CONFIDENTIAL DOCUMENT

REPORT

OF THE

SPECIAL COMMITTEE OF THREE

ON

ENTRANCE REQUIREMENTS

AND

MAINTENANCE OF STANDARDS

PRINCETON UNIVERSITY

1911

CONFIDENTIAL DOCUMENT

REPORT

OF THE

SPECIAL COMMITTEE OF THREE

ON

ENTRANCE REQUIREMENTS

AND

MAINTENANCE OF STANDARDS

PRINCETON UNIVERSITY

1911

At its regular meeting on January 12, 1911, the Board of Trustees of Princeton University passed the following resolution:

"Resolved, that the Faculty be requested to consider at as early a date as possible, the whole matter of the entrance requirements for the various courses, and the standards maintained in those courses, to make comparison with other institutions, and to ascertain the attitude of secondary schools towards Princeton in regard to these requirements and standards, and that the Faculty report thereon to this Board."

At its regular meeting on February 6, 1911, the Faculty referred this remit for consideration and action to a joint meeting of the Committee on the Course of Study, the Committee on Examinations and Standing, and the Committee on Entrance. At a joint meeting of these three committees, the following resolution, which was adopted by the University Faculty at its regular meeting, February 20, 1911, was passed:

"Resolved, that a special committee of three be appointed to collect such information as shall in their opinion be of service in conducting the investigation requested of the Faculty by the Board of Trustees, and to report the same to the Faculty."

In obedience to this resolution the undersigned members of the Faculty were appointed by Dean Fine to gather the information referred to by the Faculty resolution. This Committee proceeded to gather what information it could in regard to the points suggested, by a study of the entrance requirements of other institutions, by correspondence with leading officials of other universities in regard to their rules of scholarship and the administration of the same, and by addressing a series of questions to over five hundred headmasters and principals of secondary schools.

This information the Committee herewith submits for the consideration of the Faculty; and as the net proceeds of its report, without wishing to commit itself as a whole, or any of its members, to specific recommendations, begs leave to suggest that, in its opinion, four points emerge as the chief topics for consideration:

1. The requirement of Greek for admission to the A.B. course.

2. The question of greater flexibility in the entrance requirements for admission to the Litt.B. and B.S. courses.

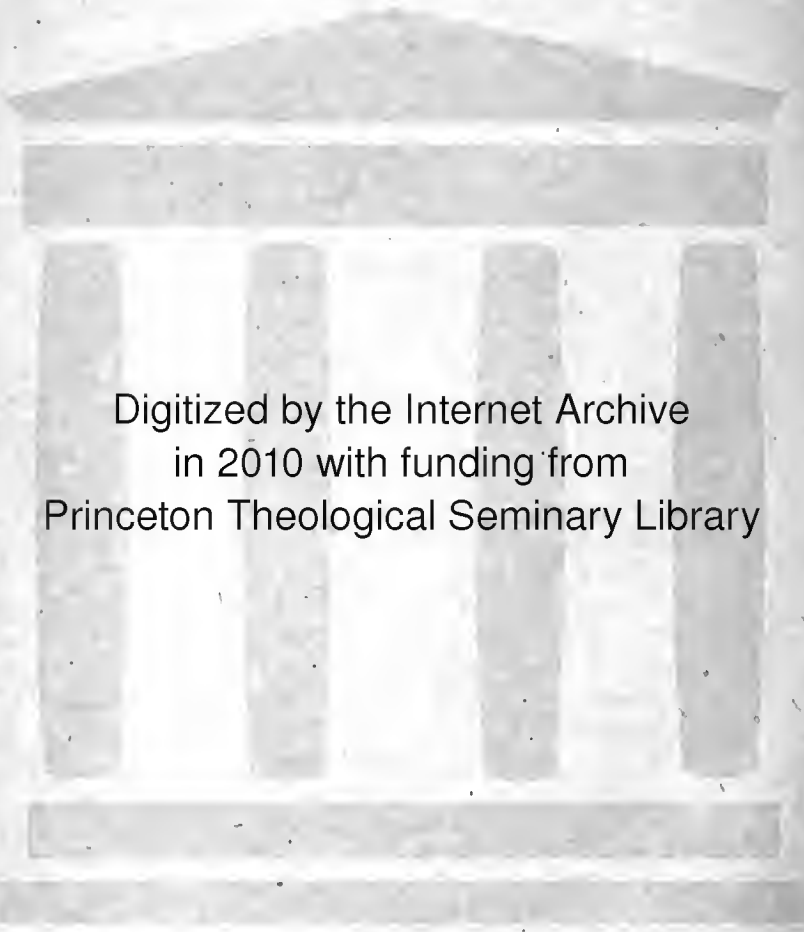
3. The question of admission by examination in all the subjects required, or by examination in the chief subjects with acceptance of secondary school records for the remainder.

4. Some modification of the present regulations governing cases of deficiency in scholarship, such as the introduction of a system of probation.

Respectfully submitted,

J. Preston Hoskins, *Chairman.*
Robert K. Root,
V. Lansing Collins.

June 5, 1911.



CHAPTER I.

Requirements for Admission

In considering the requirements for admission to the university it will be well to divide the matter into three sections: (1) the quantity of the requirements, (2) the range of choice offered to the candidate, and (3) the method of admission. For purposes of comparison with the requirements of Princeton, ten institutions have been chosen, all of which are situated along the Atlantic seaboard, and, with the exception of Cornell, which is coeducational, represent the general type of institution to which Princeton belongs. These institutions are Harvard, Yale, Columbia, Cornell, Pennsylvania, Dartmouth, Williams, Amherst, Lafayette and the University of Virginia.

(1) *Entrance Requirements quantitatively considered.*

The most convenient way to measure the amount of preparation required of candidates for admission to the University is in terms of the so-called Carnegie unit, which is based upon the length of time taken in an ordinary school to complete a given requirement. A Carnegie unit represents one year's work at an average of five periods a week. Measured in these units the requirements of the several institutions under consideration are as follows:

Princeton 15.5 for A.B., Litt.B., B.S., 12.5 or 14.5 for C.E.
Harvard 16 for all departments.
Yale 15.5* for the College, 14 to 14.5 for S.S.S.
Columbia 14.5 for all departments.
Cornell 15 for all departments.
Pennsylvania 14.5 (Engineering 12-13).
Dartmouth 14.5.
Amherst 14.
Williams 14.5.
Lafayette (not stated in Carnegie Report).
University of Virginia (not stated).

* In regard to Yale the conditions are a little peculiar. According to the Report of the Carnegie Foundation the number of units required for admission to Yale College is 14.5, i. e., relatively low. But in the opinion of several head-masters they are in reality nearer 15.5. This follows from the manner in which Yale divides her entrance requirement in modern language into a one-year course, a two-year course, and a three-year course. According to this definition the value of the Yale German A or French A would be one point. But in the opinion of head-masters it is actually worth two points. This would make the total for Yale College 15.5 points instead of 14.5 as it is on paper.

Where sixteen units, as at Harvard, are required for admission, it therefore means that it would take the average candidate four school years at an average of twenty periods per week to cover the work as defined in the requirements. Admission on fourteen units —the minimum that an institution must have in order to become a member of the Carnegie Foundation—would require three and one half years and so on. Where the number of units required for admission is fifteen or over, the entrance requirements may be said to be comparatively high. Below fifteen they are relatively low.

The units of admission inserted in our table have been taken from the Report of the Carnegie Foundation for the year 1908. But it must not be assumed that the standard of admission to the respective universities and colleges has remained constant throughout the last decade. As a matter of fact this period has been one of much change and readjustment, not a little of it, within the last five years, being due to the influence of the Carnegie Foundation itself. Even at the present time the standard for admission in several universities is not the same for all courses. Absolute uniformity can at present be asserted only of Harvard and Cornell. Everywhere else there are differences in the requirements for different departments in the same university amounting at times to as much as two or three Carnegie units. There has been a tendency to raise the entrance requirements during the last ten years, particularly for the engineering course. This movement was begun by Harvard in 1900, was participated in by Princeton about 1905, and has showed itself in various changes elsewhere.

In the case of two institutions—the University of Virginia and Lafayette College—the units of admission have not been stated. These institutions are not members of the Carnegie Foundation. Up to the year 1904, the requirements for admission to the University of Virginia were not quantitatively defined. A good high school course was the only requisite. In 1904 a requirement of 10 units was fixed according to the definitions of the Southern Association of Schools and Colleges whose unit is identical with that of the Carnegie Foundation. In 1908 the standard was raised to 12 and finally, in 1909, to 14 units, thus bringing the institution up to the minimum necessary to enjoy the benefits of Mr. Carnegie's munificence. But of these 14 units only 7 are required subjects, the remainder being elective.

Lafayette is in many respects the most conservative of all the institutions included in the table. Not only does it still require for

admission Arithmetic and Geography—subjects assumed as fundamental by most other colleges and universities—but its course throughout Freshman and Sophomore year is made up entirely of required studies. Not reckoning Arithmetic and Geography, Lafayette's standard of admission in 1900 for the A.B. and Ph.B. courses was about 13 units. By 1908 it was raised to 14 units, but for the Engineering and B.S. courses it still remains about twelve and one-half to thirteen.

To sum up the quantitative relations of the requirements for admission to the eleven institutions under comparison, a glance at the figures above will show that the requirements of Princeton, Harvard, Yale and Cornell are relatively high, i. e., 15 units or over. Those of the other institutions are relatively low.

(2) *Entrance Electives.*

In a previous paragraph mention was made of the tendency during the last decade to increase the quantity of entrance requirements particularly for admission to the B.S. and engineering courses. Where this has been done it has usually gone hand in hand with a wider choice of entrance subjects in which the candidate could elect to be examined. According to the principle of elective or prescribed entrance subjects the institutions chosen for comparison fall into two pretty well defined groups. Harvard, Columbia, Cornell, the University of Pennsylvania and the University of Virginia represent the more liberal type with a wide choice of entrance electives; while Yale, Princeton, Lafayette, Amherst and Williams—Dartmouth is reserved for special consideration in a subsequent paragraph—still preserve more of the old college system. While none of these latter keeps its entrance requirements absolutely fixed, yet the range of choice is pretty limited, certain combinations of subjects usually being specified as substitutes for something else; for example, the combination of an advanced course in Mathematics with a modern language as a substitute for Greek. But as the more liberal elective system in entrance subjects is unquestionably the goal towards which all our larger institutions are moving—the fact might be mentioned that Princeton paid homage to this principle last year when the new C.E. entrance requirements were adopted, and the new entrance requirements for Yale College, adopted in 1910, embody the elective principle—it may be well to dwell a little upon it here. It is a system which has the approval of the National Education Association; in fact it is the outcome of a series of recommendations passed by that

body about the year 1895 or 1896. At the same time it enables our public high-schools to furnish a good preparation for college without missing the main end of high-school training, the preparation of pupils, in the majority of cases, directly for the work of life.

According to this scheme of secondary education all knowledge is divided, for practical purposes, into five great spheres: the vernacular and its literature, mathematics as the key to the exact sciences, foreign languages, ancient and modern, as the embodiment of the thought and feeling of other nations, history to vitalize the past and to show how our present civilization has come to be what it is, and finally sciences, exact and descriptive. In his four-year secondary course each student is brought into contact with these five spheres and is given the opportunity to try himself out and find, if he can, where his tastes and aptitudes lie. Apart from English and a minimum quantity of Mathematics usually embracing Elementary Algebra and Plane Geometry, the student enjoys considerable option in his course. He can choose languages, ancient or modern, or a combination of ancient and modern; he may study United States History, English History, Ancient History or General History, or any *two* of the same, and in the sciences he may begin Physics, Chemistry or a biological science, such as Zoology or Botany. At the same time, in the latter half of his course, a student can pursue higher mathematics, if his aptitudes so incline him, he can keep up the languages already begun, he can take commercial courses if his goal is a business career, or he can gain some skill in the arts of expression, such as drawing, manual training, etc., if he be aiming at a mechanical or technical vocation.

It will be seen at once that such a system as this clashes with the traditional college entrance requirements, because the latter are usually confined to a few specified subjects within the spheres enumerated and require a large quantity of these few.

In facing this question, Harvard College has attempted to solve the difficulty by requiring besides English (3), Elementary Algebra (1½) and Plane Geometry (1), one ancient (4) and one modern language (2) and one science (1). At the same time, by insisting that some points shall be in advanced subjects, the Harvard system provides that some study or studies be continued long enough to give coherence and back bone to the student's preparatory training. Similarly at Cornell, where a uniform requirement of fifteen points is demanded for admission to all departments, a fixed minimum of ten or eleven points—English (3), Foreign Languages (4), History

(1), Elementary Algebra (1), Plane Geometry (1)— is required of all, while the remaining four or five points are elective. Of course for admission to the departments of Engineering and Architecture extra mathematics (2 points) is added. But observe that for general science—i. e., the traditional B.S. course—no extra mathematics is required, because it is recognized that advanced mathematics either as an acquisition or a discipline is not necessary for the study of Chemistry or of Biology, and these are spheres of knowledge which now rival Physics in importance.

It has been mentioned that Princeton paid homage to this principle of entrance electives last year. A study of the new C.E. entrance requirements which go into full effect in 1912, will show that 12.5 points are required and 2 elective. But among the required points the 4 in language may be confined to French and German or they may be distributed between Latin and a modern language, while the 2 elective points permit the candidate to pay greater attention to Language, to Science, or History, according to his tastes or aptitudes or according to the particular arrangement of his school programme of studies.

In like manner the new entrance requirements for admission to Yale College, announced in the catalogue for 1910-1911, do away with the specific combinations hitherto allowed as substitutes for Greek. Instead they require 4 points in Latin, 2 in French or German, 2½ in Mathematics, and 3 in English, while the additional 4 points required may be offered in Language, ancient or modern, in Higher Mathematics, in Chemistry or Physics, or in History, or any combination of these subjects aggregating four units.

Of course there is one other important point connected with the question of entrance electives which must be borne in mind in considering the relation of secondary school and college. Entrance options necessarily involve some liberty of election in the course of Freshman year course. ~~A group system of studies is one solution, the~~ portunity to continue some of the subjects offered for admission in order that the transition from the secondary school may remain unbroken. On the other, it is highly desirable that he be allowed to begin certain subjects which he may not previously have had. To meet this difficulty some degree of flexibility is demanded in the Freshman year course. A group system of studies is one solution, the requirement to continue at least three of the subjects offered for admission is another. The latter scheme enables the student to continue studies, already begun, to a point where they are of value both

on the one hand the candidate must have the op-

as a discipline and as an acquisition. While the liberty to choose, say, two new electives, enables him to widen his horizon and to lay the foundation for the particular group of studies or line of study which he intends to pursue. This scheme thus brings the secondary school into more intimate relation to the college without robbing the former of the liberty which the high-school must have and which all good private schools covet.

Dartmouth, too, has made liberal concessions to the elective principle. To the A.B. course a candidate may be admitted both with and without Greek, but if he enter without Greek he is not compelled to take more Mathematics. French or German, a science, physical or biological, or more History, or some combination of these is accepted as a substitute. Similarly to the B.S. course he may be admitted on as much Mathematics, i. e., 3.5 units, as is required at Princeton for admission to the same course, but he is not required to offer more than 2.5 units; for more language, ancient or modern, History, and a science are accepted. In the Freshman year candidates for the A.B. degree, who take Greek, must continue practically everything they offer for admission except History, yet those who enter without Greek can elect Graphics, Chemistry, Physics, Biology, or History. On the B.S. side the candidate has two electives in Freshman year and is free to begin the study of two new subjects from the group Physics, Chemistry, Biology, History, and the Modern Languages. So that in essence if not in form, Dartmouth has what may be characterized as a pretty liberal adaptation of the entrance elective system.

Amherst likewise requires only 14 units for admission and on the A.B. side offers the A.B. candidate a choice between elementary and advanced Latin and Greek, i. e., three years of Latin, two years of Greek and two years of a modern language are accepted as a substitute for four years of Latin and three years of Greek. For the B.S. course 2 points in History are accepted, and for no course are more than 2 points in Mathematics required. As at Dartmouth, the A.B. Freshman can elect only one course; but the B. S. candidate has the choice of two. Besides this, at Amherst as well as at Williams, liberal arrangements—as low as 11 or 12 Carnegie units for admission—are made to accommodate special or partial students. While these three colleges, Dartmouth, Amherst and Williams have thus aimed to preserve, at least in form, the old college system with Latin and Greek, they have at the same time in one way or another made pretty liberal concessions to the elective

principle both in their entrance requirements and in the course of Freshman year.

(3) *The Method of Admission*

The discussion hitherto has been confined to the quantitative aspect of entrance requirements and to the effect which freedom of choice in entrance subjects might be said to have on the arrangement of courses in Freshman year. This leads to the third and most important point in the relations existing between secondary school and college, namely, the method of admission. In addition to the requirements quantitatively defined a few institutions add a qualitative test in the form of an examination. In other words, of the institutions under consideration, four, Harvard, Yale, Princeton, and Columbia admit candidates only on examination. To all the others a candidate may, of course, be admitted by examination; but they all admit likewise without examination on the certificates of accredited secondary schools both public and private.

Harvard has recently adopted a new method of admission, to take effect in June, 1911, which may be characterized as a compromise between the old methods of admission by examination and by certificate.

Instead of prescribing the school course of the boy who wishes to enter, either directly by naming and defining subjects, or indirectly by an elaborate system of rating the studies of a school course in points or in units, under the new plan the college accepts the judgment of the school as to the candidate's programme of studies, subject only to the general limitations that the candidate's secondary school course has extended over four years, that it has omitted no one of the four spheres of knowledge: Languages, Science, Mathematics and History, and that two of the studies have been pursued beyond their elementary stages, i. e., to the stage required by the present advanced examinations of Harvard College. When the candidate has presented a satisfactory official statement in detail of the subjects studied by him, the amount of time devoted to each, and the quality of his work in each subject, then he may present himself for examinations in four subjects as follows:

(a) English.

(b) Latin *or* for candidates for the B. S. degree, French or German.

(c) Mathematics, or Physics, or Chemistry.

(d) Any subject, not already selected under (b) or (c), from the

following list:—Greek, History, Physics, French, Mathematics, Chemistry, German.

These four examinations will aim to be, as far as possible, qualitative in character. They are intended to test the intellectual efficiency of the boy at the end of his school course, to determine whether the quality of the candidate's scholarship is satisfactory, and not whether he has done a certain prescribed amount of work in a certain way. All four examinations must be taken at one time, either in June or in September; and the candidate, if admitted, will be admitted without conditions. Thus, while preserving the advantages of a liberal entrance elective system, the new plan is to a certain extent a return to first principles; for its effect will be to encourage a thorough preparation in a few chosen studies, one of the great advantages claimed for the old college system before 1870, with its training in the fixed requirements, Latin, Greek, and Mathematics. In the language of Prof. J. G. Hart, Chairman of the Harvard Committee on Admission: "The admission of a candidate under this plan, therefore, depends upon good scholarship as shown in two ways—in his school work and in his college tests. He cannot secure admission by scoring points or by working up examinations one or two at a time. He must have done good work in his school according to the testimony of his teachers; and he must meet successfully college tests at the time when he is ready to enter."

