditions: Graduates of the law school with and LL. M. degree received within 2½ years of time when they, if admitted, start work for the S. J. D., and those who, in the opinion of the dean of the law school and dean of the graduate department of said school, have successfully completed work which is substantially equivalent of the preparation of students included within the first category. Practical proficiency in such foreign languages as may be necessary for the proper completion of the dissertation may be required of the candidate by the aforementioned authorities. This proficiency shall be evidenced by examination. One year's residence at the law school is the minimum.

Under the matriculation requirements above set forth students are presumed to have the necessary equipment with which to do scholarly research and constructive writing. Therefore, no further class work is required for the S. J. D. degree. The candidate is free to attend any courses given in the school, but his participation in discussion is at the discretion of the instructors of such courses respectively. The candidate is also at liberty to confer with any members of the faculty at times convenient to such faculty members. For this degree a scholarly dissertation in the field of the philosophy or the science or the history of law is required. Such dissertation shall be submitted to the head of the graduate department on or before March 31 of the year in which the degree is sought, for examination by the faculty of law. If accepted, the dissertation must be printed in a form prescribed by the head of the graduate department and 200 printed and covered copies be deposited in the law library at least 14 days prior to graduation day at which the degree is sought. In addition to such dissertation, the candidate will be required to pass successfully a broad and intensive oral examination, conducted by the faculty of law and representatives of the graduate council, which examination shall have as its scope the whole field of private American law and those portions of public and international and foreign law in which the candidate has been working.²²

Doctor of the science of law.—Cornell University prescribes for the degree of doctor of the science of law the following:

²²The Catholic University of America. Announcements. School of Law, 1934-35, 20: 14, Mar. 15, 1934.

The candidate shall be in residence at least 1 academic year; shall pursue with distinction such graduate or advanced courses as shall be prescribed by the faculty; shall engage in such independent investigation in some field of law under the direction of a member or members of the faculty as shall be determined by that body, the results of such investigation to be embodied in one or more essays which shall be creditable contributions to legal scholarship, and a copy of which shall be deposited in the law library; and shall pass a comprehensive examination on the work pursued. It is desirable that candidates for this degree shall have had some practical or teaching experience after obtaining a first degree in law. To be admitted to this program the candidate must have an LL. B. or equivalent degree from an approved law school.²⁴

(3) *Doctor of law*.—Similar in many respects is the degree of juris doctor (J. D.) offered by Columbia University which requires a definite program of research, which is usually not the case for the juris doctor degree.

The candidate must give evidence of his ability and educational training to do original research work in the field of Anglo-American law. The candidate must have (a) graduated from an approved college or scientific school of collegiate rank or (b) successfully completed at least 3 years of undergraduate study in an approved college or scientific school which course of study must have included satisfactory courses in English, in economics, and in English and American history or the equivalent of such training, and (c) in addition to compliance with the conditions stated in (a) and (b) above have successfully completed with high rank 3 years of study in an approved law school or the equivalent thereof and have obtained a first degree in law.²⁵

The candidate must be in residence for at least 1 academic year and must complete courses and work as the faculty may deem essential to the adequate prosecution of his program of study and investigation. The required work may include study in the fields of history, business, economics, government, philosophy, public law, or comparative law. It will be rarely possible for the candidate to complete and publish the required dissertation before the expiration of 1 additional year either in residence or in absentia.

The required dissertation must demonstrate the candidate's capacity for critical or constructive legal research and must present the results of the investigation in satisfactory form. Before the final approval of the dissertation the candidate will be required to pass an oral examination on the subject of the thesis.²⁶

²⁴ Cornell Law School. Announcement for 1931-32, p. 6.

²⁵ Columbia University. Announcement of the school of law, 1933-34, p. 9.

²⁶ *Ibid.*, pp. 18 and 19.

Doctor of jurisprudence.—The graduate law degree offered at the University of Chicago is the doctor of jurisprudence (J. S. D.) and is open to students showing exceptional ability in legal scholarship. Three quarters of residence after the completion of the regular professional law course is required covering such studies as the faculty requires. The requirements include "submission of a printed dissertation upon invitation by vote of the faculty and the acceptance of such dissertation as a creditable contribution to legal science."²⁷

Doctor of canon law and doctor in both laws.—The school of canon law of the Catholic University of America sets up the following requirements for the degrees of doctor of canon law (J. C. D.) and doctor of both laws (J. U. D.). Admission to the course includes:

The successful completion of a course of subjects according to canon 1365 of the code of canon law and the provisions of the ordinances of the Sacred Congregation of Seminaries and Universities. May 24, 1931. Art. 26. 2°, (a), (b), (c).