Now, in commenting upon a new departure of this kind it is only a truism to say that the success of the plan will depend upon the efficiency with which it is executed. That is true of almost any plan. The Harvard Committee on Admission already foresees various grave difficulties. In the first place it will be no easy task to prepare a type of examination paper sufficiently flexible to fit various methods of instruction in various types of schools and to enable the candidate to exhibit the full amount and quality of his attainments. In the second, so far as the secondary school records of candidates are concerned, the entrance committee will have to reckon with the difficulty of widely divergent standards of marking in different schools. To meet the first difficulty it is probable that question-papers will have to be so set that the candidate may have a choice among several different questions bearing on the same point or involving the same principle. This would tend to equalize differences in various methods of instruction, for a different formulation of the same question will often enable the pupil to grasp its meaning more clearly. Besides, this plan of a choice among several

different questions is one that has often been advocated by school-masters as fairer to the candidate and more just to the school. The second difficulty will not be obviated so easily, for the methods and standards of grading in different schools cannot be equalized by so simple a process as the change in the character of a question-paper. The only practical solution of this difficulty seems to be the ultimate establishment of a list of accredited schools whose standards have been proved to be sufficiently high to warrant the acceptance at their face value of the marks in those subjects in which the candidate is not examined. To accomplish this end the Harvard Committee on Admission has been authorized to advise with the school-teachers in regard to the preparation of papers as well as in regard to the methods and standards of marking. It is its hope that the plan will result in a more cordial coöperation between school and college which will serve the common interests of both.

Of a much more serious character is the criticism that the new Harvard plan will tend to lower the college standard of admission by impairing the rigor of the training which entrance examinations impose, and consequently making entrance to college easier. In considering this phase of the question, a few facts must be kept in mind. No one familiar with the details of admission by examinations as at present conducted will claim that the results are entirely satisfactory. The very fact that Princeton during the last five years has dropped annually a total of seventy-eight Freshmen and Sophomores — students whose courses are made up chiefly of subjects in which they had actually passed entrance examinations—shows that this method of admission is far from perfect. If due consideration of the candidate's school record as well as the opinion of the school-master will help an entrance committee in reaching a better judgment, then such information is not only something devoutly to be wished but also something to be eagerly sought.

Apart from this negative aspect of the matter, two positive objections can be urged against admission by examination. The tendency to increase the quantity of the requirements with examination in each subject in order to ascertain whether the candidate has covered the ground tends sometimes to lead both pupil and teacher to lay greater stress on quantity than on quality. To cover the work as defined in the entrance requirements, the school-master is at times forced to sacrifice thoroughness; and as a result "coaching to pass examinations", not the discipline of the mind, becomes the chief aim.

Secondly the rigorous insistence on entrance requirements, quantitatively defined with examinations covering the whole field, has made it possible for only a special kind of secondary school, with a programme of studies especially designed for the purpose, to meet the demand. A student must be started for college several years before he is ready to enter and be prepared along the lines demanded. To do this he must enter a private preparatory school where the expenses of education are relatively great. If there be any truth in the charge so often heard that some of our Eastern institutions have become colleges only for rich men's sons, then it can be in some measure attributed to this condition; and the recent bitter attacks on the colleges by some of our public high-school principals have their foundation in the fact that the attempt to adjust high-school courses to the entrance demand of colleges robs the former institution of its liberty to plan a course of study most advantageous to the great majority of its students. On the other hand, in the opinion of many able school-masters the very fact that a definite amount of work and examination therein is required is an additional incentive for students to do good work. In other words, without some such constraint as a required examination in a definite amount of work school-masters find it difficult to make many college candidates take a study seriously. Bearing in mind the fact that the average healthy boy does not take to study instinctively, there is much truth in this statement; and it is just this aspect of the question which has been repeatedly pointed out as the most vulnerable point in the method of admission to college by certificate. Idealists may insist that this is not the proper spirit in education and that a subject which a student takes under compulsion is not likely to prove of much value to him, but Jean Jacques Rousseau and George Bernard Shaw notwithstanding, it still remains an unshaken fact, known only too well to the successful teacher, that the average boy will not study much that is difficult unless he is compelled to do so.

So far, however, as this criticism bears upon a plan of admission with examination in a few important subjects and the acceptance of satisfactory school records for the remainder, it may be pointed out that such a plan would enable the school-master to prepare a candidate thoroughly in a few important subjects even if so much was not accomplished in others. In the opinion of many educators the great number and variety of subjects now taught in our secondary schools is a hindrance rather than a help to true education. The American boy gets a smattering of many things and acquires a quickness and

versatility which enables him often to turn his knowledge to practical account, but thoroughness of training he almost never gets. He is almost never willing to tackle any subject which puts his powers to a long strain and to stick to his task to the end. As a nation we have not perhaps as yet thoroughly realized the significance of this defect; but as the competition in American life grows keener and the strain more severe, thoroughness is a quality which is likely to prove more valuable than quickness and versatility. If the new Harvard plan, therefore, does enable the school-master to give students a more thorough discipline, and at the same time makes it possible for a larger number of boys in secondary schools of all types to get a good college preparation, then it is certainly sound in principle, whatever it may prove to be in practice amid the wide diversity of American educational methods and standards.

CHAPTER II.*

The Comparative Growth in the Undergraduate Departments of Eleven Eastern Universities and Colleges during the Decade 1900-1910.

The factors which determine the growth of a university are many, and their interrelation and relative importance present a problem of baffling complexity, the solution of which probably varies in individual cases. Among the more important factors may be mentioned locality (whether city or country), the cost of living (which must take into account not only the fixed charges for tuition, room, and board, but also the less easily calculable expenditures which are demanded of the average undergraduate by the general manner of living of his fellows), the loyalty and enthusiasm of the body of alumni, the nature and variety of the courses offered, and the requirements and method of admission.

Of these factors the last, is certainly very important; since it is obvious that high requirements strictly enforced by means of examinations keep out less well prepared or less able students and thus tend to keep down the total enrollment, while lower requirements together with the laxer application of them which results from the certificate method of entrance tend equally to increase the numbers. Moreover, of all the factors involved, that of entrance requirements is the easiest to observe and estimate. In analyzing the tables of comparative growth, gathered from annual catalogues and reports, which it has to present, your committee has therefore called attention in considerable detail to this factor of the problem.

For purposes of comparison eleven institutions, lying along the Atlantic seaboard have been chosen. Five of these are located in New England, five in the Middle States, and one in the South. They thus may fairly claim to be representative of that section of the country which has been longest settled, and which is most densely populated. These eleven institutions represent all phases of university and collegiate development from the most advanced and highly specialized city universities, such as Harvard, Columbia, and the University of Pennsylvania to the more conservative rural col-

* There is a difference of opinion in the Committee as to the importance of the matter of growth in enrollment. Professor Root wished to print this chapter as an appendix at the end of the report. The majority of the Committee felt that it should be included in the body of the report.

leges of the traditional type such as Amherst and Williams, which offer only general humanistic and general science courses. One of these eleven, the University of Virginia, rests wholly upon a State foundation and one other, Cornell, is in part supported by state appropriations, is coeducational, and stands in intimate relation to the public school system of the State. Any tendency, therefore, manifesting itself in a majority of these institutions is one, which is sure, sooner or later, to make itself felt in the others.

Before proceeding to the more general questions of entrance requirements, methods of admission, elective versus required studies, etc., it may be well to point out certain individual peculiarities in some of the institutions included in the table. These local characteristics, so to speak, are not shared by other institutions; but they are none the less factors involved in the development of individual universities and must be kept in mind if a fair and just comparison between institutions is to be drawn.

Thus the actual loss of 221 in the total undergraduate enrollment of Harvard College and the Lawrence Scientific School between 1900 and 1910 is coupled with the fact that Harvard, since the year 1906, has gradually eliminated all undergraduate courses in Engineering. This loss of over 400 scientific students has been replaced, up to the year 1910, by a total of only eighty-seven in the graduate school of Applied Sciences. Again, the fact that the Sheffield Scientific School at Yale has during the decade under consideration more than doubled its enrollment—showing an actual gain of 605 or almost 120 per cent—is due at least in part to the circumstance that the course is only three years in length, while elsewhere general science and engineering courses normally embrace four.

The tendency to cut down the length of the undergraduate course shows itself in a different way in the case of Columbia. Here the courses in Columbia College are being subordinated to the demands of the professional schools in a manner which practically reduces the undergraduate course to two or three years. A student in Columbia College can under present regulations enter the Columbia Medical School or the Teachers' College at the end of his sophomore year, and at the end of his four years professional training receive both his bachelor's and his professional degree. Similarly at the end of Junior year in Columbia College he can enter the Columbia Law School, and at the end of his three years' law course receive both degrees. This is a privilege that naturally proves attractive to many men and thus becomes a factor in Columbia's growth, not paralleled elsewhere, at least to so great a degree.

Only an institution situated in a great city could hope to develop, as the University of Pennsylvania has done, a school of Finance and Commerce from a total enrollment of 139 in 1900 to a total of 494 in 1910. Among all the institutions compared, Cornell is the only one which possesses a School of Agriculture. The enrollment in this school has grown from 91 in 1900 to 507 in 1910, thus forming almost one-sixth of the total number of undergraduates. Cornell stands alone, also, in the fact that it admits students of both sexes. This might easily become an important factor in the growth of an institution. But as a matter of fact women students have had no part in the increase in Cornell's enrollment during the last ten years. Engineering courses they do not take; and in the Department of Arts and Sciences only 238 were enrolled in 1910 as compared with 263 in 1900, showing that the number matriculated is actually on the decrease.

Lastly, the peculiar constitution as well as the peculiar history of the University of Virginia must be borne in mind when that institution is drawn into comparison. Founded on the plan of European institutions of learning, without fixed entrance requirements, and without a fixed course at least in the Academic Department, it remained for three decades an anomaly among American institutions of learning, and then suffered, like all other Southern interests, for three decades more from the consequences of the Civil War. Only within the last five years has it undergone a thorough reorganization under which it is now being remodelled after the plan of our leading State universities.

As this chapter is intended to contain a comparison of the growth in the undergraduate departments of certain institutions, it may be well here to state, just what is meant by this term. Undergraduate departments, in the sense used here, include all those courses, however designated, which require for admission the Carnegie Foundation standard of at least fourteen units, which normally take four years to complete, and which lead to a bachelor's degree. Divinity, Law, Medical, and Summer schools are, of course, excluded; and only in one case has a graduate course been included. The number of students in the graduate course in Electrical Engineering at Princeton, in the graduate courses in Engineering at Dartmouth and at Harvard (from the year 1906-7 on) has been inserted to the right of the main column under the heads of these universities; but these figures have not in any case been included in the totals. This exception has been made in order to have some clue to the prospects

of relative growth in graduate and undergraduate engineering courses. For, in the effort to improve the quality of technological education, it seems to be an open question whether it is wiser to put engineering courses on a graduate basis, as has always been the case at Dartmouth and as Harvard has recently done, or whether it is not better to add to the undergraduate engineering courses as they already exist, one or two years for study along special lines. This is the method which Yale is adopting; and at Cornell last September (1910) candidates whose entrance records were not entirely satisfactory were admitted only with the understanding that they were to receive their degrees at the end of five years. From the point of view of growth a glance at the figures in the table will show that the latter method has all the advantage.

Before analyzing the growth of the several institutions under consideration a few words of explanation in regard to our tables will be necessary; for the formal arrangement of a table of statistics presents not a few technical difficulties. While the tendency to multiply so-called "nondescript" degrees so prevalent in the eighties and nineties has happily been overcome, nevertheless the courses leading to the same degree in different institutions differ widely. Besides the A.B. and the B.S. degrees we have to deal with only two others: the Litt.B. degree at Princeton and the Ph.B. degree at Lafayette and at Yale. The Princeton Litt.B. and the Lafayette Ph.B. degree stand for a general humanistic course with Latin but without Greek. At all other institutions under consideration but one, the A.B. degree is conferred for this course. In other words the A.B. figures given for every institution except Princeton, University of Pennsylvania and Lafayette, include those students taking both Latin and Greek as well as those who take Latin but no Greek. The Ph.B. degree at Yale is given for the three years' technical course in the Sheffield Scientific School. It is in fact a course in applied science, and, barring the fact that this degree is conferred at the end of three years, would almost anywhere else be designated an engineering course. For this reason no special note of it has been made in the table, and it is reckoned, as far as possible, with the C.E. courses elsewhere.

Furthermore, the B.S. degree at Princeton involves a four years' entrance requirement and a Freshman year course in Latin. But this holds true at the present writing only of Amherst (since 1905) and Williams. During the decade in question Yale did require three years of preparatory Latin for admission to the Sheffield Scientific School; but in 1910 Latin was made elective, and an equivalent

amount of French and German is now accepted as a substitute. Everywhere else the B.S. degree is conferred for courses which may have no Latin in them at all and which usually do not require any more mathematics for entrance than the A.B. course.

But the difficulties do not end here. Very often as at Columbia, Cornell, Pennsylvania, Virginia, Dartmouth, Amherst, and Williams, the A.B. candidates and the B.S. candidates, or what would correspond to them according to the Princeton meaning of the degrees, are listed without distinction under the head of "College", "Arts and Sciences", etc. In the table this has been indicated by a bracket with the usual abbreviations before it. Similarly, Yale under the head Sheffield Scientific School groups her Ph.B., her students of Agriculture, Applied Chemistry, and her Civil, Mechanical and Electrical Engineering students together. The Sibley School at Cornell and the Department of Electrical Engineering at Pennsylvania include both Mechanical and Electrical Engineers with no means of distinction; while at the University of Virginia the Engineering Department embraces a course in Mining as well as in Civil, Mechanical and Electrical Engineering. In consulting the table, therefore, it is necessary to note exactly what the figures include or comparisons may lead to erroneous conclusions. Each department in the various universities has been kept separate so far as the catalogues furnished data. The apparent absence of *special* students in most institutions should not lead to the inference that they do not exist, for only a few institutions list them separately. Where no separate figure is given for them it should be assumed that they, too, are included in the totals of the several departments.

As Princeton is the natural starting point for comparison, the figures in the upper half columns, as far as possible, include only those departments which Princeton has in common with other universities and colleges under consideration. Below the first total have been added the figures for such departments and courses as Princeton does not possess. This will render a comparison easier; but the question arises here whether it would not be justifiable to reckon to the B.S. totals the number listed under the heads: Biology, Chemistry, Geology, etc., in the lower half of the column at such institutions as Harvard, Columbia, Pennsylvania and Lafayette, for these separate schools or departments so-called are in fact only B.S. courses, with Biology, Chemistry, Geology, etc., as their main subject. However, the arrangement of such courses and departments in the lower half of the column will not only show how far these courses have contributed to the growth of the respective institutions

	HARVARD	YALE	PRINCE-TON	COLUMBIA	CORNELL	PENNSYL-VANIA	VIRGINIA	DARTM'UTH	LAFAY-ETTE	AMHERST	WILL'AMS
	16 Units for All Departments	College 15.5 Units. Sheff. Scien. Sch'l 14 to 14.5 Units	College, 15.5 (15.8) Units. S. of S. 14.5 or 12.5 Units.	14.5 Units for All Departments	15 Units for All Departments.	14.5 Units. Engineering & Wharton Sch'l 12-13 Units.		14.5 Units		14 Units Specials: 11.5 Units.	14.5 Units. Specials: 11.5 Units.
Year 1900 and 1901	A.B. 1092 B.S. 170 C.E. 62 E.E. 42 Specials 2269 M.E. 64 Chem. 21 Mining 42 Architect 26 Landscape-Architect 11 Geology 6 Biology 10 Anat.& Phys. 31 For Teachers of Science 22 2499	1190 B.S. & C.E. 505 M.E. and E.E. 48 1695 Forestry 7 Music 126 Fine Arts 75 1903	749 266 98 Grad. E.E. Course 7 48 1161	A.B. & B.S. 474 C.E. 78 E.E. & M.E. 106 696 M.E. 98 Chem. 39 Mining 110 Metallurg 7 Achtect. 58 1008	A.B. & B.S. 744 C.E. 179 E.E. & M.E. 654 1577 Architect. 50 Agricult're 91 Forestry 22 1740	A.B. & B.S. 197 C.E. 61 E.E. & M.E. 126 14 398 Chem. & Chem. Eng. 60 Architecture 66 Sch'l Fin'ce & Com'rce 136 Biology 55 721 Music 30 751	A.B. & B.S. 233 C.E. M.E. E.E. 33 and Mining 326	A.B & B.S. 642 Grad. Course C.E. M.E. and E.E. 30 642	122 B.S. 19 Ph.B. 96 C.E. 52 E.E. 30 319 Chem. 25 Mining 16 360	A.B. & B.S. 393 No Engineering Courses. 393	A.B. & B.S. 326 No Engineering Courses. 44 370
Year 1901 and 1902	HARVARD A.B. 1933 B.S. 157 C.E. 56 E.E. 19 Specials 224 M.E. 82 Chem. 32 Mining 67 Architect. 2 Landscape Architect. 9 Geology 5 Biology 12 Anat. and Physiol. 30 For Teachers of Science 21 2532	YALE 1240 B.S. & C.E. 542 1782 Forestry 31 Music 69 Art 66 1948	PRINCE-TON 760 285 143 5 44 1232	COLUMBIA Catalogue missing	CORNELL A.B. & B.S. C.E. E.E. & M. E. 817 212 784 1813 Architect 50 Agricult 86 Forestry 38 1987	PENNSYLVANIA A.B. & B.S. C.E. E.E. & M.E. 222 84 121 17 444 Chemical-Engineer 73 Architect 61 School of Finance & Commerce 149 Biology 56 783 Music 34 817	VIRGINIA A.B. & B.S. C.E., M.E., E.E. & Mining 257 294	DARTM'UTH A.B. & B.S. C.E. M.E. & E.E. 686 686	LAFAY-ETTE 122 Ph.B. 109 B.S. 14 C.E. 66 E.E. 41 352 Chem. 34 Mining 17 403	AMHERST A.B. & B.S. 399 No Engineering 399	WILL'AMS A.B. & B.S. 322 No Engineering 33 355
Year 1902 and 1903	HARVARD A.B 2109 B.S. 141 C.E. 72 E.E. 61 Specials 2383 M.E. 70 Chem. 32 Mining 75 Architect. 35 Landscape-Architect 11 Geology 3 Biology 16 Anat. and Physiol. 38 For Teachers of Science 30 2693	YALE 1205 B.S. & C.E. 598 1803 Forestry 40 Music 47 Fine Arts 20 1910	PRINCE-TON 754 291 144 7 63 1252	COLUMBIA A.B. & B.S. 484 100 125 27 736 Mech. Eng. 115 Chemistry 35 Mining 188 Metallurgy 8 Architect 81 1163	CORNELL A B. & B.S. C.E. E.E. & M.E. 783 245 886 1914 Architect. 50 Agricult. 106 Forestry 68 2138	PENNSYLVANIA A.B. & B.S. C.E. E.E. & M.E. 235 102 159 19 515 Chemistry & Chem. Eng. 81 Architect. 70 School of Finance and Com'erce 170 Biology 46 882 Music 25 907	VIRGINIA Catalogue not available	DARTM'UTH A.B. & B.S. C.E. M.E. & E.E. 709 32 709	LAFAY-ETTE 124 B.Ph. 99 B.S. 11 C.E. 76 E.E. 44 Chem. & Chem. Eng. 42 Mining 24 420	AMHERST A.B. & B.S. 385 385	WILL'AMS A.B. & B.S. 347 34 381
Year 1903 and 1904	HARVARD A.B. 2073 B.S. 126 C.E. 72 E.E. 74 Specials 2345 M.E. 56 Chem. 23 Mining 68 Architect 40 Landscape Architect 16 Forestry 7 Geology 4 Biology 14 Anat. & Physiol 35 For Teachers of Science 13 2621	YALE 1250 B.S & C.E. 726 1976 Forestry 64 Music 82 Fine Arts 35 2157	PRINCE-TON 721 343 172 7 74 1310	COLUMBIA A.B & B.S. 495 106 144 39 784 Mech. Eng 101 Chemistry 32 Mining 190 Metal'rgy 10 Architect 79 1205	CORNELL' A B. & B.S. C.E. E.E. & M.E 726 312 942 1980 Architect. 63 Agricult. 135 2178 [1] School of Forestry apparently discontinued from this year on.	PENNSYLVANIA A.B. & B.S. C.E. E.E. & M E. 271 151 207 11 640 Chemistry & Chem Eng. 86 Architect. 88 School of Finance 187 Biology 39 1040 Music 22 1062	VIRGINIA A.B & B.S. C.E. E.E. & M. E. 299 58 357	DARTM'UTH A. B. & B.S. C.E. E.E. & M E 780 21 780	LAFAY-ETTE A B 107 B.Ph. 80 B.S. 12 C.E. 86 E.E 49 343 Chem. & Chem. Eng 45 Mining 22 410	AMHERST A B & B S 408 408	WILL'AMS A B & B S 384 33 417
Year 1904 and 1905	HARVARD A B 2009 B S 98 C E. 68 E E 84 Specials 2259 M E 57 Chem 24 Mining 67 Architect 44 Landscape Architect 17 Forestry 8 Geology 5 Biology 11 Anat & Physiol. 26 For Teachers of Science 23 2539	YALE 1275 B.S. & C.E. 776 2051 Forestry 63 Music 89 Fine Arts 30 2242	PRINCE-TON 650 363 187 8 66 1275	COLUMBIA A.B. & B.S C E. E E. 525 108 134 20 796 M E 85 Chemistry 35 Mining 192 Metallurgy 5 Architect 72 1185	CORNELL A.B. & B.S. C E. E E. & M.E. 672 370 1039 2087 Architect. 65 Agricult. 184 2336	PENNSYLVANIA A.B. & B.S. C.E. E.E. & M.E. 266 177 223 666 Chem. & Chem Eng. Architect. 104 School of Finance and Com'erce 226 Biology 46 1138 Music 46 1172	VIRGINIA A.B. & B.S C.E. E.E. & M.E. 306 177 88 394	DARTM'UTH A B & B S. C.E. E E. & M.E. 827 31 827	LAFAY-ETTE 109 B Ph. 84 B.S 7 C E 85 E.E. 51 327 Chem. & Chem Eng Mining 27 390	AMHERST A B & B S 406 407	WILL'AMS Catalogue Missing
Year	HARVARD A B. 1899 B S 66 C F 55 F F 83 Specials	YALE 1322 B.S & C.E. 885 58	PRINCE-TON A B. 690[1] B.S. 390 L.B. C E. 213 E.E. 8 58	COLUMBIA A.B. & B S C E. F.E. 553 108 135 22	CORNELL A.B. & B.S. C E 693 418 M F & E.E. 1086	PENNSYLVANIA A.B. & B.S. C.E E.E. & M E. 308 200 267	VIRGINIA Catalogue Missing	DARTM'UTH A B & B S. C E. E.E. & M E. 898 31	LAFAY-ETTE 85 B.Ph. 63 B S 10 C F. 93 E.E. 10	AMHERST A.B. & B.S. 455	WILL'AMS A.B. & B.S. 418 25

	HARVARD	YALE	PRINCETON	COLUMBIA	CORNELL	PENNSYLVANIA	VIRGINIA	DARTM'UTH	LAFAYETTE	AMHERST	WILL'AMS
Year 1905 and 1906	A.B. & B.S. 2103 C.E. 34 E.E. 42 (C.E. & E.E. 29) 66 Specials 68 Qual. Spec.[2] 46 2403	1351 B.S. & C.E. 895 2246	A.B. & B.S. 588 C.E. 341 E.E. 236 27 37 1229	A.B. & B.S. 606 C.E. 106 E.E. 116 26 854	A.B. & B.S. 735 C.E. 460 M.E. 1072 E.E. 2267	A.B. & B.S. 313 C.E. 217 E.E. 307 M.E. 123 Mining 837	A.B. & B.S. 289 C.E. E.E. M.E. 412	A.B. & B.S. 1029 Grad. C.E. 41 E.E. & M.E. 1029	96 B.Ph. 67 B.S. 13 C.E. 114 E.E. 45 335	A.B. & B.S. 469 469	A.B. & B.S. 446 30 476
	M.E. 37 Chem. 11 Mining 20 Architect. 15 Landscape-Architect. 6 Forestry 8 Geology 3 Biology 1 Anat. & Physiol. 9 Teachers of Science 12 2451	Forestry 59 Music 87 Art 41 2433	M.E. 73 Chem. 42 Mining 152 Metallurg. 8 1120	Architect. 81 Agricult. 261 2609	Chemistry & Chem. Eng 1484 Architect 140 School of Finance & Commerce 335 Biology 43 Music 47 1531				Chem. & Chem. Eng. Mining 31 361		

[1] In 1907 Harvard began to eliminate courses in the Lawrence Scientific School. From this date on B.S. candidates are enrolled in Harvard College and are not distingnished in the catalogue from A.B. men. In the same year the Graduate School of Applied Sciences was opened. The number 29 bracketed to the right of the main column indicates the number of students in this school. The catalogue does not distinguish C.E., M.E. and E.E. men.

[2] This class of undergraduates was created in 1906.

[3] In 1906-07 Columbia begins to put her School of Architecture on a graduate basis. It is therefore omitted henceforth.

	HARVARD	YALE	PRINCETON	COLUMBIA	CORNELL	PENNSYLVANIA	VIRGINIA	DARTM'UTH	LAFAYETTE	AMHERST	WILL'AMS
Year 1907 and 1908	A.B. 1823 B.S. 223 C.E. 24 E.E. 30 (Grad School C.E. & E.E. 63) 2331 Specials 231 Qual. Spec.	1315 B.S. & C.E. 945 2200	A.B. & B.S. 545 L.B. B.S. & L.B. C.E. 325 C.E. 247 E.E. 11 55 1183	A.B. & B.S. 607 C.E. 81 E.E. 75 23 786	A.B. & B.S. 791 C.E. 409 E.E. & M.E. 1122 2412	A.B. & B.S. 299 C.E. 271 E.E. & M.E. 340 Mining 919	A.B. & B.S. 325 C.E. E.E. M.E. 436	A.B. & B.S. 1102 C.E. M.E. & E.E. 52 1102	101 B.Ph. 73 B.S. 12 C.E. 104 E.E. 53 7 350	A.B. & B.S. 508 508	452 20 472
	M.E. 16 Chem. 4 Mining 6 Architect. 6 Landscape-Architect 2 Forestry 4 Geology 1 Biology 0 Anat. & Physiol. 3 For Teachers of Science 0 2373	Forestry 61 Music 83 Fine Arts 32 2443		M.E. 57 Chem. 42 Mining 124 Metallurg. 8 1017	Architect. 99 Agricult. 325 2836	Chemistry & Chem. Eng. 124 Architect. 164 School of Finance and Commence 433 Biology 44 1684 Musics 42 1726			Chem. & Chem. Eng. Mining 39 430		

	HARVARD	YALE	PRINCETON	COLUMBIA	CORNELL	PENNSYLVANIA	VIRGINIA	DARTM'UTH	LAFAYETTE	AMHERST	WILL'AMS
Year 1908 and 1909	A.B. & B.S. 2238 C.E. 13 E.E. 8 (Grad School C.E. & 70 E.E. 2259 Specials Qual. Spec.	1273 B.S. & C.E. 1053 2326	A.B. 531 B.S. & B. L. C.E. 241 E.E. 10 4 61 1213	A.B. & B.S. 630 M.E. 73 Chem. 31 Mining 153 Metallurg 13 20 813	A.B. & B.S. 873 C.E. 569 E.E. & M.E. 1158 2600	A.B. & B.S. 328 C.E. 298 M.E. & E.E. 385 Mining 100 Chem. & Chem. Eng. 2 Architect 17 School of Finance and Commerce 47 Biology 50 1834 Music 37 1871	A.B. & B.S. 297 C.E. E.E. M.E. 398 Mining 101 1107	A.B. & B.S. 1107 C.E. E.E. & M.E. 52 1107	101 B.Ph. 82 B.S. 23 C.E. 89 E.E. 61 356	A.B. & B.S 524 524	A.B. & B.S. 454 27 481
	M.E. 8 Chem. 2 Mining 4 Architect 2 Landscape Architect 0 Forestry 2 Geology 0 Anat. & Physiol. 0 2277	Forestry 70 Music 95 Fine Arts 47 2538		M.E. 73 Chem. 31 Mining 153 Metallurg 13 1085	Architect 130 Agricult. 394 3124	Chem. & Chem. Eng. Architect 17 School of Finance and Commerce 47 Biology 50 Music 37 1871			Chem. & Chem. Eng. Mining 42 439		

	HARVARD	YALE	PRINCETON	COLUMBIA	CORNELL	PENNSYLVANIA	VIRGINIA	DARTM'UTH	LAFAYETTE	AMHERST	WILL'AMS
Year 1909 and 1910	A.B. & B.S. 2265 C.E. 13 E.E. (Grad. School C.E. & E.E.) 87 Specials Qual. Spec	1229 B.S. & C.E. 1110 2358	521 B.S. & L.B. C.E. 203 E.E. 13 19 84 1253	A.B. & B.S. 636 C.E. 96 E.E. 55 20 807	A.B. & B.S. 943 C.E. 555 E.E. & M.E. 1169 2667	A.B. & B.S. 367 C.E. 306 E.E. & M.E. 381 1054	A.B. & B.S. 332 C.E. E.E. M.E. & Mining 107 439	A.B. & B.S. 1097 C.E. E.E. & M.E. 50 1097	91 B.Ph. 102 B.S. 35 C.E. 77 E.E. 64 2 371	A.B. & B.S. 527 527	A.B. & B.S. 500 23 529
	Undergraduate courses in Engineering discontinued.	Forestry 82 Music 81 Fine Arts 50 2571		M.E. 78 Chem. 44 Mining 150 Metallurg 10 1089	Architect 130 Agricult. 507 3313	Chem. & Chem. Eng. Architect. 200 School of Finance and Commerce 492 Biology 43 1928 Music 31 1959			Chem. & Chem Eng Mining 46 464		

but will also furnish data for other comparisons, such as the reader himself may feel tempted to make.

The Growth in Enrollment Viewed in the Light of the Entrance Requirements

Bearing in mind the facts already given in the first chapter of this report as to the varying requirements for admission to the several institutions which are considered here, it will be interesting to see how far the growth in numbers at each can be related to the requirements for admission—whether high or low in quantity, whether relatively prescribed or with wider choice of electives, whether admission takes place by examination or by certificate.

If we consider first the two classes of institutions which have respectively the prescribed and the elective system of entrance requirements it will be found that in the departments of arts and sciences, i. e., for courses which lead to the A.B. (Litt.B., Ph.B.) and B.S. (general science) degrees—those with the entrance elective system, Harvard, Columbia, Cornell, Pennsylvania, and Virginia have increased in enrollment on the average about 32 per cent; while those with the prescribed system of admission, Princeton, Dartmouth, Lafayette, Amherst, and Williams, have grown only on the average 27 per cent; and if Dartmouth is omitted—for good reasons, which will be explained later—the average increase for the four remaining colleges drops to 16¾ per cent.* Two of the latter—Princeton and Lafayette—have actually lost, the one 5, the other 4 per cent. of the enrollment in 1900. Of course the fact must not be overlooked that other factors are involved here; but both groups contain institutions with high and with low quantitative requirements, institutions, also, which admit only on examination and those which admit on certificate. That these figures, therefore, show a certain drift in favor of the entrance elective system can hardly be doubted; for it must be remembered that we have eliminated all engineering courses and have eliminated also the special schools in Biology, Chemistry, Music, Fine Arts, etc., which are enumerated in the table in the lower half of the column below the first total.

Only one institution with prescribed requirements, namely Dartmouth, has had a phenomenal growth during the ten years in ques-

* Yale must be omitted from this comparison because the Ph.B. men cannot be distinguished from the engineers in her catalogue list.

tion. In this institution the 1910 undergraduate enrollment was 70 per cent. higher than in 1900. But though Dartmouth must technically be grouped with the institutions whose requirements are closely prescribed, a reference to the first chapter of this report (p. 10) will show that in reality a rather wide range of choice is possible.

Of the institutions under discussion, four, Harvard, Yale, Princeton, and Columbia, have during the decade just ended admitted candidates only on examination, while the others have accepted in lieu of examination the certificates of accredited secondary schools, both public and private. Confining ourselves first to the college or general humanistic and general science courses, and again omitting Yale because the Ph.B. candidates in the Sheffield Scientific School cannot be distinguished in her catalogue from the students of Engineering nor in Yale College from the A.B. candidates, we find that the increase in 1910 over the enrollment in 1900 has averaged for Harvard, Princeton and Columbia only 11 per cent., while for the remaining seven institutions it has averaged over 37.5 per cent. If all undergraduate courses are included in our calculation, the average increase in enrollment in 1910 over that of 1900 for Harvard, Yale, Princeton and Columbia has been close to 15 per cent., while in the remaining seven it rises to more than 65 per cent. Or if only engineering courses are considered in those institutions where engineering has been highly developed, and if the Lawrence Scientific School from 1900-1905 and the Sheffield Scientific School with its B.S students are included, the figures show that the average growth in Harvard, Yale, and Columbia, institutions with entrance examinations, has been during the decade only 46 per cent., while at Cornell, University of Pennsylvania, University of Virginia and Lafayette it has averaged 142 per cent., showing again that so far as the increase in the number of students is concerned, admission on certificate has an immense advantage over examination only, whether it be viewed exclusively from the academic, or from the engineering side, or whether we consider the total enrollment of all departments taken together.

Of course there are other factors involved besides the quantity of the requirements, the freedom of choice in entrance subjects, and the methods of admission; but such factors as the strictness with which the entrance requirements are enforced, the relative difficulty of entrance examinations where they are still required, and the strictness with which the standard is maintained after admission, are factors about which university catalogues furnish little direct

information, and upon which this is not the place to dwell. While they undoubtedly play a part in the growth of all institutions, allusion is made to them here merely to emphasize the fact that in the study of the tables, the quantity of the entrance requirements, the degree of liberty in the choice of entrance electives, and the method of admission by examination or certificate are the three calculable factors constantly to be kept in mind. For usually it will be found that a steadily growing institution will have at least two of these three factors in its favor.

Thus in institutions like the University of Pennsylvania (14.5 units), Dartmouth (14.5), Amherst (14.5), and Williams (14.5), with requirements quantitatively low, admission on certificate, and a fair degree of choice in entrance electives, the growth in the courses leading to the A.B. and B.S. degrees during the ten years from 1900 to 1910 has been respectively 86, 70, 34 and 42 per cent. Cornell with high entrance requirements (15 units), but with admission on certificate and a liberal choice of entrance electives, has increased her enrollment in the Department of Arts and Sciences 26 per cent. during the same period. Columbia College, with somewhat lower requirements (14.5 units), with a large option in entrance subjects, and admission only by examination, but with the advantage of admission to her professional schools after two years of undergraduate work, has increased 34 per cent. or 162 by actual count in the last decade.

Princeton, with entrance requirements quantitatively high (15.5), little choice in entrance electives, and entrance examinations strictly enforced, between 1900 and 1910 actually lost 54 or 5.3 per cent of her enrollment in the A.B., B.S. and Litt.B. courses.* Again, Harvard College, with a large choice in entrance electives, but requirements quantitatively high (16.), and admission only by examinations likewise pretty strictly enforced, has gained only 103, or 4.7 per cent in her enrollment during the last ten years.

Finally, if Yale College is added, with entrance requirements relatively high (15.5 units), admission only by examination, and up to the present year (1911) only a limited choice of entrance combina-

* Special students have not been included in this total because it is not possible to tell how many of them fell to C.E. and how many to the A.B. and B.S. courses. Furthermore the qualifying specials which have greatly outnumbered the others during the last four years enter on their records at other institutions and do not take entrance examinations. If all specials should be included the actual loss would be 49, not enough difference to affect materially the calculations.

tions, the table shows that her gain in enrollment has been only 39 in ten years, or 3.2 per cent. of the enrollment in 1900. Since 1906-1907 the numbers have actually been on the decline, there being 122 fewer students in Yale College in 1909-1910 than in 1906-1907; and the enrollment for 1910-1911 shows a further decrease of three.

In this last connection it is interesting to note that during the past three years, Princeton's enrollment in the A.B., B.S. and Litt.B. courses has been on the increase. The total undergraduate enrollment in 1910-1911 shows a gain of 91 over that in 1907-1908. This increase is due to the fact that the enrollment of the B.S., Litt.B. course has recently been more than offsetting the loss in the A.B. If the C.E. enrollment is included (but not the qualifying specials who do not pass entrance requirements) this gains sinks to 57, owing to the fact that the numbers in the C.E. course have been slightly on the decline during the last three years.

Comparison of Individual Undergraduate Courses.

On the basis of the table as presented it will now be in order to make a few special comparisons to find out if possible how other institutions are developing, particularly in those courses which have existed at Princeton during the last ten years. As the longest established and most venerable, the A.B. course will be considered first.

I. The A.B. Course.

Of all the institutions in the table only three, Princeton, Lafayette and the University of Pennsylvania, still insist upon Greek for the A.B. degree. But in the catalogue of the last named university the A.B. candidates and the B.S. candidates are listed without distinction in the Department of Arts and Sciences. So it will be impossible to take the number of A.B. candidates in this case into account. As to the state of Greek in the Eastern colleges one must be content with figures from Princeton and Lafayette. In 1900-1901 there were 749 students taking the A.B. course in Princeton. This number rose to 760 in 1901-1902, but since that date it gradually declined to 521 in 1909-1910.* This represents a loss of 228 or over 30 per cent. during the decade under consideration. These figures are particularly significant because the entrance requirements for the A.B. course have undergone no essential changes during these ten years. The only modifications made have been slight, bringing the definition of two of the units in Latin and Mathematics into harmony

* In 1910-1911 the registration in this course has declined further to 496, a loss of 25 more.

with the Carnegie system. In other words Sallust and an extra book of Caesar have been dropped from the Latin requirement and Permutations and Combinations from Algebra, reducing the number of units required for admission from 15.8 to 15.5.

Princeton has high entrance requirements and admits only on examination. Let us see the fate of this course at Lafayette, an institution with low requirements and admission on certificate. In 1900-1901 there were 122 A.B. candidates at Lafayette. In 1902-3 the number rose to 124 to sink back—with some fluctuation—to 91 in 1909-1910. In other words, Lafayette has lost thirty-one or over 25 per cent of her A.B. enrollment since 1900. As the entrance requirement for the A.B. course at Lafayette up to 1908, omitting Arithmetic and Geography, was only thirteen units—since that date it has been fourteen—it follows that the A.B. course with required Greek, even in an institution with low entrance requirements, has been losing ground steadily.

But if the outlook is discouraging for the A.B. degree with Greek, the prospect for the A.B. course both with and without Greek is not much more propitious. Here three institutions may be compared, Harvard, for the seven years 1900-1907, Yale and Lafayette. Princeton cannot be brought into the reckoning because the Litt.B. candidates are not distinguished from the B.S. during Freshman and Sophomore years. As the Ph.B. candidates at Lafayette—i. e. men who take Latin but not Greek—are listed separately, they are added to the Lafayette A.B. number to get the total.