Presentation of testimonial letter from the candidate's ecclesiastical superior; a certificate of candidate's previous philosophical and theological studies. Courses include: Introduction to legal science, general norms, persons, things, processes, delicts and penalties, history of canon law and American civil law, contacts between canon law and American civil law, practice of canonical procedure.

The course in canon law is 3 years in length. The examination is on the dissertation, the whole code, and the subject matter covered. A dissertation of not less than 6,000 words is required.

The course for the doctorate in both laws is 4 years in length. The examination covers the dissertation, the whole code, and the subject matter covered in Roman and American civil law. A dissertation of not less than 6,000 words is required.

²⁷ Announcements of the University of Chicago. The Law School Number, 1932-33, p. 9.

GRADUATE DOCTORS' DEGREES IN MEDICINE, PUBLIC HEALTH, AND HYGIENE

The following examples of doctors' degrees in the graduate fields of medicine, public health, and hygiene are given herewith.

DOCTOR OF MEDICAL SCIENCES.—The *Harvard Medical School* requires for the degree of doctor of medical sciences that the—

candidates for this degree must matriculate as medical students and complete with an honor grade the regular elementary courses offered by this school in anatomy, histology and embryology, physiology, biological chemistry, bacteriology, pathology, pharmacology, and clinical pathology, together with other subjects as may be recommended by the committee. In addition, all candidates are required to have a reading knowledge of French and German. Ordinarily the preparatory training will be equivalent to the first 2 years of the course of study leading to the degree of M. D. Students who have completed all or a portion of this work from other approved medical schools may be admitted to candidacy upon presenting evidence that they have passed the above subjects or their equivalents with an honor grade and upon passing the general examination described below.

Following the completion of this preliminary training the student shall devote himself for not less than 2 years to the intensive study of one of the fundamental medical sciences and to the preparation of a thesis. The thesis must show an original treatment of a fitting subject and give evidence of independent research. There shall be two examinations for this degree. A general examination, before entering upon the work of the last 2 years, covering the elementary medical sciences listed above, and a final examination upon acceptance of the thesis covering the particular medical science chosen as a special field.²⁸

The *University of Pennsylvania*, in the graduate school of medicine, offers the degree of doctor of medical science to student physicians who have been productive in research upon the completion of the third year of the regular graduate medical course. It indicates demonstrated capacity for medical teaching and investigation in a stated chemical or medical science department.²⁹

²⁸ Harvard University catalog, 1931-32, pp. 523-524.

²⁹ University of Pennsylvania Bulletin. Graduate school of medicine.

Columbia University has the following requirements for the degree of doctor of medical sciences: The student must present evidence of graduation from a medical school approved by the university; the completion of an internship of not less than 1 year after graduation in a hospital approved by the university. The recommendation of the department in which the work is to be done must be obtained. The specific degree requirements include—

- (1) A period of study after the internship of not less than 3 years in the university or in hospitals and laboratories recognized by it, at least 1 calendar year of which must be spent in the university.
- (2) Such intensive graduate training in the basic medical sciences of anatomy, embryology, physiology, biological chemistry, pharmacology, pathology, bacteriology, and in other fields of science, including original investigation as shall be recommended by the departments concerned.
- (3) An active experience during the 3-year period of not less than 18 months in the hospital, clinics, and diagnostic laboratories of the specialties elected.
- (4) Written, oral, and practical examinations and a dissertation may be prescribed in the specialty elected and in clinical, laboratory, and public health fields to which the specialty is related.²⁰

DOCTOR OF PUBLIC HEALTH.—At *Yale University* the degree of doctor of public health is conferred upon those who hold the degree of M. D. from a high-grade medical school, and who have completed at least 2 years of resident graduate work at Yale University. These requirements include prescribed and elective courses of study, practical field work in public health, and a dissertation based upon individual study of a particular problem.²¹

Harvard University School of Public Health requires the candidate to have an M. D. degree, or its equivalent, from an approved medical school. The D. P. H. is granted on evidence of real scholarship in the fundamental aspects of public health. A thesis which displays independent ability and originality in a special field is also required. Two years of

²⁰ Columbia University. Bulletin of information, thirty-fourth series, no. 48, Sept. 1, 1934. Announcement of college of physicians and surgeons, school of medicine, Columbia University, for the winter and spring sessions, 1934-35, pp. 47, 48.