At Harvard the number of A.B. candidates rose from 1992 in 1900-1901 to 2109 in 1902-1903, and then gradually declined to 1823 in 1907-1908. In other words, the Harvard A.B. course lost 169 or over 8 per cent. during the years for which we can get figures. Harvard has quantitatively the highest entrance requirements of any university in the land, has up to the present admitted only on examination, but has permitted the candidate a wide liberty of choice in entrance subjects.

But let us look at Yale College where the entrance requirements are a little lower, 15.5 units, where there is a limited range of choice, but admission only on examination. In 1900-1901 there were 1190 students enrolled in Yale College; this number grew to 1351 in 1906-1907, but since that date has dropped back to 1229, netting a gain of 39 or only 3.2 per cent. during the period in question. The loss since 1906-1907 has been 122 or 9 per cent. of the enrollment in that year. Under these circumstances it is not surprising that Har-

vard has adopted a new method of admission and that Yale has reformed her entrance requirements on the elective principle.

The record for Lafayette, where the entrance requirements are low (13 to 14 points), and where students are admitted on certificate, is no better. In the A.B. and Ph.B. courses the total enrollment in 1900-1901 was 218 (122+96), in 1909-1910 it was 193 (91+102) showing a loss of 25 or 11.4 per cent. In the Ph.B. course there was a gain of 6 or about 6.2 per cent. during this same period. So that with or without Greek, with admission by examination or on certificate, with a wide or a limited range of entrance electives, the A.B. course does not seem to have very brilliant prospects, as far as any inference can be drawn from the records of these three institutions.

A brief table will set forth the figures in detail.

SUMMARY I. THE A.B. COURSE.

	Harvard	Yale	Lafayette
1900-1901	1992	1190	218
1901-1902	1983	1240	231
1902-1903	2109	1205	223
1903-1904	2073	1250	196
1904-1905	2009	1275	184
1905-1906	1899	1322	148
1906-1907	—	1351	163
1907-1908	1823	1315	174
1908-1909	—	1273	183
1909-1910	—	1229	193
	Loss 169 = 8.4 %	Gain 39 = 3.2 %	Loss 25 = 11.4 %

II. The B.S. Course.

The B.S. or general science course offers especial difficulties and the figures ascertainable for only three institutions*—Harvard (1900-1906), Princeton (1900-1905), and Lafayette (1900-1910)—hardly warrant any general inferences beyond the fact that this course seems to be dividing up into several more special courses such as Biology and Chemistry, with the tendency particularly in the latter subject to lay emphasis on the practical side. The first difficulty in considering the B.S. degree is to determine the course for which this degree is conferred; for no degree, particularly in these days of elective studies, has become the label of such an *omnium*

*At most other institutions considered the B.S. candidates are catalogued together with the A.B. and it is impossible to ascertain the proportion of each. In the Yale catalogue they are listed with the engineers without distinction.

gatherum as the B.S. While Harvard, Yale, Princeton and Lafayette have tried to keep it as the designation for a course made up preeminently of scientific studies, yet if a definition had to be given it could only be said that this degree stands for about every course, except Engineering, for which the A.B. degree is not given. Even to-day the Princeton B.S. course with its four years entrance and Freshman year requirement in Latin would naturally be taken at Harvard or at Yale in the academic department and be rewarded with the A.B. degree on completion.

Again the B.S. is a course with widely varying entrance requirements. If the A.B. requirements have remained relatively stable, the B.S. have been subjected to all the whims of the elective system. Very few institutions still require Latin for this course, although it may be offered as an elective at most. Where a special degree, as at Lafayette the Ph.B., is provided for a course with Latin but with no Greek, the B.S. degree is conferred only for the course without Latin and without Greek. So that comparisons are often of no value at all. Lastly it is a course whose entrance requirements have undergone great changes quantitatively. As a consequence uniformity in increase or decrease is not one of its characteristics. All these difficulties will come to light in the figures available for the three institutions mentioned.

Between 1900 and 1906, the year before the courses in Lawrence Scientific School began to be eliminated, the number of B.S. students at Harvard dropped from 170 to 66, a loss of 104 or 61.2 per cent. of the enrollment at the first date. At first glance this would seem to indicate that the course in general science was also on the decline. But certain local conditions at Cambridge must be taken into account here. Between the years 1900 and 1903 the entrance requirements for this course were rapidly raised from 13 to 16 Carnegie units, bringing the standard up to that for admission to Harvard College. This procedure, coupled with the fact that Harvard University is located in the same city as one of America's leading technological schools, the Massachusetts Institute of Technology, will probably account for most of the loss; for it must be remembered that the Mass. Inst. of Tech. admits on only 14 units, two of which are accepted on certificate, while the Lawrence Scientific School from 1903 on required 16 units with examination in all.

On the other hand the enrollment at Princeton in the B.S. course rose from 266 in 1900 to 363 in 1905, a gain of 97 or 36.4 per cent. But up to the year 1903 the requirements did not total more than 13 Carnegie units. Another point was added the next year, and by

1905 they had reached 14.5. In 1906 the B.S. and Litt.B. entrance requirements became identical and the quantity of the requirement was made equal to that for the A.B. course, namely 15.8 units. For the sake of completeness rather than comparison the growth in the enrollment of B.S.-Litt.B. candidates may be added. It will furnish some clue as to the future prospects of this course. In 1905-1906 the number of B.S.-Litt.B. candidates, as closely as can be calculated, was about 390. The difficulty, here, lies in the fact that this was one of the three transition years and that the A.B. and Litt.B. candidates are for two years listed together in the University Catalogue under the head of academic students. By 1907-08 the number sank to 325 to rise to 440 in 1909-10. This represents a gain of 50 since 1905 or 12.8 per cent. As the number has risen still further to 515 in 1910-1911, a gain of 75, the growth of this department is for the first time more than balancing the loss on the A.B. side, which was 55 during the same year.

Similarly at Lafayette, there has been an increase in the enrollment of the B.S. course during the ten years 1900-1910 from 19 to 35, a gain of 16 or 84 per cent. But it must be remembered that the B.S. course at Lafayette is a pure science course requiring neither Latin nor Greek for admission. Again, not counting Arithmetic or Geography, the quantitative requirements for admission to this course did not aggregate more than 10.5 units between 1900 and 1905. By 1908 they had been raised to 12.5 or thirteen. While the number of elective possibilities is small, yet Lafayette admits on certificate. So the only admissible inference from a comparison of these three institutions seems to be that the growth of the B.S. department has depended more on the comparatively low quantity of the entrance requirements than that of almost any other department.

A table is added which sets forth the figures for these courses:

Summary II. The B.S. Course.

	Harvard	Princeton	Lafayette
1900-1901	170	266	19
1901-1902	157	285	14
1902-1903	141	291	11
1903-1904	126	343	12
1904-1905	98	363	7
1905-1906	66	——	——
	Loss 104 or 61.2 per cent.	Gain 97 or 36.4 per cent.	

	B.S.	Litt.B.
1905-1906	390	—
1906-1907	341	13
1907-1908	325	12
1908-1909	376	23
1909-1910	440	35
	B.S. Litt.B. gain 50 or 12.8 per cent.	Gain 16 or 84 per cent.

III. The College or the Department of Arts and Sciences, including all A.B., B.S., Litt.B. and Ph.B. degrees but exclusive of the special schools of Chemistry (at Columbia, University of Pennsylvania and Lafayette) and of Biology (at the U. of P.).

The general results ascertainable from the comparison of the enrollment in the general humanistic and general science courses in the institutions under consideration, together with some of the factors which may be said to affect the increase or decrease of this enrollment, have all been embodied in the earlier pages of this chapter. Here it is only necessary to add, for the sake of completeness, the details in connection with each university or college. Beginning with those institutions which have during the last decade admitted only on examination, it will be found that at Harvard the total enrollment in the courses under consideration was 2162 in the year 1900-1901. By 1906 this number had sunk to 1965, due probably to the increase in the entrance requirements for the B.S. course. Since 1906 it has risen to 2265, netting for the decade a gain of 103 or 4.7 per cent on the enrollment in 1900. Quantitatively Harvard has the highest entrance requirements of any university in the land. Since 1900 they have been 16 points for the A.B. course and since 1903 the same for the B.S. While she has during this decade allowed a wide choice in entrance electives, she has up to the year 1911 never admitted except upon examination in all of the subjects offered for entrance.

At Princeton the enrollment for the A.B. and B.S. courses totaled 1015 in the year 1900-1901. In 1905-6 it was 1000. Since 1906-1907, the year in which the new entrance requirements went into effect, the total enrollment for the A.B., B.S. and Litt.B. courses has dropped further to 961 representing a loss of 54 or 5.3 per cent. during the decade in question.* Since 1907-1908 the numbers in

* This year (1910-11) the total enrollment (exclusive of specials) has risen in these three courses to 1013, or about what it was in 1900. Almost all the

the B.S.-Litt.B. departments have been somewhat on the increase. So far as the entrance requirements are concerned, they have been substantially 15.5 units for the A.B. course since 1900 with only a choice between two modern languages, and up to 1904 for the B.S. course not more than 14.5 units, being gradually raised until 1907 when they became 15.5, the same as for the A.B., with only two possible combinations of electives for admission, and the bulk of Freshman year devoted to Latin, Mathematics, and Physics.

At Columbia, on the other hand, where there is almost as wide a range of entrance electives as at Harvard, admission to the B.S. course without either Latin or Greek, and a fairly wide choice of electives in Freshman year, the enrollment has increased steadily during the decade under consideration from 474 to 636, representing a gain of 162 or 34 per cent. over the enrollment in 1900. According to the Carnegie Foundation Report (1908) the entrance requirements at Columbia aggregate 14.5 units. At present they are nearer 15 units, at least for the A.B. course. While Columbia admits only on examination, the more liberal choice of entrance subjects and the privilege of entering a professional school after two years undergraduate study doubtless account for much of the gain.

For Yale College the figures have already been given in a previous paragraph; and as her Ph.B. students are included in the enrollment for the Sheffield Scientific School it is impossible to obtain separate figures.

Turning next to the larger group of institutions which admit on certificate, Cornell will be considered first. The enrollment in the Department of Arts and Sciences here has grown from 744 in 1900 to 943 in 1910, a gain of 199 or 26.7 per cent. As has been explained in a previous paragraph, no part of this gain is due to the fact that Cornell is coeducational, for fewer women were matriculated in this department in 1910 than in 1900. So far as the entrance requirements are concerned they embody the elective principle, 9 or 10 units being required and the remainder elective. Since 1908 they have been 15 units for all departments, but in 1900 for the A.B. course they were about 13.5 units, being raised to 14 in 1906 and equalized at 15 for all courses in 1908. With the wide choice of entrance electives there goes hand in hand a wide option in Freshman year. Candidates are admitted to the B.S. course without Latin or Greek; and these factors combined with the method of admission account

increase in the total registration of Princeton has been due to the growth in the C.E. course.

for much of the growth during this decade. Although the University of Pennsylvania does not grant the A.B. degree without Greek, the arrangement of entrance requirements is in fact, if not in form, very similar to that of Cornell. The B.S. degree is given for all courses, even those in Architecture and in the Wharton School of Finance. For the Department of Arts, which covers the Princeton A.B., Litt.B. and B.S. courses, the entrance requirements total 14 units, seven of which (Eng. 3, History 2, Mathematics 2) are required and the rest elective. Candidates are admitted on the certificates of accredited schools. Between the years 1900 and 1910 the Department of Arts increased from 197 to 367 a gain of 170 or 86.2 per cent over the enrollment in 1900.

At the University of Virginia, where in 1900 the only requirement was a good high school course, and where in 1909 it was quantitatively defined as 14 units, seven of which are required (Eng. 3, Math. 3, History 1), the increase between 1900 and 1910 was 13.2 per cent., the enrollment in the former year being 293 and in the latter 332.

Of the four remaining institutions of the college type an account, with considerable detail, has already been given. It will be necessary here only to add the figures. At Dartmouth in the courses leading to the A.B. and B.S. degrees the enrollment in 1900 was 642. The growth from this date on has been an unbroken one reaching a total of 1097 in 1910, a gain of 455 or 70.8 per cent. On the other hand at Lafayette, whose entrance requirements have also been explained, the enrollment in the A.B., Ph.B. and B.S. courses dropped from 237 in 1900 to 158 in 1906. Since that date it has risen to 228 representing a loss of 9 or less than 4 per cent. during the ten years under consideration.

At Amherst, where the entrance requirements are reckoned at 14 units by the Carnegie Foundation, there has been, if the admission of special students is included, in reality a sliding scale of admission varying from 11 to 14 points. For no course has more than 2 points in Mathematics been required, and the combinations allowed for Greek in some cases bring the total to not more than 12 points. For the A.B. course three years of Latin and two years of Greek will be accepted, the two extra points being offered in Modern Languages. In the B.S. course either four or five points in languages are accepted and in Freshman year the student has two electives, while the A.B. candidate has but one. The enrollment at Amherst

has grown during the decade in question from 393 to 527, a gain of 134 or 34 per cent.

Finally at Williams College, which is credited with 14.5 points for admission, the actual number has been 13 units with Greek and 14 without, an extra point in History being added; while as low as 11 or 12 units have been accepted in the case of special or partial students. For the A.B. course 2 units in Mathematics suffice, while for the B.S. 3.5 units are required. Of course, Williams admits on certificate; and the gain during the decade has been 159 or 42.9 per cent., the enrollment growing from 370 to 529 almost without a break. The figures for the combined humanistic and general science courses may be summarized for these ten institutions as follows:

SUMMARY III. HUMANISTIC AND GENERAL SCIENCE COURSES COMBINED.

	Harvard	Princeton	Columbia	Cornell	Penn.
1900-1901.....	2362	1015	474	744	197
1901-1902.....	2140	1045	...	817	222
1902-1903.....	2250	1045	484	783	235
1903-1904.....	2109	1064	495	726	271
1904-1905.....	2107	1022	525	672	266
1905-1906.....	1965	1000	553	693	308
1906-1907.....	2253	929	666	735	313
1907-1908.....	2046	870	607	791	299
1908-1909.....	2238	907	630	873	325
1909-1910.....	2265	961	636	943	367
	Gain	Loss	Gain	Gain	Gain
	103=4.7%	54=5.3%	162=34.1%	199=34.1%	170=86.2

	Virginia	Dartmouth	Lafayette	Amherst	Williams
1900-1901.....	293	642	237	393	370
1901-1902.....	257	686	245	399	355
1902-1903.....	...	709	234	385	381
1903-1904.....	299	780	208	408	333
1904-1905.....	306	827	191	406	...
1905-1906.....	...	808	158	455	443
1906-1907.....	289	1029	176	469	476
1907-1908.....	325	1102	186	508	472
1908-1909.....	297	1107	206	524	481
1909-1910.....	332	1097	228	527	529
	Gain	Gain	Loss	Gain	Gain
	39=13.2%	455=70.8%	9=4%	134=34%	159=42.9

IV. The C.E. Department.

The most striking fact in the history of American universities during the last ten years has been the development of the department of applied science. A glance at our table will quickly show that in the department of Civil Engineering alone the numbers at

Princeton have doubled, those at Cornell have tripled, and at the University of Pennsylvania there were in 1910 five times as many civil engineering students as in 1900. For this department we can compare six institutions—Harvard from 1900-1906, Princeton, Columbia, Cornell, the University of Pennsylvania and Lafayette.

At Harvard we notice the same phenomenon as in the B.S. course. The number of civil engineers rose from 62 in 1900 to 78 in 1903 only to drop back to 55 in 1906, when civil engineering courses were placed upon a graduate basis. The reason for this loss of 7 in six years is not far to seek. It is undoubtedly to be attributed to the same cause as the loss in the B.S. course. Between 1000 and 1903 Harvard raised the entrance requirement to the C.E. course from 13 to 16 units. As the Massachusetts Institute of Technology required only 14 units for admission during this period, it is more than probable that the Lawrence Scientific School was in a position of distinct disadvantage.

In spite of several changes in the entrance requirements, the enrollment in the C.E. department of Princeton grew from 98 in 1900 to 247 in 1907 to sink back to 203 in 1909,* making the net gain 106 or 108.3 per cent. for the decade in question. In 1900 the entrance requirements for the C.E. course were hardly more than 10 Carnegie units. By 1905 they had been gradually increased to 14 or 15 units, causing apparently no falling off in growth, as the requirement was not, as at Harvard, made greater than at other good engineering schools. When in 1906 the B.S. and Litt.B. requirements were made identical, the C.E. requirements were left at either 14.5 if Latin was offered, or only 12.5 if a modern language was substituted; and this situation continued until 1911. As the enrollment still continued to increase for the next two years, reaching 247 in 1907-1908, it is probable that the decrease since then has been due to a more rigid enforcement of the rules of scholarship; for there seems to be no good reason why the number of C.E. students should decrease so long as the requirements are on a par with those of other institutions. The liberty of choice is not a factor which plays nearly so important a part in engineering requirements as it does elsewhere, and other institutions such as the Sheffield Scientific School have shown an unretarded growth in spite of admission only on examination.

*In 1910-11 the enrollment in the C.E. course has risen again to 214.

At Columbia the C.E. department, for whatever reason, has not increased in a manner comparable with the development in the others. In 1900-1901 the enrollment was 78, in 1904-1905 it reached 108, and then with some fluctuation, declined to 96 in 1909-1910, netting a gain of 18 or 18.7 per cent. for the decade. The difficulty does not seem to lie with the entrance requirements, for they have remained at 14.5 units throughout the whole period, the only change being the allowance of a wider choice of electives in order to enable the candidate to lay the foundation for his special line of study in Engineering, Architecture, Chemistry, etc. At Columbia, as at most of the other large engineering schools, the entrance requirements are identical for all engineering and applied science courses.

At Cornell and the University of Pennsylvania on the other hand, the growth in the Department of Civil Engineering has been something phenomenal. During this decade the enrollment has more than tripled at the former University and quintupled at the latter. In 1900-1901 there were 179 civil engineering students registered at Cornell; in 1909-1910 this number had risen to 555, an actual gain of 376 or 210 per cent. Up to the year 1906 the requirements for admission to this course at Cornell aggregated about 14 units. In 1908 they were raised to 15 points, of which 11 (Math. 4, Mod. Lang. 3, Eng. 3 and History 1) are required and the remainder elective. In passing it may be noticed that the requirements at Cornell are the same for all engineering courses and for the Department of Architecture.

At the University of Pennsylvania the enrollment in the civil engineering course has grown from 61 in 1900 to 306 in 1910, a gain of 245 or 401.6 per cent. Up to 1907-1908 the requirements for admission to the Towne Scientific School and the Department of Architecture averaged only about 12 to 13 units. Since that date it has been from 1 to 1.5 points higher with essentially the same adjustment of required and elective subjects as at Cornell.

Finally, at Lafayette, where there has been a loss in the humanistic and general science courses, there has been a gain of 25 or 48 per cent. in the engineering courses, the number rising from 52 in 1900-1901 to 114 in 1906-1907, and then falling again to 77 in 1909-1910. From 1900 to 1903 the entrance requirements aggregated 10-11 units, by 1905 they had been raised to 12-13, not reckoning Arithmetic and Geography.

The figures for the development in the C.E. Departments of these six institutions are summarized in the following table:

SUMMARY IV. THE C.E. COURSE.

	Harvard	Princeton	Columbia	Cornell	Penna	Lafayette
1900-1901	62	98	78	179	61	52
1901-1902	56	143	—	212	84	66
1902-1903	72	144	100	245	102	76
1903-1904	72	172	106	312	151	86
1904-1905	68	187	108	376	177	85
1905-1906	55	213	98	418	206	93
1906-1907	—	236	106	460	237	114
1907-1908	—	247	81	469	271	104
1908-1909	—	241	69	569	298	89
1909-1910	—	203	96	555	306	77
	Loss 1900-1906 7	Gain 106 =108.3%	Gain 18 =18.7%	Gain 376 =210%	Gain 245 =401.6%	Gain 25 =48%

V. The E.E. and the M.E. Departments.

The comparative growth of these two departments, which are united at Cornell and the University of Pennsylvania, can be briefly set forth in the form of tables; for it will be recalled that the entrance requirements are identical with those of the C.E. course. What has been said of them in the previous section holds true here also.

For the undergraduate course in Electrical Engineering figures are available for three institutions: Harvard from 1900-1906, Columbia and Lafayette. It is worth observing that the enrollment in Harvard's E.E. course nearly doubled between 1900-1906, while in all other engineering courses it declined. At Columbia there has been a loss for the whole decade, as in the C.E. course, while Lafayette gained [illegible] per cent.

118.3

THE E.E. COURSE.

	Harvard	Columbia	Lafayette
1900-1901	42	106	30
1901-1902	49	—	41
1902-1903	61	125	44
1903-1904	74	144	49
1904-1905	84	134	51
1905-1906	83	135	40
1905-1907	—	116	45
1907-1908	—	75	53
1908-1909	—	64	61
1909-1910	—	55	64
	Gain 41=99%	Loss 51=48.1%	Gain 34=113.3%

For the department of Mechanical Engineering separate figures are obtainable for only two institutions, Harvard and Columbia. In both there has been a loss—at Harvard in harmony with the decrease in all engineering courses, except electrical engineering, due

probably to high entrance requirements; at Columbia, for some reason which is not clear, because during this same decade the Columbia School of Mines has grown from 110 to 150, a gain of 40 or 36.6 per cent. The figures for Harvard and Columbia are as follows:

THE M.E. COURSE.

	Harvard	Columbia
1900-1901	82	98
1901-1902	70	—
1902-1903	56	115
1903-1904	57	101
1904-1905	66	85
1905-1906	37	93
1906-1907	—	73
1907-1908	—	57
1908-1909	—	73
1909-1910	—	78
	Loss 45=54.8%	Loss 20=20.4%

As the E.E. and M.E. courses are united at the University of Pennsylvania and at Cornell, it is impossible to obtain separate figures for either. By adding the E.E. and M.E. enrollment at Harvard and at Columbia, the growth in these two departments can be compared in four institutions as follows:

SUMMARY V. THE E.E. AND M.E. COURSES.

	Harvard	Columbia	Cornell	Pennsylvania
1900-1901	126	204	654	126
1901-1902	138	—	784	121
1902-1903	142	240	886	159
1903-1904	128	245	942	207
1904-1905	125	219	1039	223
1905-1906	121	228	1086	267
1907-1908	—	189	1072	307
1907-1908	—	132	1122	349
1908-1909	—	137	1158	385
1909-1910	—	133	1169	381
	Loss 5 or 39%	Loss 71 or 34.3%	Gain 515 or 78.7%	Gain 255 or 210.1%

The most noteworthy fact about these figures is that while Harvard and Columbia actually lost in these combined courses, Cornell has gained 78.7 per cent. or 515, and the University of Pennsylvania has just tripled its enrollment in ten years.

VI. All Engineering Departments and Special Schools of Applied Science, exclusive of Schools of Finance, Architecture, Fine Arts, Agriculture and Forestry.

If now a summary of the growth in all engineering (including

mining) courses and for the special schools of Chemistry, Biology, Geology, etc., where they exist, is made, totals for six institutions may be presented. In one only, the Sheffield Scientific School, has it been necessary to include the Ph.B. men, because these students are not listed apart from the engineers. And in one only, Columbia, has there been a loss for reasons which must be local. At Harvard the gain from 1900 to 1906 was only 62 or 20.6 per cent.; but as has been previously explained, Harvard had during this period the highest entrance requirements of any engineering school in the country and the proximity of the Massachusetts Institute of Technology made growth under the circumstances impossible. At all the other schools, Yale, Cornell, Penna., Virginia, and Lafayette, the growth was little short of phenomenal, the enrollment averaging for these five institutions 137.4 per cent., or more than doubling. The subjoined table sets forth the figures in detail:

SUMMARY VI. ENGINEERING DEPARTMENTS AND SCHOOLS OF APPLIED SCIENCE.

	Harvard	Yale	Columbia	Cornell	Penna.	Virginia	Lafay'te
1900-01	300	505	438	833	311	33	123
1901-02	354	542	——	996	334	37	158
1902-03	397	598	571	1131	338	——	186
1903-04	359	726	592	1254	483	58	222
1904-05	365	776	559	1415	542	88	205
1905-06	362	885	544	1504	642	——	195
1906-07	——	895	497	1532	696	123	225
1907-08	——	945	387	1621	788	111	237
1908-09	——	1053	435	1727	861	101	233
1909-10	——	1110	433	1724	867	107	234
	Gain 5 years 62=20.6%	Gain 605 =119.9%	Loss 5	Gain 891 =106%	Gain 556 =178.7%	Gain 64 =194%	Gain 111 =90.2%

VII. Graduate Schools of Applied Science.

In conclusion, now, brief reference must be made to the graduate schools of applied science at Harvard, Princeton, and Dartmouth, for it is the view of some educators that all engineering courses should be on a graduate basis, i. e. candidates should present a bachelor's degree for admission. On the other hand the majority of engineering schools will probably find it more practicable to add one or two years for work in special lines to the regular course in engineering, as the best means of improving this type of education. The latter method enables these institutions to maintain their undergraduate courses at their full strength and at the same time develop such special lines of work as circumstances demand. Whatever be thought of this plan in theory, at least in practice it is much safer, as a comparison of the growth in the schools of Applied

Science will demonstrate. Since the establishment of the Harvard School of Applied Science in 1906, the enrollment has increased from 29 to 87 a gain of 58 or 200 per cent. In other words the enrollment has tripled; but the figures are comparatively so small that they furnish no adequate basis for any calculation of the increase.

At Dartmouth the Chandler School of Engineering has always been on a graduate basis. During the last ten years candidates have been allowed to enter this school after completing three years of undergraduate work in the so-called Chandler Scientific course. Yet the enrollment in the Chandler Engineering School has risen from 36 to only 50 during the ten years from 1900-1910—a gain of over 38 per cent.; but during the same period Dartmouth College has increased over 70 per cent. And here again the totals are so small that they hardly warrant a very broad generalization.

The Electrical Engineering School at Princeton shows the same uncertainty. In 1900-1901 it had an enrollment of 7; this number rose to 13 in 1909-1910 only to sink back to 8 this year (1910-1911). If, therefore, the graduate basis is to be the ultimate solution of the problem of courses in applied science, these schools are more likely, according to present indications, to reach that goal by way of the undergraduate scientific course as is actually taking place at Yale, than by the method of requiring a bachelor's degree for admission.

VIII. Grand Summary.

On the basis of the table one last comparison of the number of undergraduates in all departments of the universities under consideration may be attempted. In this total the Princeton Specials (including qualifying specials), the number of which has increased with some fluctuation from 48 in 1900-1901 to 89 in 1909-1910,* are included for the first time, because it has been impossible to tell just how many of them were to be assigned to the A.B. the B.S. Litt.B. and C.E. course respectively, and the number, when added, would hardly perceptibly affect the ratios of increase or decrease. Moreover, it should be borne in mind that the totals contain all the schools which have hitherto been omitted. In some cases, such as the School of Fine Arts, and of Music at Yale it may be doubted whether they should be included at all, for while they do not require a bachelor's degree for admission, they are hardly looked upon as undergraduate courses. This fact must be kept in mind when the comparison is drawn. While Harvard, owing

* In 1910-1911 the number of specials has dropped again to 68.

to the elimination of undergraduate courses in applied science, has lost about 8 per cent., Princeton and Columbia have each gained about the same percentage in ten years. At Lafayette the gain has been 28, at Virginia 31, at Amherst 34, at Yale 35, while at Dartmouth, Cornell and Pennsylvania it has reached 74, 90 and 160 per cent. respectively. A table will set forth these figures in detail.

GRAND SUMMARY. ALL UNDERGRADUATE DEPARTMENTS.

	Harvard	Yale	Princeton	Columbia	Cornell	Penna.
1900-01.....	2499	1903	1161	1008	1740	751
1901-02.....	2532	1948	1232	——	1987	817
1902-03.....	2693	1919	1252	1163	2138	907
1903-04.....	2621	2157	1310	1205	2178	1062
1904-05.....	2539	2242	1275	1185	2336	1172
1905-06.....	2403	2402	1271	1185	2500	1306
1906-07.....	2451	2433	1229	1120	2609	1531
1908-09.....	2277	2538	1213	1085	3124	1871
1907-08.....	2373	2443	1183	1017	2836	1726
1909-10.....	2278	2571	1253	1089	3313	1959
	Loss 221	Gain 668	Gain 92	Gain 81	Gain 1573	Gain 1208
	=8.8%	=35.1%	=7.9%	=8.1%	=90.4%	=160.1%

	Virginia	Dartmouth	Lafayette	Amherst	Williams
1900-01.....	326	642	360	393	370
1901-02.....	294	686	403	399	355
1902-03.....	——	709	420	385	381
1903-04.....	357	780	410	408	417
1904-05.....	394	827	396	406	——
1905-06.....	——	898	353	455	443
19060-7.....	412	1029	401	469	476
1907-08.....	436	1102	430	508	472
1908-09.....	398	1107	439	524	481
1909-10.....	439	1097	464	527	529
	Gain 113	Gain 455	Gain 104	Gain 134	Gain 159
	=31.5%	=73.9%	=28.8%	=34%	=42.9%

Chapter III

The Maintenance of the Standard.

On the important question of the maintenance of the standard your committee has been able to gather some information concerning different methods of dealing with cases of deficient scholarship at different institutions, together with a statement of the results following the enforcement of the rules. Part of the data here presented has been taken from printed reports and is common property. A part, however, has come from private sources and must be regarded as confidential.

So far as the rules governing the number of entrance conditions a candidate may have and still be admitted to college are concerned, there is a more formal and a more elastic method of admission in the case of those institutions which still require examinations for entrance. To be admitted to regular standing at Princeton a candidate must not be back more than one-fifth the total number of points required for admission. That is to say, for the A.B. and Litt.B.-B.S. courses, a candidate may be about 3.2 units in arrears, or a little more than three full courses of one year at five periods per week; for the C.E. course during the last five years it has been possible for a candidate to be conditioned in 3 or 2.5 units, according as he elected Latin and a modern language or both modern languages. Of course this rule has not been enforced with mechanical regularity. In addition to the candidates admitted to regular standing, Princeton has admitted on an average about 30 candidates *on trial* every year. These trial candidates have a greater deficiency than those admitted regularly. But, as a rule, it does not go beyond 4.2 Carnegie units for the A.B. and B.S.-Litt.B. candidates, nor beyond 4 or 3.5 for the C.E. In rare cases the Entrance Committee has felt justified in going beyond the limits stated. Such cases arise where the candidate has reached his majority, has had to make his own way, and has not had adequate opportunity to prepare himself fully. Under such exceptional circumstances the Committee uses its own judgment and does not feel bound by numerical rules.

Compared with Princeton, Harvard and Yale have a somewhat more flexible rule of admission. The statement in the Harvard catalogue concerning entrance conditions reads as follows: "It

is impossible, therefore, to define the requirements for admission *with conditions* in terms of points. The requirements for admission without conditions are so defined, but the requirements for admission with conditions vary with individual records. With the evidence afforded by examinations and by school records, the Committee on Admission endeavor to consider each case on its merits." For the last five years the Harvard Committee on Admission has demanded the whole secondary school record of the candidate as evidence, and in doubtful cases, where practicable, has consulted the head-master of the school in which the candidate was prepared. The practice of consulting the whole school record of the candidate is one which the Princeton Committee on Entrance intends to follow in the future. It can hardly fail to be of value in all doubtful cases, and is a thing desired by many school-masters.

The Yale catalogue contains no information concerning the number of entrance conditions permitted in Yale College, but in regard to the Sheffield Scientific School we find the following statement: "The number of conditions which shall exclude a candidate from admission is not fixed. The record of each candidate is considered with a view to deciding whether his preparation is adequate, and whether the deficiencies are of such a nature as to admit of their being made up within the time allotted, i. e. before the beginning of his second year." As a matter of practice it is generally supposed that the Yale Entrance Committee lays particular stress upon the studies which a candidate takes during the last year in his secondary school. If he makes a good record in his final examinations in these, his chances for admission are very good, even if his preliminary record is poor.

Comparing these more elastic rules with those of Princeton, the inference seems justified that the latter is more strict in admitting candidates *with conditions* than either Harvard or Yale. For it is safe to say that a committee which is free to use its own discretion, and to adjust the terms of admission to individual records, will practically always be more lenient than one which is bound by precedents and a standard set by law. But in justification of the Princeton standard of admission and its enforcement, it must be remembered that it is only an integral part of the whole system of regulations governing deficiency in study. When an average of 37 Freshmen is dropped annually and an average total of 78 Freshmen and Sophomores—students whose course is made up chiefly of subjects which are required for admission—it is mani-

festly unwise as well as unjust to admit a larger number of candidates in September if it be probable that they cannot maintain the standard set after they are admitted.

So far as those institutions which admit on certificate are concerned, little definite information can be obtained. But it is safe to say that there is no evidence to show that they are more strict in regard to admission *with conditions* than those institutions which admit only on examination. In fact the natural inference is to the contrary, for practically all the universities and colleges that have been considered, with the exception of Princeton and Yale College, still admit a goodly number of *special* or *partial* students, a practice which means that delinquent candidates are not utterly cast out even if they do not conform to the standard. Besides, a candidate who may not be certificated in all the entrance subjects required still has the chance to remove his conditions at entrance examinations. The practice inaugurated at Cornell in September, 1910, of requiring candidates who were not certificated in, or who had not actually passed, all the entrance requirements, to take a course of five years in order to obtain their degrees is a new departure with the purpose of improving the quality of technological education. It has, so far as known, been imitated nowhere else.

Turning now to a consideration of the maintenance of the standard after admission, and of the number of men dropped or dismissed in course as the result of deficiency in study, your committee has been able to obtain some information in regard to the rules of scholarship in Harvard, Yale, Cornell, the University of Michigan, the University of Wisconsin and the University of Minnesota. Here again, the automatic system at Princeton which drops a student as soon as he is back in half his work stands in contrast with the more flexible "probation" system in vogue at Harvard, Cornell and the Western State universities. In the latter institutions the practice is for the instructor to warn a student at any time that his work is unsatisfactory. If a student is thus warned in two courses, the matter is brought to the official notice of the proper committee, who investigate the student's work, and if his record warrants, put him on probation. A student on probation cannot take part in any public activity, and is supposed to devote his whole time to study. If at the next examination his work does not show improvement, then he may be dropped or dismissed from college for the rest of the year. By special vote of Faculty he may be

permitted to re-enter at the beginning of the following year and take the year over again. Since much depends upon the strictness with which such rules are enforced, it will be necessary to consider the practice at different institutions a little more in detail, and to start with Princeton as the basis for comparison.

The regulations governing conditions at Princeton may be consulted in detail on pages 277-278 of the University Catalogue for the year 1910-1911. The gist of these rules is that a student is dropped as soon as he is deficient in half of his work. As the average number of weekly recitations usually amounts to fifteen, a student is dropped as soon as he is conditioned in eight hours of his work; and unremoved entrance conditions as well as back conditions incurred in course, except in the case of Freshmen, contribute to this total. If a student is dropped in February, he may, after the lapse of a whole term during which he must be absent from Princeton, and with the permission of the Faculty, enter the next lower class; but a student dropped from his class at the end of the academic year may, with the permission of the Faculty, be allowed to enter the next lower class at the beginning of the next academic year.

The result of the enforcement of these regulations may best be presented in the form of a table setting forth the number of men dropped in the different courses at each examination during the last five years:

			A.B.	B.S.-Litt.B.	C.E.	Totals
1906	Feb.	Regular	22	28	16	
		Special	1	1	1	69
	June	Regular	15	14	12	
		Special	2	2	1	46
			40	45	30	115

			A.B.	B.S.-Litt.B.	C.E.	Totals
1907	Feb.	Regular	9	17	16	
		Special	2	7	3	54
	June	Regular	14	10	26	
		Special	1	1	2	54
			26	35	47	108

			A.B.	B.S.-Litt.B.	C.E.	Totals
1908	Feb.	Regular	28	15	24	
		Special	2	3	3	75
	June	Regular	12	7	31	
		Special	3	2	3	58
			45	27	61	133

			A.B.	B.S.-Litt.B.	C.E.	Totals
1909	Feb.	Regular	12	20	22	
		Special	3	7	5	69
	June	Regular	7	6	21	
		Special	2	2	2	40
			24	35	50	109

			A.B.	B.S.-Litt.B.	C.E.	Totals
1910	Feb.	Regular	9	19	10	
		Special	3	1	1	43
	June	Regular	16	17	8	
		Special	2	5	4	52
			30	42	23	95

Summarizing first for all departments, this table shows that on the average 112 students or 9.1 per cent of the annual enrollment have been dropped every year for the last five years. Of these an average of 62 has been dropped in February and 50 in June.

In the A.B. course the number dropped each year has averaged 28.8 or about 5.3 per cent of the A.B. enrollment. On the B.S.-Litt.B. side the yearly mortality has been greater, averaging over 30 on an enrollment of 375, or 8.7 per cent. Still greater is the number dropped in the C.E. course, reaching an average of 37.2 every year on an enrollment of 229 or 16.2 per cent of the number matriculated. But greatest of all is the number of specials, qualifying for regular standing, who have, during the last four years, failed to make good. The actual number dropped annually has been only a little over fifteen (15.4); but as the average enrollment has been only 68, the percentage rises to 22.5 or over one-fifth of the total number annually enrolled.

At first glance it would appear that the B.S.-Litt.B. students are somewhat, and the C.E. students much, inferior in quality to the A.B. But certain facts in regard to the different courses must be taken into consideration. In the opinion of some schoolmasters it is now harder to enter Princeton without Greek than with it. The B.S.-Litt.B. courses involve in Freshman year, not only a four hour course in Mathematics, more advanced than the A.B., but also a four hour course in Physics. This is no longer the old descriptive course in Physics of twenty years ago, but one which includes laboratory work and a series of experiments which must be worked out on a mathematical basis. The advanced requirement in Mathematics and the experimental work in a mathematical science may well make this course more difficult, particularly for that two thirds of the class who are Litt.B. candidates, i. e. not students of science at all, but seekers after a general humanistic course without Greek. This

is one of the disadvantages of linking the Litt.B. with the B.S. course for the first two years.

As far as the C.E. course is concerned, it may be asserted that it is the most exacting of all the courses. In Freshman year it includes four hours in Mathematics, four in Physics and three in Chemistry with laboratory work in both, together with considerable work in Drawing. By some business men it is now regarded as the course which provides the best mental discipline for practical life; and it is therefore not altogether surprising that a large number of students succumb to its exactions.

Another arrangement of the figures in the table will show the proportion dropped in each class during the last five years:

		1906	1907	1908	1909	1910	Total
Seniors	Feb.	5	5	3	5	4	
	June	0	0	0	1	0	23
Juniors	Feb.	5	6	10	7	2	
	June	6	8	5	8	8	65
Sophomores	Feb.	20	15	30	26	22	
	June	15	21	21	15	22	207
Freshmen	Feb.	35	16	24	16	10	
	June	20	21	24	10	11	187
Specials	Feb.	3	12	8	15	5	
	June	5	4	8	6	11	77

From these figures it appears that an average of 4.6 Seniors, 13 Juniors, 41.4 Sophomores, 37.4 Freshmen and 15.4 Specials have been dropped annually, the number of Freshmen and Sophomores taken together being 78.8.