²¹ 1930-31; 1931-32. July 19, 1930. Vol. XXX. No. 42, pp. 26-27. Bulletin of Yale University. General catalog number, 1931-32, p. 217.

work are usually required and at least 1 academic year must be spent in residence at the university.³²

Johns Hopkins University requires candidates to be graduates of an approved medical school, and that they have had a liberal education as evidenced by a degree in the arts or the sciences or its equivalent, and have completed the course leading to a certificate in public health or its equivalent. The course is 2 years in length to those who do not come with advanced credits. At least a full academic year of residence is required devoted to advanced work in one subject or a group of related subjects. An acceptable thesis presenting an individual study of some subject in public health or hygiene. Credentials for at least 3 months of practical work in a public-health organization approved by the advisory board.³³

DOCTOR OF SCIENCE IN HYGIENE.—This course as outlined at Johns Hopkins University does not require the candidate to present the M. D. degree for admission. The admission requirements for candidacy for this degree include:

- (a) A degree in arts or science, or in medicine, with a reading knowledge of French and German.
- (b) Certificates of the satisfactory completion of adequate courses in chemistry, physics, and biology.
- (c) Certificates of the satisfactory completion of adequate courses in anatomy including histology, physiology, and pathology.
- (d) In exceptional cases on the recommendation of the head of a department, a candidate may be accepted who offers in place of (c) satisfactory evidence of special training of an advanced character in subjects fundamental to this main field of work.

Graduation: The following requirements must be absolved before the candidate may be presented for the degree:

1. The completion of 3 academic years of graduate work (or an equivalent). One year, at least, must be spent in residence.
2. Completion of a satisfactory research on the principal subject, and its presentation in the form of a dissertation.
3. Final oral examination of the candidate before a committee of the faculty.

³² Harvard University catalog, 1931-32, p. 560.

³³ Johns Hopkins University circular, school of hygiene and public health, catalog and announcements for 1932-33, April 1932, p. 31.

With respect to requirement 2 in addition to the principal subject, two subordinate subjects must be selected. The candidate must pass written examinations in the principal and subordinate subjects.³⁴

GRADUATE DOCTOR'S DEGREES IN THEOLOGY

The following examples are given of the doctorate in theology:

Doctor of theology.—At Harvard University the degree of doctor of theology is distinguished from the Ph. D. degree as far as general requirements are concerned in that it is necessary for the student to spend at least 5 years of study beyond the baccalaureate degree. Three years of the five are required for the obtaining of the bachelor of theology degree, at least an additional year is required to obtain the degree of master of theology, and at least 2 years beyond the bachelor of theology is required for the degree of doctor of theology.³⁵

Boston University admits to candidacy for this degree those who have completed the requirements for the S. T. B. and who have evidence of ability to do high-grade graduate work. At least 48 semester-hours beyond the S. T. B. in residence is required. At least 20 of these hours must be in a major field. As a rule at least 1 ancient and 1 modern language are required subject to the demands of the major. Examinations before the faculty are required in courses taken for the degree and a satisfactory dissertation in the field of the major is required.³⁶

Doctor of sacred theology.—The requirements for this degree at the school of sacred sciences of the Catholic University of America include the following: Admission to candidacy granted to students whose work for the licenciante of sacred theology has been especially meritorious. Graduation: At least 1 year's work additional to that required for the S. T. L. (2 years above the S. T. B.). A thesis of at

³⁴ The Johns Hopkins University Circular. School of hygiene and public health. Catalog and announcements for 1932-33, April 1932, p. 31.

³⁵ Harvard University catalog, 1931-32, p. 491.

³⁶ Boston University catalog, issued May 1, 1931, p. 513.

least 25,000 words is required. An oral examination in the prescribed courses is given and a final examination, 3 hours in length, is required covering the dissertation and the defense of 60 theses covering the whole field of theology. The diploma is granted only after 200 copies of the printed dissertation have been sent to the library.

DOCTOR OF LETTERS.—The degree of doctor of letters is conferred at Georgetown University on the same basis as the Ph. D. degree if the student specializes in languages or literature.

DOCTOR OF MODERN LANGUAGES.—Middlebury College offers the doctorate in modern languages (D. M. L.). This degree is earned at the Middlebury summer schools of French, Spanish, and German.

The principal requirements are as follows:

1. The master's degree with a language major from some recognized university.
2. Residence at the summer sessions of Middlebury College equivalent to 5 year-courses of 30 credits. This will ordinarily require 4 summers' residence at Middlebury, but the basis of the requirement is chiefly the fulfillment of a program, not merely a given total of points.

The student will be required to complete the main lines or groups of the curriculum—stylistics, phonetics, realia, teaching methods, literature, and philology. A minimum of 20 credits over and above the credits necessary for the M. A. must be secured in residence at Middlebury; a maximum of 10 credits may be transferred.