Now in considering these figures the fact should be emphasized that they do not, of course, represent the actual loss. They are merely the cases that have fallen under the rule and been officially dropped. A considerable number of these delinquents return to college and take a term or a year, as the case may be, over again. Thus, for example, of the 37 Freshmen dropped annually an average of 10, according to the reports of the Committee on Entrance, returned in September 1907, 1908, 1909 and 1910 and reëntered the Freshman class. But unfortunately statistics as to the reëntrance of students dropped in the upper classes are not available. The net loss of students every year from all causes can be calculated by comparing the number admitted to each class at the time of entrance with the number at present enrolled. The result of such a calculation for the three upper classes at present in college shows that on

the average about 76 students or 7.3 per cent. of the original enrollment leave college every year. While this method of reckoning does take into account the number of men that reënter, yet it furnishes no means of distinguishing between those students who leave college because of deficiency in study and those who leave for other reasons. All that can be asserted is that for the three upper classes at present in college an average of 76 out of the whole undergraduate body has been lost annually as the result of all causes.

But if the actual loss from deficiency in study cannot be accurately determined, at least a comparison of the actual number dropped can be made with that of other institutions. In this way some idea of what these institutions do to maintain their standards of scholarship may be obtained. Turning first to a consideration of those institutions which require examination for admission and therefore may be said to have a higher entrance standard, the first institution to be considered is Harvard which has a combination of the probation and the dropping method of dealing with delinquents.

First of all it will be necessary to explain that a student at Harvard must take in each academic year at least four courses, in addition to such work in English as may be prescribed for him. This amount of work is about equivalent to five courses of three weekly hours at other universities. Courses of instruction are some of them whole courses running throughout the year, and some of them half courses running through either half-year; two half-courses are equivalent to a course, but no half of a full course can be counted as a half-course without special permission of the Faculty. Three-hour examinations are held in the middle and at the end of the year. Mid-year examinations are final for the half-courses of the first half-year, but the mid-year record in a full course is provisional and may be superseded by the record made at the end of the year.

In addition to the three-hour mid-year and final examination, there are, however, one-hour examinations in November and in April. These are regarded as very important for the purpose of maintaining the standard. If at such a one-hour examination a student fails to get above grade D in at least *two courses*, he is placed on probation. Grade D, it should be explained, represents a mark between 40 and 50 per cent., and ordinarily represents a pass if counterbalanced by higher grades in other subjects. This rule, therefore, means that a student could fail in two courses—six hours according to Princeton reckoning—in another could have an average between 40 and 50 per cent., and in two others an average of over 50 per cent., and still

have what is known at Harvard as a "promotion grade", i. e. keep off probation.

A student on probation at Harvard is not allowed to compete for scholarship prizes or honors, or to take part in any concert, theatrical performance, athletic contest, or what not, until a satisfactory record, generally made at the next written examination, restores him. If he is not restored to regular standing at the aforesaid examination, then his probation is closed, and he has to leave college and begin the year over again with the next lower class. If at the end of Freshman year a student is dropped, he has to make a satisfactory record in the following November or be dropped for good. Students of other classes on probation who fail to win their promotion at the end of the year cannot return to college without a vote of the Administration Board. This Board ordinarily requires that these men should demonstrate during the vacation their ability to do serious work in a satisfactory way. The evidence of this accomplishment is of a varied character. Some of the youths go to the Engineering Camp at Squam, where they have hard work for six to ten weeks in various kinds of Engineering and Surveying. Other boys go into business and then submit letters from their employers.

Besides enabling the Faculty to test a student at four different times during the academic year, and to put him on probation or to drop him as the case may be, this method of dealing with delinquents is cumulative in its effect. If a Freshman wins his promotion by the minimum standard explained in the previous paragraph, i. e. by conditions in two courses, a grade of 40 to 50 per cent. in a third, and one above 50 per cent. in the two remaining courses, then at all the examinations in Sophomore year it becomes necessary for him to have a grade above D (40 to 50 per cent) in at least *three* of his courses; for to be promoted to the Junior class the student must have passed in studies amounting to not less than *seven* courses in *five* of which his grade must be above D. Similarly for promotion to the Senior class he must have passed in college studies amounting to not less than *twelve* courses, in at least *eight* of which his grade must be above D.

From the printed reports of the President and Treasurer of Harvard University, as well as from private sources, a few statistics as to the results of this method may be cited. At the mid-year examinations in 1909 twenty-two men who had been on probation and who had failed to regain a promotion grade were dropped. By

the end of the year the number who were dropped and left college rose to 32. As the total undergraduate enrollment in 1909-1910 was 2265 the actual loss from this cause was 1.4 per cent. On the other hand we find that a total of 156 entered a lower class, evidently as the result of failing to make their promotion, or 6.8 per cent of the enrollment. This would make the total number coming under the law 188 or 8.2 per cent of the total undergraduate registration. This is only slightly less than the Princeton average of 9.1 per cent. dropped students, with an actual loss, however, apparently much smaller. So far this academic year (1910-1911) 25 men have been sent away as the result of the November and mid-year examinations; and the probation of a few others was closed at the April examination.

A brief summary of the number of men at Harvard who have been "dropped and left college" and those who have entered a lower class is added for four years since 1905. As the President's Report for the year 1907-1908 cannot be found in the Princeton University Library, the figures for this year will have to be omitted:

	1905-06	1906-07	1908-09	1909-10
Dropped and left College.....	49	64	51	32
Entered a lower class.....	169	133	179	156
Total undergraduate registration...	2103	2253	2238	2265

For these four years the average number of men who annually were "dropped and left college" is 49 or 2.1 per cent. of the enrollment. The average for those who entered a lower class is 159.2 or 7.3 per cent. of the average undergraduate registration. Taken together, this would make an average of 9.4 per cent. coming under the law. At Harvard, as at most other universities located in cities, a very large number of men—as many as 294 in 1909-1910—leave college before and at the end of the year without completing the course. That some of these men may have been on probation, or perhaps anticipating such a contingency may have left college for that reason, is not improbable. This is not an uncommon occurrence at all universities; but no statistics can furnish data concerning such voluntary cases, and the number "dropped and leaving college" is comparatively small at Harvard.

In regard to the method of dealing with cases of deficiency in study at Yale not much reliable information has been ascertainable. So far as your Committee is aware, no tabulated statistics on this subject are published; and the request for answers to specific questions would entail such labor upon those to whom they were directed

that it has been possible to obtain definite answers only in a few cases. However, the general features of the rules of scholarship are about as follows:

After Freshman year, it is the practice at Yale not to drop a delinquent student formally out of college but to "rate him down" as the phrase goes; i. e. to keep him enrolled in the lower class until he has completed the number of hours required for promotion into the next higher class. According to the rule printed in the Yale catalogue, a student is enrolled as a Freshman until he has completed at least eleven of the fifteen or sixteen hours of work per week required in Freshman year, he is then enrolled in the Sophomore class until he has completed twenty-six hours; i. e. out of a possible thirty or thirty-two made up of his Freshman and Sophomore hours, and so on. As it has been impossible to ascertain the number of men "rated down" as the result of the enforcement of this rule, no comparison can be made with other institutions as to the number of failures annually and the possible loss of students resulting therefrom.

In addition to this regulation, both Yale College and the Sheffield Scientific School drop Freshmen through the year. In fact the first year is made a test year, and Freshmen are dropped out of college at the Christmas and the June examinations, and at Easter. According to private information, the number of Freshmen dropped in Yale College annually at Christmas ranges from 8 to 15, about 3 go at Easter, and 8 to 15 more are dropped in June. This would make an average total of 25 to 30. As the total enrollment of Freshmen in Yale College has averaged 366 during the last five years, the percentage of Freshmen dropped is 7.3. If the additional 12 to 15 men are added who leave of their own accord, the percentage of loss rises to a little over 10. As these men have the privilege of returning the next year and of trying the year over again, these figures do not represent the actual loss.

Compared with the number dropped at Princeton in Freshman year which has averaged over 37 or a little over 10 per cent. of the average enrollment, Yale's percentage of students actually dropped is somewhat less. If the number of men who leave of their own accord is added, it rises to 10 per cent., a figure practically identical with that of the number of men dropped at Princeton. But it should be borne in mind that this rule at Yale is enforced only during one—the Freshman—year, while at Princeton the number of men actually dropped in Sophomore year is larger than in

the Freshman, rising to an average of 13.8 per cent. during the last five years.

In the Sheffield Scientific School 41 students were dropped from the class of 1910 during Freshman year because of deficient scholarship. As the number originally admitted was 363 the percentage of the class dropped was 11.2. As the Freshman class at Princeton has had an average enrollment of 349 during the last five years and 37.4 have been dropped the percentage resulting is 10.7 This is somewhat less than at Yale; but then it must be borne in mind that at Yale this rule is enforced only during one year and not throughout the course as at Princeton. Similarly of the class of 1911 in the Sheffield Scientific School 48 were dropped during Freshman year. As the number originally admitted was 383, the loss was 12.5 per cent.

At Cornell and the Western State universities a somewhat different method of dealing with scholastic deficiency obtains. In these institutions there is no clear distinction of classes, the degree being conferred after so many terms of residence, or upon completing so many hours' work, usually 120, i. e. eight terms at fifteen hours per week. Each individual is permitted, within certain limits, to elect a greater or a lesser number of hours per week according to his capacity and industry. The result is that blanket rules working automatically do not apply, and each individual case has to be considered upon its merits. Students are not dropped into a lower class; they are first put upon probation for unsatisfactory work; but at just what point work becomes unsatisfactory is usually not specified, the decision being left apparently to the judgment of the instructors. If the student on probation does not show improvement at the examination which terminates the probation period, he is dismissed from college and usually can be readmitted at the beginning of the next year only by special permission of the Faculty.

At Cornell there are eight different colleges, and each college has control of its own students. Probation does not necessarily mean the same thing in each; but when a student is placed on probation, he is definitely told by his faculty just what probation means in his case. If at the end of the term after which he is placed on probation he has not made good, then he is usually dropped permanently from the university.

Thus in the College of Arts and Sciences, the part of Cornell University which offers the closest parallel to the humanistic and

general science course at Princeton, a student may be dismissed at any time. In 1909-1910 five were dropped during term time for flagrant neglect of their work. But usually students are dismissed after the mid-year and final examinations.

The rule governing the removal of conditions is stated as follows: a student conditioned in any course must remove his condition before the beginning of the third term of his residence after it was incurred. A failure to do so requires that the subject be taken again in class if credit for it is desired. Presumably if credit is not desired another course equivalent in value may be substituted, and the student may, if necessary, take a longer period to obtain his degree.

"If a student's marks reveal work unsatisfactory in quantity or quality, the case will be investigated and the student may be placed on probation, temporarily debarred, or permanently excluded from the college. If he is temporarily debarred conditions may be imposed upon his subsequent registration."

Probation is regarded as but one step short of final exclusion, and is to be distinguished from advice, warning, admonition or censure.

"No student who is on probation shall represent the University on any student organization, or individually, either at home or abroad, nor shall he participate in the performance or management of any play, nor shall he hold the position of assistant-manager or manager of any student activity, or any editorial position, nor shall he compete for any of the positions mentioned."

In regard to the procedure in administering this rule in the College of Arts and Sciences, the following information from a private source has been kindly furnished the Committee. First of all there is no definite rule at Cornell as to the number of hours in which a student may fail before putting his continuance at college in jeopardy.

After term examinations, the Registrar furnishes the Dean of the College a list of all students who have failed either, (a) to pass in 12 hours—the minimum registration regularly permitted, the maximum being 18 save for students with an average grade of over 85 per cent. who may take 20; or (b) to secure passing marks in three or more subjects regardless of the number of hours involved; or (c) to pass two thirds of all the hours for which they are registered. This list constitutes what is colloquially know as "doubtful cases" and includes anywhere from 100 to 125 students

each semester out of 1000 or so registered in the college. Upon it are to be found the names of those who may have the best of reasons for their deficiency, as well as of those whose failure is due to neglect of work.

To each person upon the list a letter is sent in which an explanation or an excuse for the whole or any part of the record is requested. In addition to this, a personal interview with the delinquent is sometimes held. After these formalities, the Committee on Academic Records, consisting of nine professors besides the Dean, goes over the entire list of doubtful cases, supplementing so far as possible in each case, from the knowledge of the members of the Committee, the information shown by the record, and the contents of the communication received from each student. A vote being had, the student is allowed to continue, or is warned and referred to some professor, or is put upon probation or "dropped" for a definite period, usually a semester. A student "dropped without prospect of reinstatement" is not considered "expelled"; but a letter is written to him telling him that his name has been dropped from the roll for deficient scholarship and that the Committee, upon consideration of his record and of all the circumstances, is unable to find the indication which they would gladly see that he is fitted to continue his course with the prospect of profit and success. Accordingly he is advised not at any future time to apply for readmission, inasmuch as such an application, if made, probably could not be favorably considered.

In passing upon doubtful cases, the Cornell Committee exercises a large degree of discretion. Students have been dropped who had passed 12 hours; and others have been continued who had passed nothing at all. A man is not likely, however, to be dropped upon 12 hours unless he is known to be generally indifferent and below mediocrity in his work. A student is not likely to be continued on a record of no hours at all in any semester unless his general standing has been at least creditable and his excuse is specific and satisfactory.

As a rule, the Committee tries to give a Freshman another chance, perhaps on probation, if in his first term any encouragement to believe that he will do better can be found, even though his term's record is far from what it should be. On the other hand, a student put upon probation, or warned and referred to a professor, is given definitely to understand that an improvement is expected, and unless the next term's work does show such improvement he is likely to be strictly dealt with.

In conclusion the informant remarks that "while the practice of Cornell undoubtedly exposes the Committee to the danger of arbitrary and even whimsical decisions, yet on the whole it is disposed to assume that risk rather than to resort to an automatic rule that a student shall be dropped, whether or no, if he has passed only x hours and continued, whether or no, if he has passed x + 1 hours."

The results of the Cornell method for the last six years may be seen in the following table for the School of Arts and Sciences taken from the annual report of the President for the year 1910-1911 (Page xli.).

	Students dropped after examination			Students warned or put on probation			Aggregate for Year	Total Students Registered	Percentage dealt with
	1st Term	2nd Term	Total	1st Term	2nd Term	Total			
1904-05	23	20	43	18	10	28	71	684	10.4
1905-06	21	16	37	20	18	38	75	705	10.6
1906-07	18	15	33	42	48	90	123	748	16.4
1907-08	21	21	42	24	21	45	87	820	10.6
1908-09	27	22	54	33	29	62	116	902	12.7
1909-10	32	28	60	29	33	62	122	970	12.8

The summary of these figures show that an average of 99 students were dealt with annually for neglect of study, or an average of 12.25 per cent. But of these only an average of 44.8 or 5.5 per cent. of the enrollment was dropped. In other words, over half of the delinquent students dealt with made good as the result of warning or probation. Compared with the figures for the Princeton A.B. and B.S.-Litt.B. courses taken together, the courses which most nearly correspond to the Cornell College of Arts and Sciences the figures do not greatly differ. While Princeton has dropped annually an average of 58.8 for the last five years or 7 per cent. of the enrollment, Cornell has dealt with 12.25 per cent. of her enrollment and actually dropped annually 44.8 students or 5.5 per cent, somewhat less than Princeton.

At the University of Michigan the rules relating to delinquents in the department of Literature, Science and the Arts state that a student whose work is unsatisfactory is warned. In all such cases notice of the character of the work is sent to the student and to his parents or guardian.

A student whose work is extremely unsatisfactory is put on probation. The degree of deficiency which places a student on probation is not stated in the printed rules, and is apparently left to the judgment of the instructors. To be on probation means that the student is forbidden to take part in any public activity and is

in imminent danger of dismissal from the university. This penalty of dismissal may be incurred through unsatisfactory work in a single course. During the period of probation the student is on trial to prove his fitness to do work in the university, and is required to devote all his time to his studies.

The results of this method of dealing with delinquents in the Department of Literature, Science and the Arts during the last five years can be seen from the following table kindly furnished by the Dean of the Department.

	Dismissed		Summoned to show cause and did not return		Percentage	Total Registration
Year	No.	%	No.	%		
1905-06	33	2.1	3	0.2	2.3	1578
1906-07	34	2.1	6	0.4	2.4	1660
1907-08	55	3.2	12	0.7	3.9	1713
1908-09	49	2.7	11	0.6	3.3	1841
1909-10	53	2.7	8	0.4	3.1	1970+
Average for 5 yr.		2.6		0.5	3.0	

The number dropped annually has never been more than 55 or 3.2 per cent. of the enrollment and the average for the five years from 1905-10, is 2.6 per cent. If the number of those students is added who have been summoned to show cause and do not return, the average percentage rises to 3.1 of the enrollment. Compared with the 7 per cent. dropped at Princeton and the 5.5 per cent. dropped at Cornell in these same departments, the conclusion seems unavoidable that either the quality of the student in the Western State universities is much superior or the standard of scholarship is comparatively low. Perhaps the number of women students at these State universities may be a factor making for a better grade of work and the need of less constraint.

Judging from the small amount of the information furnished, the percentage dismissed for neglect of study at the University of Wisconsin is very low. Here a student is required to complete so many hours' work in order to obtain his degree. To accomplish this work he may take a longer period than four years; but there are no rules which automatically drop a student or cut him off from the university. A student who is marked "poor" in two of his studies is liable to action by the Faculty. Two or more conditions or failures render a student liable to dismissal from the University. In case the student's work is defective, yet not such as to warrant dismissal, he may be advised to withdraw or warned and placed on probation. The future work of such a student must show marked improvement if he is to remain in the University.

The University of Wisconsin publishes no statistics on the subject of dismissal; the number that were dismissed or left on the advice of the Faculty during the year 1909-1910 was 115 out of nearly 2000 students. For this one year the percentage would therefore be 5.7 per cent. of the enrollment for that year.

The University of Minnesota differs in some respects from the other State universities mentioned. Here an effort is made to preserve class distinctions, and the rules governing scholarship are somewhat more complicated and elaborate. Students, as a rule, are dropped only at mid-year, those falling under the rule in June are required to attend the summer school, or in some other way do a satisfactory amount of work before returning in the fall. Any student reported below grade in sixty per cent. of his work at the middle or close of the first semester or at the middle of the second semester is dropped from the rolls, and is not allowed to reënter the university until the opening of the following year. Such a student is then allowed to reënter *on probation*. Monthly reports on his work are required from his instructors and if, by the middle of the semester or after, he is reported as delinquent in two or more subjects, he is dropped for that year without further action. Freshmen who fail in half the prescribed work of that year (about fifteen hours per week) are required on reëntering the university to pursue again all the subjects, unless excused by the Committee on Students' Work. Furthermore no student is allowed to take part in any performance of a dramatic or musical club, in any intercollegiate debates or oratorical contest, or be eligible to election or appointment to official positions upon the boards of student publications, unless he has a clear record at the time.

As the result of the operation of these rules for the last five years in the College of Science, Literature and Arts, the following data have been kindly furnished the Committee:

Year	Dropped	Total Registration
1907-08.....	57	1350 circa
1908-09.....	57	1375 circa
1909-10.....	58	1394
1910-11.....	49	1543
1906-07.....	41	1344

These figures give an annual average of 52.4 students dropped, or 3.7 per cent of the average annual enrollment, figures comparable to the results in the other State universities cited. The men falling under the law at the June examinations have a chance to redeem themselves by the opening of college in September.