3. Two semesters' residence in the foreign country of the major language. This time should be spent in study in approved courses amounting to or equivalent to 12 hours a week (or 24 semester-hours) of class exercises. The work must be done according to a plan previously approved by the dean of the respective school, and the final results must also be approved by him. Work done in a foreign country prior to the student's enrollment as a candidate for the D. M. L. cannot be accepted. Summer sessions may not be substituted for the requirement of 2 semesters' foreign residence.

4. A major language (French, Spanish, or German).

(a) A thorough knowledge of and the ability to use the spoken and written language, tested by an oral and written examination.

(b) A thorough study of and training in phonetics. Candidates will be required to do at least 1 summer's work in the phonetics laboratory, and to write a report on their research.

(c) A scientific study of modern methods of teaching foreign languages.

NOTE.—Besides attendance in the courses of methods at Middlebury, candidates will be required to teach at least 1 year under supervision. Statements will be requested from superintendents of schools, heads of departments, and others as to the success of the candidate's teaching and professional ability. No student will be granted the D. M. L. who cannot be unqualifiedly recommended as an experienced and successful teacher of the language.

(5) A final oral examination conducted entirely in the major language, before a board including native members of the faculty; this examination to cover all elements of the candidate's preparation—phonetics, pedagogy, literature, etc. (This training should include a certain amount of philological preparation—old French or old Spanish, phonology, morphology, etc., but these subjects should be studied not in se and per se, but always with the idea of the help they may afford to the knowledge and teaching of the modern languages.)

6. A minor language (preferably another romance language). This will be tested by an oral and written examination. The candidate's knowledge of the language should be sufficient at least to teach successfully the elementary courses in the language. In addition, a reading knowledge of German will be required, as a guarantee of the ability to use German texts or editions.

7. A dissertation written in the major language. This dissertation, which should approximate 35,000 words, is intended to prove a thorough and understanding study of some subject, literary, phonetic, or pedagogical, which is worth a careful study. It must embody considerable original work and reflection must show a mastery of the field, clearness of thought, and must be written in correct and easy style. The subject must be chosen and the preparation continued under the guidance of some member of the Middlebury faculty."

DOCTOR OF COMMERCIAL SCIENCE

The requirements for the degree of doctor of commercial science at Harvard University include the following:

In addition to business-training in the school, a general training in economic theory, economic history, a period of approved business experience, and ability to read at least one modern foreign language. A candidate must spend at least 3 years in full-time graduate study or offer the equivalent thereof. The candidate must show a general training in the whole field of study, a thorough knowledge of his special business subject within the field, and do independent research in some portion of the subject. A thesis must be presented which gives evidence of the candidate's imagination and originality, analyt-

"Middlebury College Bulletin, Women's catalog number. October 1933, pp. 83-84.

ical power and good judgment, in the constructive solution of problems of business administration and in the interpretation of the results of his research."

4. OTHER ASPECTS OF THE DOCTORATE

Although we find various types of the doctorate that are not essentially different from the Ph. D. degree except from the standpoint of a more professional approach, it is of interest to observe that in the field of engineering the majority of institutions offer as their highest engineering degree the Ph. D. Only a few schools offer the Sc. D. or Eng. D. for this purpose. In the field of public health Harvard offers a degree in addition to the D. P. H.—the Ph. D. in Hygiene. This is for students without the medical degree. The Delamar Institute of Public Health of Columbia University grants the Ph. D. as the highest degree in this field. Combination programs which facilitate the obtaining of the Ph. D. by students working for the M. D. degree are also noted, such as the one at the University of California. Recently a program for the Ph. D. in music has been elaborated by the Eastman School of Music of the University of Rochester. In this program higher musical research and study have a definite professional setting.

These additional examples are somewhat indicative of the increasing significance of the doctorate in the several professional fields.

5. SUMMARY

There has been little change since 1900 in the formal standards set up for the Ph. D. degree.

The standards and requirements for the Ph. D. degree are being modified in the direction of flexibility. Qualitative standards are taking the place of mere quantitative requirements.

The requirements for the Ph. D. degree show considerable uniformity with respect to such general items as admission to candidacy and minimum residence requirements. That is, the regulations for admission to candidacy provide in nearly all cases an adequate period for testing the candidate's abil-

* Harvard University Catalog 1931-32, p. 575.

ity as a graduate student, and also providing a period in which an acceptable program involving a primary and secondary interest may be worked out. The thesis or dissertation is required in all cases, but there is considerable difference of view as to what constitutes a thesis which adequately measures or tests the originality and scholarship of the candidate and the value of the contribution.

The publication of the doctor's dissertation in some form is everywhere required, with one exception. Only one institution requires full publication before the degree can be granted. But the requirements for the publication of the thesis in many universities are so full of alternatives as to discourage a serious attempt at full publication. In a considerable number of schools the method of publishing a university series of thesis abstracts seems to be an interesting compromise. This may help the finances of the student, but it also reduces the significance of full responsibility on the part of the student in completely fulfilling his principal objective in the graduate school.

While not altogether uniform as to procedure, the final oral examination or defense of the thesis continues to be the universal practice. This is usually preceded by a comprehensive written examination.

The creation of new types of doctor's degrees similar in general character to the Ph. D. degree has become increasingly popular. These new degrees are largely controlled by professional considerations and in a number of instances require of the candidate a period of practical professional or field experience. The emphasis is placed on the applications of knowledge rather than upon the discovery of new knowledge or truth. These degrees are now fully recognized by a large group of leading universities and are on the whole considered to be the equivalent of the Ph. D. degree.

CHAPTER VIII

CONCLUDING OBSERVATIONS

The evolution of graduate instruction in the United States, particularly within the past 50 years, has been a matter of the greatest importance to this country. Graduate schools have been the principal organized stimulating agency and outlet for the creative energies of the talented minds of America and have been one of the most potent sources of influence and power in bringing to realization the present development of our physical and social resources. Graduate instruction has not only been a determining factor in our culture, but to some extent its influence has been felt abroad.

The rapidity of this evolution, as evinced by the large number of institutions that are giving advanced instruction, such as that leading to the master's degree, and the relatively large number of institutions offering work leading to the doctorate has brought forth a number of problems which are of importance in determining the character of graduate study.

1. PRINCIPLES VERSUS APPLICATIONS

The extraordinary expansion of agriculture, industry, commerce, and education, especially between 1870 and 1900, greatly encouraged the establishment of graduate schools throughout the country, and the demands for adequately prepared research leaders and workers were for a long time greater than the supply. Furthermore, as the nature of the socio-economic problems of the time demanded not mere theory, but practical results, the interests of research and graduate study were naturally turned in the direction of the applications of truth and knowledge to these problems

rather than toward general principles. Much of this research yielded few returns of fundamental scientific importance, but often yielded great social as well as financial benefits.

This tendency to investigate applications led to two results. First, a greater concentration on local or regional problems, rather than on those of a more general nature. Second, it helped to detach a great deal of research from the immediate influence of foreign countries, such as Germany and France. The nature of local problems in certain fields made it difficult to keep the close contacts with foreign contributions; furthermore, there was less need for such contacts, as a large amount of excellent source material of local or regional origin was readily available.

2. THE PROBLEM OF THE MODERN FOREIGN LANGUAGE REQUIREMENT

The conditions just noted doubtless have been among the principal causes of the decrease of interest in the study and use of foreign languages as a part of the requirements for the Ph. D. degree. When Latin and Greek were the primary vehicles of culture and scholarship, their requirement was necessary and universal. As the vernacular became an added vehicle of literary and scientific information, less value was placed on the ancient tongues. Benjamin Franklin was one of the first to protest against the use of the ancient languages as the principal media of instruction in the Pennsylvania Academy. As many of the major contributions to literature and science during the past century were the fruits of French and German scholarship, it became imperative for English-speaking scholars to have a knowledge of these tongues. But the universities of this country and of other English-speaking countries have made such large contributions to the several fields of knowledge that their contributions in the English language now constitute a body of such research and cultural value as to compare favorably in quality and quantity with that from foreign sources. With the increase in foreign translations it has come to be felt by many that the value of the untranslated matter often is not of sufficient significance to warrant the enforcing of the for-

eign-language requirement on the majority of graduate students. It has been felt that time can be spent to better advantage in acquiring the use of other tools of investigation or in giving greater attention to the gaining of a new or broader educational content.

There are doubtless other reasons for the partial breakdown of the modern foreign-language requirement. Because of our past insularity, now happily decreasing, it has not been so easy to recognize adequately the scholarly achievements of older nations or cultures. Again, the character of our foreign-language training is partly responsible for some of the difficulties involved. Mastery of even one, not to speak of two foreign languages, sufficient for facile use is seldom achieved by the average high-school student, so that unless the student makes foreign languages a major or a minor in college, his achievement in that subject becomes a vague memory. And even though his record gives outward attestation of linguistic skill, it seldom passes at current value when he enters the graduate school.

The desire on the part of students to escape this requirement is sometimes due to genuine difficulties. Many students through nature or training resist the methods of language teaching which are primarily memory and logic and prefer, as students of science, the method of mathematics or statistics.

From personal observation it would appear that the question of the foreign-language requirement for the Ph. D. is beginning to be settled on its merits. On one hand, there are still many who feel that scholarship of a high order cannot fully be achieved without a continually growing acquaintance with the contributions of foreign thought in the original languages, in both specialized and general fields. The doctor of philosophy needs this broadening atmosphere with its new stimulating thought forms as a deepening of his foundations as a basis for a life of study and research. There can be no question as to the great value of such experience, but under present circumstances there are relatively few candidates who can follow such a plan.