Summarizing the results for those institutions for which we have figures for four or five years, and confining ourselves to the Department of Arts and Sciences in each, or to what most nearly corresponds to the A.B. and B.S.-Litt.B. courses at Princeton, the tables show that Princeton has been dropping annually in these courses 58.8 students or 7 per cent. of the enrollment, and Harvard 49 or 2.1 per cent., or if the number of men who "enter a lower class" be added, 9.4 per cent. The two State Universities, Michigan and Minnesota, drop respectively 3.1 and 3.7 per cent. of their enrollments. Cornell stands in between with an average of 5.5 per cent. All of these institutions drop students out of college at mid-year, and at all of them "dropped" students may ordinarily return and take the year over again. All of them except Princeton and Minnesota put the student on probation before dismissal, the former not following the practice except in so far as students who have back conditions are disqualified from taking part in undergraduate activities, and the latter using this method to keep a student up to the mark after he has been readmitted.

As Princeton and Harvard are the only two which require examinations for admission—a practice which is supposed to insure a better preparation and a higher standard from the start—the discrepancy between the numbers actually dropped or at least 'rated down' and those dismissed at State universities like Michigan and Minnesota, which admit on certificate, may be due in part to a higher standard, or it may be due to the fact that students from public high schools, upon which the State universities depend, are better. Not better, in the sense that they have a better mental endowment than students in the Eastern universities, nor that they are better prepared, but better in the sense that they are more zealous students, taking their studies more seriously. The fact too, that a large fraction of these students are women and are pursuing a course with some professional end in view tends to make them a more serious-minded body.

CHAPTER IV.

The Attitude of Head-Masters and Principals of Secondary Schools Towards the Requirements for Admission to Princeton.

In order to ascertain the attitude of the secondary schools towards Princeton's entrance requirements, your Committee, acting in consultation with Dean Fine, addressed in the name of the Faculty a series of questions to the head-masters and principals of over five hundred schools, public and private, situated throughout the entire country. In compiling the list of schools to which the questions should be sent, the Committee used first the list kept in the Registrar's Office of schools which have sent any boys to Princeton during the past ten years. To this list was added a small number of private schools of good standing, and a large number of public schools, from which no candidates have entered Princeton in recent years. A special effort was made to include all important high schools in New Jersey, New York, and Pennsylvania.

The questions asked of the schools were these:

1. What criticism, if any, have you to make of the present requirements of Princeton for admission to (a) the A.B. course? (b) the B.S. and Litt.B. courses? (c) the C.E. course?

2. How many boys in your school have been deterred from entering Princeton because they cannot get the A.B. degree at Princeton without Greek? What proportion of the boys preparing for college in your school are studying Greek?

3. What criticism, if any, have you to make of the character of the Princeton entrance examination papers, either as a whole or as regards any individual subject, and of the results of the examinations in the light of the school records of your candidates?

4. Do you favor admission by examination, by certificate, or by a method like that recently adopted at Harvard, of certification as to the general preparation of a candidate with examinations in certain subjects?

In addition to these four questions, which were sent to all the schools, the following question was addressed to the principals of public high schools:

5. Will you be kind enough to furnish a full statement of the subjects studied during his high school course by the boy whom you

regard as the ablest student in your last graduating class? Did this boy enter any college?

With these questions was sent the following letter of explanation:

Dear Sir:—

The Faculty of Princeton University desires to ascertain the attitude of leading head-masters and principals of secondary schools towards the Princeton entrance requirements and entrance examinations, with the purpose of securing, if possible, a closer correlation between the work of the schools and the requirements for admission to the university. The Faculty will deem it a great favor if you will kindly send, at as early a date as you conveniently can, the freest and fullest answers to the enclosed questions, together with any remarks on the general subject which may occur to you. It need hardly be added that your statements will be considered confidential.

To these inquiries your Committee has received 178 replies, of which 84 are from private schools and 94 from public high schools. While it is perhaps disappointing that only one third of the inquiries elicited a reply, your Committee feels that the actual number of replies received is large enough to warrant safe generalizations, particularly in view of the fact that these replies show a rather remarkable agreement in spirit, with divergence only along a few well defined lines. Moreover, answers have been received from a large proportion of the schools whose relations with Princeton have been particularly close. Of the 28 schools which have during the past five years sent 10 or more students to Princeton, 21 have replied to the questions.

In analyzing and summarizing the opinions gathered from the replies it will be convenient to consider the answers to each of the five questions separately, and to distinguish in each case the public from the private schools. The public high schools have been divided into seven geographical groups, comprising New Jersey, New York State, Pennsylvania, New England, the South (including Texas), the Middle West, and the Far West (the region west of the Mississippi River and north of Texas), with the idea of revealing any differences of opinion which may exist between one section of the country and another. The private schools have been divided into two groups: those which have sent a considerable number of students to Princeton, and those whose relation with the University has been less close. The former will be designated as "A Schools", the latter as "B Schools".

The general spirit and temper of the replies has been almost without exception friendly. Of sweeping criticism or condemnation of our requirements and examinations there has been extremely little. One or two replies have accused the colleges of wishing to "make the schools their slaves", or have characterized our requirements as "having no element of reason in them"; but in view of the whole body of replies this attitude may be regarded as negligible. Individual aspects of our requirements and of our examinations are freely criticised, but almost always in a spirit of friendly co-operation. The total amount of even such friendly criticism is not very great.

First Question

"What criticisms, if any, have you to make of the present requirements of Princeton for admission to (a) the A.B. course? (b) the B.S. and Litt.B. courses? (c) the C.E. course?"

Of general dissatisfaction with Princeton's requirements for admission there is very little. Only four schools of the total number heard from (178), three private schools of "Class A" and one high school in Pennsylvania, express the opinion that the requirements are too great quantitatively, and would like to see them reduced (for all except the C.E. course) by from one-half to one "Carnegie unit". One "A" school and one Pennsylvania high school believe that the requirements cover too many different subjects, and that, without altering the total quantity of the requirements, more advanced work or more thorough work should be demanded in fewer subjects. One "A" school in New Jersey thinks that English Grammar and Arithmetic should be added to the requirements for all coures. One "A" school, situated in New Jersey, and two or three high schools think that the requirements "do not allow sufficient choice to meet the legitimate needs and desires of individual students, or to accommodate boys who have started to prepare for other colleges, and late in their school course wish to change to Princeton," or who do not decide till then to go to college at all. Four high schools, three of them in the Middle, and one in the Far West, object to the requirements *in toto* as "antediluvian", as devised to make Princeton an aristocratic institution for the privileged class, and believe that any boy graduating from a good high school should be *ipso facto* eligible for admission to any college, without question. "Now is the time for the colleges to join with the high schools, take the high school product and make the

most of it. Thereby will come a new triumph of humanity as opposed to privilege and selfish interest—the old struggle and yet the new, perhaps the eternal problem."

Forty-seven private schools, more than half of the total number heard from (84), express complete satisfaction with Princeton's requirements, 25 of these schools being of the "A" class and 22 of the "B" class. Thirteen of the 47 not only express satisfaction, but compliment the University on its requirements. Four "A" schools and 10 "B" schools do not answer the question. Twenty-two high schools express complete satisfaction; 35 do not answer the question.

Apart from the general criticisms already noted, the objections to Princeton's requirements concern themselves with a few specific points which can best be considered under the heads of the several courses.

(a) *The A.B. Course.*

The objection most frequently made to the Princeton requirements has to do with the insistence on Greek for the A.B. course. Objection to this requirement is expressed by 16 private schools out of 84 heard from, and by 21 high schools out of 94 heard from. The objections are distributed among the several categories of schools as follows: Private schools "A" (the class from which a majority of our students come), 5 out of a total of 42; Private schools "B", 11 out of 42; High schools: New Jersey, 2 out of 10; New York, 10 out of 23; Pennsylvania, 2 out of 18; New England, 3 out of 9; the South, 1 out of 8; the Middle West, 1 out of 12; the Far West, 2 out of 14.

On the other hand, 8 private schools, 4 of each class, and 5 high schools, four in Pennsylvania and one in the Far West, explicitly state their approval of this requirement; and several of them express the hope that "at least one A.B. degree in the United States will mean Greek".

Two "A" schools and 4 high schools, 3 of them in New Jersey, object to the requirement of three foreign languages for the A.B. degree as "not based on sound pedagogy, and therefore not provided for in any of our regular courses."

(b) *The B.S. and Litt.B. Courses.*

Fifteen schools out of the total number heard from criticize Princeton's requirements for the B.S. and Litt.B. courses. Of these fifteen, six are "A" schools, three "B" schools, and six public high

schools. Though the specific points emphasized in these criticisms vary, the intent of all of them is the same—that a wider choice of subjects should be offered to the candidate. "A scheme that required of all students English, Latin, Algebra, Plane Geometry, and a modern language, with three units of electives to be selected almost without restriction from those now allowed, would be educationally sound, and would admit the great majority of desirable students." This sentence, quoted from the reply of a well-known head-master in New Jersey, may be taken as representing the opinion of the majority of the fifteen schools who criticize the B.S. and Litt.B. requirements, though two "B" schools wish Latin also made elective for the B.S. course, and one New York high school objects to the requirement of two foreign languages. Several schools call attention particularly to the fact that for the Litt.B. course, which is practically an arts course without Greek, the candidate is required to offer as much advanced mathematics as is demanded of candidates for the B.S. and C.E. courses, and that if he wishes to offer *advanced* French or German, he is also compelled to offer a science. "If he does not want this combination the only substitute he may have is two elementary modern languages, so that a boy enters with Latin and a smattering of two other languages." One high school in Pennsylvania suggests that candidates for the B.S. course ought to have an opportunity to offer both Physics and Chemistry. One "B" school thinks that it ought to be possible to offer three history subjects.

(c) *The C.E. Course.*

Of the C.E. requirements as they now exist there is extremely little criticism. One private school of the "A" class thinks that the requirements for this course should be raised in quantity to make them equivalent in value to the requirements for the other courses. One "B" school would require both Physics and Chemistry and more Algebra (through Horner's Method and use of detached coefficients). One high school in New England thinks that both Physics and Chemistry should be required, and another high school in the same region thinks that credit ought to be given for Mechanical Drawing.

Second Question.

"*How many boys in your school have been deterred from entering Princeton because they cannot get the A.B. degree at Princeton*

without Greek? What proportion of the boys preparing for college in your school are studying Greek?"

Before taking up the replies to this question, it may be well to say a few words as to the reasons which led the Committee to include this specific question in its list. Since Princeton is almost alone among American colleges and universities in restricting its A.B. degree to candidates who offer Greek, the Committee anticipated that in the answers to question 1 there would be numerous objections to this restriction. It wished to apply to this anticipated objection the criticism of definitely ascertained facts as to the actual effect of the restriction on prospective candidates for admission. The question was further intended to furnish material for judging whether or not school-boys (or their parents) regard the degree of Litt.B. as less desirable than that of A.B. The evidence seems to show that the boys (and presumably also their parents) do not in general care about the designation of their degree. If they wish to enter Princeton without Greek, they accept without question, it would seem, whatever degree Princeton offers to them. The replies show that, so far as the school-masters are aware, there are very few boys who are deterred from entering Princeton by the restriction on the A.B. degree. It would seem to follow, also, that the restriction accomplishes very little towards encouraging the study of Greek in the schools—a conclusion which receives confirmation from the fact that at Yale College, where no such restriction exists, the proportion of students entering the Freshman class with Greek is about the same as at Princeton. A detailed analysis of the replies follows:

Private Schools "A".

Of 42 schools of this class which have been heard from, 22 report that no boys, so far as they know, have been deterred from entering Princeton by the requirement in Greek. Eight report that "very few" have been deterred. One head-master has the "impression that it does deter candidates"; and one school situated in New Jersey "feels that the number is large". Ten schools do not answer the question.

As regards the proportion of the boys preparing for college who are studying Greek, two schools report 50 per cent. In five, the proportion is between 25 per cent. and 50 per cent.; in 14, between 10 per cent. and 25 per cent.; in ten, below 10 per cent.; in three, no Greek is being taught. Eight schools do not answer the ques-

tion. In the 34 schools which answer, the average proportion is 15.8 per cent.

Private Schools "B".

Of 42 "B" schools heard from, 27 report that no boys, so far as they know, have been deterred from entering Princeton because of the Greek requirement; 5, situated for the most part in the Middle West, report that a considerable number have been deterred; one school, situated in Illinois, says that the number is large; 9 schools do not answer the question.

In one of these schools, a school situated in Boston, from which no students have come to Princeton in recent years, at least two years of Greek are required of all members of the school, so that the proportion is 100 per cent. In two schools it is 75 per cent., in one 50 per cent., in one 30 per cent. In eight the proportion ranges between 10 per cent. and 25 per cent., in 17 below 10 per cent. In 8 schools no Greek is being taught. Four schools do not answer the question. In the 38 schools which answer, the average proportion is 16 per cent.

Two schools, one in Texas, the other in Connecticut, express the opinion that boys prefer the A.B. to the Litt.B. degree.

Public Schools.

Of 10 New Jersey high schools, 6 report that no boys have been deterred by Greek; 4 do not answer the question. In 7 of these schools no Greek is taught; in one the proportion of candidates for college studying Greek is 33 per cent., in another 6 per cent. One school does not give the proportion.

Of 23 high schools in New York State (including the greater city), 10 schools say that no boys have been deterred by Greek; two schools think a few have been deterred; eleven schools do not answer the question. The highest percentage of boys studying Greek is 24 per cent. in one school. One school reports from 10 per cent. to 15 per cent. In 5 schools the percentage is 5 or lower. In 8 schools Greek is not taught. Three schools do not answer.

Of 18 high schools in Pensylvania, 10 report no boys deterred by Greek; three that a number are deterred; five do not answer. In only 6 of the schools is Greek taught, the highest proportion being 20 per cent., the rest about 5 per cent.

Of 9 high schools in New England, 6 report no boys deterred; three do not answer. In one of these schools the proportion of can-

didates for college who are studying Greek is 66 per cent.; in another the percentage is 30; in 2 others there are a few boys studying Greek. In 4 schools no Greek is taught. One school does not answer.

Of 8 schools in the South (including Washington, D. C.), four report no boys deterred; one school (in Texas) says that some have been deterred; three do not answer. Greek is taught in four of these schools, the proportion in one being as high as 50 per cent. in others ranging from 20 per cent. to 4 per cent.

Of 12 schools in the Middle West, none replies to the first part of the question. Greek is taught in four of these schools, the highest percentage being 15 per cent., the others ranging from 2 per cent. to 4 per cent. Two schools say that Greek is offered but "pupils simply will not take it."

Of 14 schools in the Far West, nine report no boys deterred; five do not answer. Greek is taught in four schools, the highest proportion being three boys out of 30 preparing for college. In one school with a total enrollment of 600, 10 are studying Greek.

Of the whole number of high schools, 94 in all, 45 report that no boys have been deterred from entering Princeton because of the requirement in Greek; six report that some boys have been deterred; 43 do not answer. Greek is taught in 40 schools.

Third Question.

"*What criticisms, if any, have you to make of the character of the Princeton entrance examination papers, either as a whole or as regards any individual subject, and of the results of the examinations in the light of the school records of your candidates?*"

The answers to this question taken as a whole furnish comparatively little information of value beyond the fact that there is no widespread dissatisfaction with the Princeton entrance examinations. Since an intelligent answer to the question necessarily presupposes on the part of the school-master a familiarity with our examinations extending over several years, it is but natural that replies from the private schools, to whom questions of college entrance are more important than to the public high schools, should be more detailed and more valuable. This is particularly true of the "A" schools from which Princeton draws a majority of its students.

Of the 42 "A" schools heard from, 20 express complete satisfaction with the examinations, and 3 of the 20 compliment them as the best set by any college. One school regards the papers taken

as a whole as too hard and long, and one as uneven in character from year to year. One school considers our marking of the papers too lenient, while another thinks it too severe. One school urges that instead of allowing at the examinations a period of three or four hours for each of the major subjects, such as Greek or Latin as a whole, that specific periods be assigned for each part of the subject, e. g. Greek Grammar, Xenophon, Homer. Fifteen schools make definite criticisms of the examinations in individual subjects. Four schools do not answer the question.

Of the 42 "B" schools heard from, 25 express complete satisfaction, and nine of the 25 express distinct praise. One school thinks the papers do not offer sufficient range of choice. Six schools criticize the examinations in particular subjects. Ten do not answer the question.

Of the 94 high schools heard from, 30 express satisfaction, two of them with distinct praise. One thinks the time allowed too short; one regards the examinations as too hard, one as "too formal and rigid"; one says that they appear to be made out by young and inexperienced men. Five schools criticize particular subjects. Fifty-five schools do not answer the question.

It will be most convenient to consider the specific criticisms in a series of paragraphs devoted to the several subjects concerned.

History.

Two schools criticize the examinations in History as presupposing more maturity and power of logical thought than the average school-boy may be expected to possess.

Greek and Latin.

Fifteen schools, 11 of them being of the "A" class and one a high school, criticize the papers in Greek and Latin. Five of these criticisms are directed against Latin Composition. Two schools consider it too hard; one objects that there are too many disconnected short sentences, and one that a too Ciceronian style is demanded; one suggests that the examination should be based on some set portion of Caesar. One school considers Greek Composition too hard. Two schools, both of the "B" class, think the examination in Latin Grammar too hard. Three schools would like to have more stress laid on translation at sight, one of them making the interesting suggestion that for such translations the candidate should be allowed to use a lexicon in the examination. One "A" school would

like to have the examinations in Greek conform to the plan recently adopted for Latin. Other individual criticisms of the Latin papers are that they are too long, that greater stress is laid on quantity than on quality, that the passages chosen for translation are too hard and too disconnected, that word-forms are emphasized rather than acquaintance with the author, that greater variety and diversity is desirable in the questions, that a wider range of choice should be given on the papers.

English.

Seven schools—four of class "A", two of class "B", one high school—criticize the examinations in English. Three consider the papers too hard. Individual schools object that not enough range is given in English A, that fewer compositions should be set and those longer ones, that the only test should be the power to write correctly, that it is "hard to make out what the framer of the questions wants."

French and German.

Seven schools—six of class "A", one of class "B"—criticise the papers in French and German. One, a school which sends a good many boys to Princeton, objects that the papers in both subjects are too hard, that not enough stress is laid on grammar and too much stress on composition. A school in Philadelphia considers the French papers too hard, especially in grammar questions. Two schools criticize the French composition and one the German composition as too hard. Two schools think French B too difficult. One teacher of French who is a native of France, objects to the questions which ask a candidate to indicate in English spelling the pronunciation of French words, on the ground that the better a boy pronounces, the more difficult is it for him to indicate his pronunciation in this way. The same teacher also objects to the giving of disconnected idiomatic phrases for translation.

Mathematics.

Ten schools—eight of class "A", one of class "B", one high school—criticize the papers in Mathematics. Three think that more choice should be given. Two object to the required use of unfamiliar logarithm tables in the examination. Two complain of the difficulty of the originals in Geometry and of the prominence given to them in the papers. Two schools consider the Trigonometry papers too

hard. One "B" school thinks the mathematics papers as a whole insist too much on minor points.

Physics and Chemistry.

One high school in Pennsylvania thinks the examinations in science too hard. One private school thinks they should include more options. Three schools criticize the examinations in Physics as too hard, as different in character from the examinations set by other colleges, as not covering the subject with sufficient completeness.

FOURTH QUESTION.