On the other hand, in certain prominent institutions that once held to a rigorous and universal enforcement of the French and German requirement, the policy has been

changed. The matter is left to departmental judgment. If the research demands it, and there is a worthy foreign literature, the necessary language or languages are demanded. If the research does not demand it or if there is a paucity of foreign material, the foreign-language requirement may be waived and, if necessary, other tools or techniques must be used. In other words, the nature of the problem determines the case, whether it be language, statistical methods, or other techniques, or all of these.

From a superficial standpoint, because of the somewhat wide acceptance of the new degrees of Ed. D. and other forms of the applied doctorate, it may seem that the Ph. D. degree has been split, as well as splintered, on the modern foreign-language rock. These new degrees have become popular with students partly because of the flexible character of the modern foreign-language requirements. Foreign languages are seldom required, except when the dissertation demands them, and as these degrees usually represent work in applied fields, local or regional data are more often used. These degrees also appear to be more sincere in their requirements because the enforcement of the foreign language has not degenerated into the bugaboo of an artificial or formal requirement as is often the case for the Ph. D. However, the setting up of these new doctorates is based upon something more fundamental and important—the wide spread of graduate study and research in highly diversified forms which require approaches not only from general research objectives but from professional as well as other practical objectives. It is of interest to note that in the 25 or 30 universities that offer the Ed. D., Sc. D., Eng. D., J. S. D., etc., that the Ph. D. degree is also offered, but the objectives for the latter are more general or theoretical in character.

3. OVEREXPANSION IN GRADUATE DEPARTMENTS

Another question of importance has recently arisen—the tendency to overexpansion on the part of a number of graduate schools. This tendency has natural causes; the desire to meet rapidly growing local and regional demands, the pressure which calls for a small political unit, denomina-

tion, or other constituency, to demand a complete university organization worthy of recognition. Among the 75 or more universities and colleges that grant the Ph. D. degree the question may be raised as to what extent and on what grounds highly specialized departments can be maintained. From the standpoint of national needs how many of the 75 institutions are justified in covering from 10 to 30 major fields with hundreds of departments, many of which are attended by few students?

During an earlier period the establishment of a number of high-grade graduate schools in strategic locations was natural and useful. But professional competition and local pride have apparently forced other schools to expand their programs with highly specialized courses when there is little genuine justification for it. This has harmed the quality of graduate instruction in many cases and has served to depreciate the value of the doctorate, as well as other higher degrees. It has also been a cause of financial suffering to these institutions, especially since the economic depression.

Such a situation may suggest the desirability of a more logical concentration of specialized effort in the light of State, regional, and National needs. The broader or more general fields of subject matter must needs be common to all graduate schools, with the possible exception of the few whose interest is largely in one or two fields of research. But highly specialized departments in each of the principal fields should be allocated as far as possible by mutual agreement between institutions whose competition serves to weaken the quality of work and effort. Rather than 50 weak centers of highly specialized endeavor, consider the advantages of 5 or 10 well-organized and equipped centers worthy of the fullest recognition, that are by environment and other reasons best adapted for the work. One of the leading physicists of this country remarked that only 5 universities were doing research of a type equivalent to that being done by his local department, and he added slowly and pensively that 20 other schools might be considered as having something of value in their contributions to his particular subject. What about the other 40 graduate departments? And how many of these 20 schools would be better justified in lessening their

efforts in this line and applying their energies to more appropriate fields?

If a national program of graduate instruction could be restrained from unnecessary extravagances by the concentration of highly specialized departments in fewer and more highly organized centers, it might prove very advantageous from the standpoint of costs as well as educational or research efficiency. Already certain institutions have come to agreements on the question of unnecessary duplication of graduate effort. In a certain competing area, agreement has been made by university X that university Y is to be considered the principal research center for a certain field of science while university Y will be the principal research center for a certain humanistic field. In this particular case environmental factors as well as expense have been strong influences in determining this new adjustment.

This matter of voluntary adjustments, however, cannot always be kept in control because it is seldom possible for even the most powerful and wealthy graduate schools to keep from generation to generation a full galaxy of geniuses in every department. New intellectual luminaries arise in unsuspected places and new alignments may be made which draw support away from older and more recognized centers. However, with the aid of the national learned societies, research associations, national and institutional surveys, this concentration of specialized study may be appropriately effected with benefit to the student, the professor, and to higher education in general.

4. THE SELECTION OF THE THESIS OR RESEARCH PROBLEM

Another matter of importance concerns the selection of research or thesis problems. One of the charges against the modern graduate school has been that it has tended from time to time to degrade true research by emphasizing matters relatively unimportant from the standpoint of genuine scholarship. This question has been discussed considerably in recent years. There is no doubt that to provide each year 3,000 research problems of true doctoral caliber and

12,000 subjects adequate for master's theses is a matter of no mean significance. At this rate, within the next 10 years 30,000 doctoral dissertations and 120,000 master's theses will appear on the scene to add to the sum total of human knowledge. To what extent is it possible to originate or to set up genuine research problems? How many of these so-called "research problems" are pseudo problems? How many theses topics are of even secondary significance? Out of this great mass of organized knowledge and information how much is fundamental? How much is worthy of application?

In some places there are indications of a reaction against ultrascientific techniques which, in the minds of superficial students, constitute the main feature and end-all of the research or thesis problem. The question has been raised whether highly technical methods as applied in certain fields have not become as barren of real results to the student and to the problem as were the medieval abuses of the scholastic period when dialectical methods degenerated into the fine art of splitting logical hairs.

Doubtless, these questions are unavoidable. They are forced on us by the tremendous forces of a civilization developing under very high pressure. These problems, many as they have been and many as they will be, have grown out of urgent necessity. They have required and will require exact study until they are gradually solved. Then, perhaps, other categories of problems will have arisen or a new period will begin in which increasing attention will be given again to principles and fundamentals, the basis of a new cycle of scientific and social service.

5. THE EVALUATION OF GRADUATE STUDY

The two attempts to evaluate graduate schools on a Nation-wide basis are symptomatic. They are the results of a growing uncertainty on the part of prospective graduate students as to where they best can specialize and at the same time gain the professional or legal recognition which is necessary in certain professional occupations, such as teaching. With 160 schools offering the master's degree in one

or more fields, including among these 75 or more schools that offer one or more doctor's degrees also, the question of the selection of a proper school may become difficult, not only because of differences in educational offerings and resources but because of economic factors, such as cost of living, tuition, and other educational expenses. There is also the matter of the migration of students from one graduate school to another; the recognition of candidates with only first degrees from all kinds of colleges and schools. If we count also the several undergraduate colleges that are included in a large number of our universities, it will be found that the graduate schools must adjust their articulation with almost 1,000 undergraduate colleges, liberal, technical, or other. It is, therefore, a matter of interest to the professor as well as to the student.

Because there is no national ministry that exercises direct control over higher education, the Association of American Universities has come to be, in a broad sense, the arbiter of standards of graduate work, not by an attempt to control the graduate work of its constituent members and other higher institutions of learning, but by virtue of its recognition as the only existing national accrediting agency for colleges and universities from the point of view of graduate work and research. On the basis of this accrediting, graduates of these colleges and universities are admitted generally to graduate schools.

At the present time the Association of American Universities publishes a list of colleges and universities which it approves. These are classified as follows: Universities of complex organization, usually with graduate schools and certain professional and technological schools. A. Members of the Association of American Universities. This includes 30 institutions.¹ B. Other institutions. This list includes 11 universities and 30 technological institutions; also 202 colleges primarily organized with undergraduate curricula leading to the A. B. or B. S., in some cases with strong technological divisions and occasionally a strong professional school.²

¹ See appendix.

² Journal of proceedings and addresses of the 35th annual conference of the Association of American Universities, 1933. University of Chicago Press, pp. 26-33.

Thus the graduates of these 241 or more institutions have what amounts to immediate access to the graduate schools and advanced professional or technical courses of the 30 universities constituting the Association of American Universities. These graduates are able usually to earn their advanced degrees in the minimum period of time. Those with the master's degree or those with more credit can readily migrate to one of these 30 institutions, as well as other universities and colleges, and have their degrees or credits accepted at par value. By this it should not be assumed that graduates of colleges on regional accredited lists, or even those from nonaccredited colleges, are rejected by the graduate and other higher schools of the association. On the contrary, a liberal attitude is taken with respect to those from the other accredited colleges. Perhaps there is a little more careful scrutiny of the student's record; perhaps some additional work may be required in such cases. Those from nonaccredited colleges are also treated liberally, but often they are obliged to overcome some weakness in their baccalaureate or other programs and along with other candidates are given a chance to prove their worth before gaining the full status of a graduate student.

With these facts in mind, attention is called to the growing number of universities in list B of the association whose graduate schools have developed strong departments in several fields. These in many cases have only begun to emphasize graduate study in comparatively recent years and are in a definite process of evolution from first-class liberal arts colleges or technical schools or both into full-fledged universities capable of handling broadly and deeply research and graduate studies.

It is therefore obvious that such classifications as those of President Hughes and the American Council on Education will become more and more useful in helping all graduate schools to reach the highest goals in all their departments, or to restrict their efforts to fewer fields. At the same time, the critical and stimulating activities of other higher educational associations, public and private research associations, State departments of education, and denominational boards are helping to improve the standards of graduate study by

special studies, by legislative requirements, and other forms of action.

This is the process by which the graduate schools of American universities are being developed; a slow and irregular process, but one by which it is hoped that the creative talents of American society may be brought to their highest consummation.

APPENDIX

1. MEMBERS OF THE ASSOCIATION OF AMERICAN UNIVERSITIES, 1935

(M)—Men only

Brown University, Providence, R. I.
California Institute of Technology (M), Pasadena, Calif.
Catholic University of America, Washington, D. C.
Clark University (M), Worcester, Mass.
Columbia University, New York, N. Y.
Cornell University, Ithaca, N. Y.
Harvard University (M), Cambridge, Mass.
Indiana University, Bloomington, Ind.
Johns Hopkins University, Baltimore, Md.
McGill University, Montreal, Canada.
Massachusetts Institute of Technology, Boston, Mass.
Northwestern University, Evanston, Ill.
Ohio State University, Columbus, Ohio.
Princeton University (M), Princeton, N. J.
Stanford University, Stanford University, Calif.
State University of Iowa, Iowa City, Iowa.
University of California, Berkeley, Calif.
University of Chicago, Chicago, Ill.
University of Illinois, Urbana, Ill.
University of Kansas, Lawrence, Kans.
University of Michigan, Ann Arbor, Mich.
University of Minnesota, Minneapolis, Minn.
University of Missouri, Columbia, Mo.
University of Nebraska, Lincoln, Nebr.
University of North Carolina, Chapel Hill, N. C.
University of Pennsylvania, Philadelphia, Pa.
University of Texas, Austin, Tex.
University of Toronto, Toronto, Canada.
University of Virginia (M), Charlottesville, Va.
University of Wisconsin, Madison, Wis.
Washington University, St. Louis, Mo.
Yale University (M), New Haven, Conn.

2. GRADUATE STUDY UNDER THE AUSPICES OF THE FEDERAL GOVERNMENT

For a great many years the various libraries, museums, laboratories, and observatories that have been a part of the several departments or other establishments of the Federal Government have been available for the use of students, investigators, and research workers. (See 27 Stat. 395 and 31 Stat. 1010.)

GRADUATE SCHOOL OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

In order to meet the needs of the Department the Secretary of Agriculture organized the graduate school of the Department in 1921. Secretary Henry C. Wallace in his report for 1921 said:

To maintain the efficiency in a scientific organization under civil-service regulations some provisions must be made for adequate training of those who enter the service in the lower positions. * * * To meet this need the Department has provided for graduate training in various lines for the scientific workers. The work is given outside of office hours, is supported entirely by the students, and is therefore unofficial in nature. It is, however, supervised and encouraged by the Department. Everything necessary is done to insure the highest standard for the work, so that it will not only be effective training for the Department workers, but satisfactory to the graduate institutions of the country. It is expected that the ambitious workers of the Department will make arrangements with such graduate institutions for the acceptance of these credits and will ultimately attend these institutions and complete any work required for advanced degrees. Leaves of absence for this purpose are being arranged and closer cooperation with graduate departments in the solution of research problems is being considered.

The graduate school of the Department of Agriculture is administered by the director, who is director of scientific work of the United States Department of Agriculture. There also are an associate director, secretary and registrar, and a treasurer. The work is planned by the graduate-school council selected from the leading scientists of the department. The director of the school is chairman of the council, which at this time includes 24 members. The instructional

staff includes 53 members, several of whom are from outside universities. The school grants no degrees. Properly qualified outside students may be admitted to the school.¹

ADVANCED EDUCATIONAL WORK AT THE BUREAU OF STANDARDS, UNITED STATES DEPARTMENT OF COMMERCE

The work at the Bureau of Standards was begun in 1908. The courses offered have been in the fields of physics, chemistry, and mathematics. As in the graduate school of the United States Department of Agriculture, students obtain their degrees at well-known universities. While the major research is conducted largely at the laboratories of the Bureau of Standards, students must fulfill the minimum residence requirements of the university where the degree is to be obtained.

The graduate work at the Bureau of Standards is administered by a committee of five, appointed by the director of the Bureau. Three members are named by the director and two by the staff. The school grants no degrees.²

¹ From data submitted to the author Sept. 26, 1934, by Dr. A. F. Woods, director of the graduate school.


² From data submitted to the author by Dr. Lyman J. Briggs, director of the Bureau of Standards.

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