"*Do you favor admission by examination, by certificate, or by a method, like that recently adopted at Harvard, of certification as to the general preparation of a candidate with examinations in certain subjects?*"

The replies to this question can be best stated in the form of a table.

	No answer	Examination	Certificate	Harvard method	Consideration of school certificate
PRIVATE SCHOOLS:					
Private Schools A....	2	10	4	18	8
Private Schools B....	0	12	8	20	2
All Private Schools...	2	22	12	38	10
HIGH SCHOOLS:					
New Jersey.....	0	0	9	1	0
New York	2	*	9	8	0
Pennsylvania	0	2	7	9	0
New England	1	3	1	4	0
South	2	0	4	2	0
Middle West	4	0	4	4	0
Far West	1	1	5	7	0
All High Schools.....	10	6	39	35	0

* Four New York high schools wish Princeton to accept the examinations of the State Board of Regents. Princeton has during the current year accepted these examinations in a few instances, but only after the papers and answers had been examined and passed by members of the University Faculty.

Perhaps the most notable fact which this table brings out is the wide divergence between the private and public schools in their attitude towards admission on certificate. It is favored by only 14 per cent. of the former, while nearly half of the high schools which express an opinion give it their support. Those who favor it often add the comment that the school is best able to judge of

a boy's fitness to do the work of the college. One comment repeatedly made is that "if every school were as rigid as we try to be here before granting certificates to candidates, there would be less objection to the certificate method of admission." The opponents of the certificate method characterize it as "thoroughly bad, and productive of a low standard of scholarship." A prominent head-master in New York City writes: "We have felt for a long time that the moral effect of facing an examination, distinct from their school work, was a tonic for most boys and, under proper care, that it was a terror to few. These last very exceptional cases could very easily be decided by the Committee on Admissions."

Another striking fact is the large measure of approval which is given to the new method of admission recently adopted at Harvard. This approval comes equally from public schools and from private. Frequently the approbation is accompanied by the comment that it is "a step in the right direction"—which would seem to imply that it is in some quarters regarded as merely a half-way-house to complete certification. But this is not the only ground on which it wins assent. The head-master of a well-known school in Brooklyn writes: "We are strongly in favor of Harvard's new method of admission, because it minimizes cramming and gives the secondary school a fair opportunity really to give the boy thorough work in a few subjects which may be carried throughout the course, rather than to give him a smattering of many things; and because such an examination seems a real test of power rather than an effort to discover by cross examination whether a boy has been in a given place at a given time." Others favor it because it "divides the responsibility for admitting a candidate between the college and the school," and believe "that the schools will insist on higher standards, if the responsibility is placed on them to some extent." In a great many instances, particularly among the private schools, the approval of the new method is qualified with doubt as to the way it will work out in practice. "It all depends upon the spirit in which it is carried out. If it is designed to make entrance easier, we are opposed to it; if it is designed to make the college more accessible, it would seem to be the liberal thing to do." Several schools express the hope that "Princeton and Yale will not jump to the new method until it is thoroughly tried out."

As bearing on the whole question of certificate, examination, and the Harvard method, it will be interesting to quote at some length from a letter received from the president of a well-known academy

in central Pennsylvania, a school which sends a large number of boys to Princeton. "I have never favored the system of college entrance by certificate... My experience has been that the boy who expects to enter college on examination will invariably do better work than the fellow who expects to enter college on certificate. I can recall a number of cases where boys expected to enter Yale or Princeton and worked very faithfully, and just before the close of their senior year their parents decided to send them to one of the smaller colleges on certificate. In every case the work of the boys dropped considerably. All they wanted to do was to make the passing grade of seventy per cent. in order to secure a college entrance certificate... When a college demands entrance examinations, it is doing a favor to the boys, because it is putting them up against something that is hard. In addition, the colleges that demand entrance examinations can select their boys, and they get a better quality of material on the average than the colleges that take boys on certificate. I am not enthusiastic about the Harvard plan of entrance. It has some good features; but there are some very big loop-holes in it. As a bid to many of the second grade high schools, it is all right. As an inducement for hard work on the part of boys who are going to college, it will not accomplish much. There is no denying the fact that the system of entrance to college by certificate, even in a modified form, is not conducive to the highest type of scholarship."

If this may be taken as representing the attitude of many of the leading private schools towards the certificate method, the following quotation from a letter written by the principal of a city high school in the Mississippi valley, himself a graduate of Princeton, may represent the general attitude of the high schools: "Princeton continues to demand admission upon examination alone. This puts the western boy at a great disadvantage. Western schools do not admit that it is wise or fair to ask of the immature boy what the college does not venture to ask of its own more mature students, a final examination (for entrance) covering all of the work of four years. We do not consider this sound educational doctrine, do not practice it, and seem to find ourselves in a position to refuse to prepare for such demands. The logical result of such a policy has been that Harvard, Yale, Princeton, etc., have about lost their hold in the West. What it means in the East may be seen by consulting the advertising columns, of the *Princetonian*, the *Yale Alumni Weekly*, etc., and noticing the number of special tutors who adver-

tise. It has resulted in a system of cramming, pure and simple, which we have abandoned, and shall be loth to consider again."

It will be seen from the table which heads this section that ten private schools, eight of them in class "A", favor admission by "examination with consideration of the school certificate." The head-master of a well-known academy in New Jersey, a gentleman who has given a great deal of thought to matters of general school policy, answers the 4th question thus: "Not by certificate, and not exactly by the Harvard method. I strongly urge, however, the requiring of a certified copy of the student's school record, and the giving of due weight to this record. In time, after the system was established, it would be possible to alter the character of the examinations, and make them more general rather than specific." The head-master of a New York school writes: "The method adopted at Harvard appeals to us very strongly; but we are also inclined to favor the method in vogue at Columbia. Both require a certificate of the actual school record, which we think ought always to be taken into consideration in all fairness to the candidate; but Columbia examines in *all* subjects defined for entrance. Both teachers and pupils are likely to take more trouble with any subject in which an examination is definitely required and *vice versa*." The head-masters of another New York school write: "We believe that the best method for admission to college in all cases is by examination. We do not believe in the reliability or the value of certification, and we trust that Princeton will maintain the method and standard by which she has been governed in the past. While in special cases the Harvard method of 'half and half' may be good, we believe, in the long run, the straight examination method will be found to reach the real values in the candidate best. We do, however, think that the estimate of a good school of the character and qualities of an applicant may be safely given some weight by the Committee on Admissions of a university. We believe that most universities do give such weight, and the rigidity of the examination, in special and deserving cases, can thus be modified to the fair relief of such applicants as have 'power', but not power fully developed, owing to temporary obstructions or deficiencies."

The Princeton Committee on Entrance has already arranged to secure from the schools a detailed statement of the school record of each candidate for admission to the University, and proposes to make use of these records in deciding such doubtful cases as may come

before it next September, and to place them at the disposal of examination readers this June.

In concluding this section of the report, is will be interesting to quote the following sentence from a letter received by a member of your Committee from Dean Jones of Yale College: "I think you are entirely safe in saying that Yale will not adopt any such plan of admission as Harvard proposes, and for the present at least we shall make no changes in our requirements."

Fifth Question.

"Will you be kind enough to furnish a full statement of the subjects studied during his high school course by the boy whom you regard as the ablest student in your last graduating class? Did this boy enter college?"

This question, which was addressed only to principals of public high schools, was intended to furnish evidence to show how far the subjects required for admission to Princeton accord with the subjects actually studied by the ablest students in American high schools. The matter is one of some importance; for about twenty per cent. of the entering class at Princeton come from public high schools, and in ability and earnestness as students these boys are usually above the average of their class. With the private schools, preparation to meet college requirements is a primary consideration; so that they may be trusted to teach, though unwillingly, any subjects or combinations of subjects which the colleges demand. With public high schools, on the other hand, preparation for college is a matter of at most secondary concern, and special courses to meet the requirements of individual colleges cannot ordinarily be arranged.

The Committee has received 92 statements of the subjects actually studied by able students in public high schools. In a few instances, where the school principal was unable to decide upon one "ablest student", two statements were furnished by the same school; so that the 92 statements represent a slightly smaller number of different schools. In evaluating the material thus gathered, the Committee has compared each statement of studies with the requirements for the several courses at Princeton, and has decided in each case for which of our courses the boy was prepared, or most nearly prepared. Wherever the preparation was deficient, the nature of the deficiency was noted. The results of this investigation can best be shown in the following table:

Location of High Schools	Number of Answers	Went to college	A.B.		B.S.-Litt.B.			C.E.			No approximation to requirements
			Eligible	Deficient in modern language	Eligible	Deficient in math. or science	Deficient in languages	Eligible	Deficient in math. or science	Deficient in languages	
New Jersey	11	8	1	—	1	3	1	2	—	3	—
New York	25	16	2	2	5	5	3	—	4	3	1
Pennsylvania	22	10	2	—	3	5	3	4	3	2	—
New England	9	6	4	—	2	2	—	1	—	—	—
South	5	5	1	1	—	1	1	1	—	—	—
Middle West	9	5	—	—	4	2	—	2	1	—	—
Far West	11	7	1	—	2	2	1	1	—	3	1
Total	92	57	11	3	17	20	9	11	8	11	2

These figures require little explanation or comment. A total of 39 boys, or 42 per cent. of the whole number, had studied the subjects required for admission to one or another of our courses. In the majority of the cases where the boy was not eligible, the deficiencies were not very great. In nearly every case the trouble was not that the total amount of school work done was insufficient in quantity, but that some of the subjects were not the right ones or were not rightly combined to meet our requirements. The most striking detail brought out by the investigation will be found in the B.S.-Litt.B. column under the heading "deficient in mathematics or science." Twenty boys, more than a fifth of the total number, have pursued studies which naturally lead to the Litt.B. course, that is to say, a "classical" course without Greek, but lack the advanced mathematics or the science (in a few cases both) demanded by the Princeton requirements for this course. This deficiency of one (in a few cases two) units of requirements is nearly always accompanied by an equivalent surplus over our requirements in History or Modern Languages. In other words, a slight change in our requirements for the Litt.B. course in the direction of greater range of choice, such a change as has recently been adopted at Yale College, would make nearly all of these cases eligible.

CHAPTER V.

Letters Addressed to Dean Fine by the Head-Masters of Certain Secondary Schools

In addition to the list of questions sent out by your Committee, the following letter was addressed by Dean Fine to the head-masters of sixty-three schools whose relations with Princeton have been particularly close, the schools which are referred to in the preceding chapter as "Class A".

My dear Sir:—

I should appreciate it very much if besides replying to the questions relating to our entrance requirements which are enclosed herewith, you would also kindly send me a reply to the following question:

> Are there any features of the course of study at Princeton, of the rules of scholarship, or of the requirements for the A.B., B.S., Litt.B., or C.E. degrees which in your opinion deter desirable students from entering the University? If so, what are those features?

It is the desire of the Faculty to inform itself as to the attitude of the best secondary schools, and of those in particular which send a considerable number of students to Princeton, toward not only the requirements for entrance, but also the course of study. That is my reason for asking your opinion on the points above indicated.

Very truly yours,

H. B. Fine.

To this letter twenty-four replies were received. Instead of attempting to analyze and summarize these replies, the Committee has thought it better to print them virtually entire, and this determination has received the approval of Dean Fine. In a few cases portions of the letters which were of a personal nature, or not directly pertinent to the enquiry, have been omitted and the omission indicated by a row of dots. The letters are printed in alphabetical order according to the names of the schools.

ALLEGHENY COUNTY ACADEMY,
Cumberland, Md.

We have heard absolutely no question raised as to any features mentioned.

JOHN E. EDWARDS, *Prin.*

ALLEGHENY PREPARATORY SCHOOL.
Allegheny, Pa.

March 28, 1911.

DR. H. B. FINE,
Princeton, N. J.

MY DEAR DR. FINE:

Relative to your question to me ten days ago as to whether there were any features in the courses of study at Princeton which deter desirable students from entering your university, I will state that none come to my mind at this time. So few of our students have as yet graduated from Princeton, that I am not able to get much data from graduates of your university who have had our preparation. I personally do not feel that the average student continues through his college course with the schedule he lays out for himself before entering, and that a schedule worked out by a secondary-school boy, even with the assistance of his parents or instructors, is made adaptable to the special features of a college course.

If I can be of any further assistance, please let me know. I am,

Very truly yours,
H. M. BUTLER, *Acting Headmaster.*

PHILLIPS ACADEMY,
Andover, Massachusetts.

April 4, 1911.

DEAN H. B. FINE,
Princeton University,
Princeton, N. J.

MY DEAR MR. FINE:

Your favor of March 17th should have been answered earlier, but I have been anxious to get a composite opinion on the question at issue, and hence have talked the matter over informally from time to time with various members of our teaching force. Unfortunately our Princeton delegation in recent years has been too small to give us any large amount of data on which to base a satisfactory judgment. Some of our men are inclined to think that too great emphasis

is laid on the classics at Princeton. Personally, I hold just the opposite opinion, but this is getting to be almost a hobby with me and perhaps too much weight should not be attached to my judgment therefore. In view of my early experience with Princeton only a few days after my appointment to the position I now hold, I realize that things have changed wonderfully. That they have changed, no one doubts, and my opinion of Princeton has changed with them. Personally I have felt that during the last few years especially, Princeton has come nearer to attaining the ideal which it is the duty of our great educational institutions to strive for than has any other college known to me; hence I don't feel like criticizing it. Very likely the Princeton requirements may deter a good many men from entering. How valuable to the world those men would have been had they entered under less exacting conditions, is to my mind an open question. My judgment is that the college in the main is far better off without them, though undoubtedly a few exceptionally good men may be included in the number.

Regretting that our relations with Princeton are not more intimate and our Princeton delegation larger, so that it would be possible for me to speak with more assurance, believe me,

Very sincerely yours,

ALFRED E. STEARNS,
Principal.

CHESTNUT HILL ACADEMY,

Chestnut Hill, Pa.

March 18, 1911.

MY DEAR PROFESSOR FINE:

In reply to your circular letter, I would say that more and more of our boys are going to Princeton which would seem to indicate that the courses are acceptable. It is the feeling of most of our men here that Princeton would do well to drop the Litt.B. degree and give A.B. for both courses as this seems to be the trend of things just now, but I suppose that it would seem revolutionary to even breathe the thought. Beyond this matter of names which really does not matter very much, I have no suggestions to offer. I am very glad that the Chestnut Hill Academy has made a beginning in sending boys to you and am especially glad that some of our best students are going there next fall.

Yours sincerely,

J. L. PATTERSON,
Head Master.

COLUMBIA GRAMMAR SCHOOL,
New York.

May 4, 1911.

To PROF. H. B. FINE,
Dean of Princeton University.

DEAR SIR:

In reply to your question as to our opinion upon features of the courses of study at Princeton, put to us March 17, 1911, we beg to say that as far as our experience goes, none of the requirements for the courses A.B., B.S., Litt.B., or C.E., deter desirable students from entering Princeton.

We do find that many of the weaker boys desirous of entering Princeton, select the C.E. course in order to become associated with the university, because its requirements for entrance, though probably not for completion, are, in their judgment, much easier than those for the A.B., B.S., Litt.B., degrees. Such students are perhaps not ultimately desirable, because they are of the kind likely to shirk the hard and therefore probably the more valuable work in college.

. . . . . .

Very truly yours,
CAMPBELL & WILSON,
Headmasters.

THE CUTLER SCHOOL,
New York.

March 20, 1911.

DEAR SIR:

In reply to your letter of May 17, let me say that we have not found that the requirements for admission to Princeton, or for graduation, have deterred any of our pupils from entering; and further, that we have no sympathy with the full certificate system, nor with a partial certificate system, such as Harvard has recently adopted. We believe that a boy is strengthened by knowing that he must pass an examination on definite subjects, on definite lines, and that just so far as he is admitted by certificate so far he is weakened. We think this true of most boys, who have an opportunity to fit themselves properly.

We can understand, however, why Harvard has made the change, and why Yale has increased her alternative subjects required, in their attempts to reach the high school pupils, particularly in the

West. The opportunity to go direct to a State college, added to its nearness, is a temptation which can probably be met best in this way; unfortunately, the plan will not make our pupils more self-reliant. We have grown up from the first as a fitting school, and we have made our school course to fit the usual college requirements, so with such slight modifications as we are ready to make, our pupils can prepare either for Princeton, Harvard, Yale, or Columbia.

Most of our boys come with a definite idea of the college they wish to enter; circumstances may influence one to change from the A.B. course to the S.B. or C.E., but they seldom change their choice of college after joining us. As you may infer, most of them have inherited college affiliations, or they have relations or friends with such affiliations; few of them are from families who are thinking of college in the abstract.

Very truly yours,

ARTHUR H. CUTLER,
Principal.

PROFESSOR H. B. FINE,
Princeton University.

DELANCEY SCHOOL,
Philadelphia.

March 20, 1911.

MR. H. B. FINE,
Dean of the Faculty,
Princeton University,
Princeton, N. J.

MY DEAR MR. FINE:

Your circular letter of March 17, has come to hand. On Friday, the 24th of March, I shall put before the faculty for discussion your letter, in order to obtain a detailed statement as to how the various men in the various subjects feel with respect to the Princeton requirements.

. . . . . .

I will merely say in reply to your personal note that I feel the Harvard method recently adopted is in all respects the best system I know of. There is one difficulty in connection, however, which should not be overlooked and is inherent in all certificate systems. We are sending a boy to Harvard at the present time who has attended three or four other schools previous to coming here and who is particularly bright, but as we have not

prepared him in several of the subjects, it is most difficult for us to obtain from these schools a correct estimate of his standing while attending these schools. Harvard desires a correct appreciation of the boy's work in the subjects not included in the four compulsory examinations, and the amount of correspondence and the unsatisfactory results of the correspondence with other schools is very trying. There are few boys in this school who have been deterred from entering Princeton because they cannot obtain the degree of A.B. without Greek. Many boys enter the University of Pennsylvania in the engineering department rather than Princeton because but one modern language and the same amount of mathematics is required, and many who take the two modern language course (Wharton School) do not have to take such severe examinations in mathematics as that demanded by the Princeton B.S. or Litt.B. courses.

I have no criticism to make of the Princeton papers generally but feel that boys should be given as much time as possible on their English papers. We had one boy last year who was turned down in his Princeton English (Mr. Dunning s boy) who is far better in English than any boy we have sent to Princeton with the exception of Strain for a number of years past. We are sending this year three A Number One boys, Robinson, Towson and Dunning. The first two are first-class and Dunning is above the average.

. . . . . .

Most sincerely,

COLEMAN P. BROWN.
Head Master.

THE EPISCOPAL ACADEMY,
Philadelphia.

PROF. H. B. FINE, Dean,
Princeton University,
Princeton, N. J.

MY DEAR SIR:—

In reply to your circular letter of March 17th, ... I write to say that I keep in pretty close contact with those of our students that attend Princeton, and I feel quite sure that in general the course is satisfactory, and there are no features in the curriculum of Princeton that deter desirable students from entering the University. Of course, lazy and worthless boys say to me that Princeton is too hard, and I will never get through; to which my re-

ply is, "Princeton is too hard for *you* undoubtedly, and I think it doubtful if you would get in, let alone stay there." I am very appreciative of the scholastic standard maintained at Princeton, and I think the value she places on the A.B. degree in requiring Greek is most important. I feel sure that the scholastic world is coming round to a proper appreciation of the value of the humanities, and Princeton has always held, and I trust will always hold, a consistent course in regard to them.

Yours very truly,

WILLIAM H. KLAPP,
Head Master.

FLUSHING HIGH SCHOOL,
Flushing, N. Y.

March 24, 1911.

DEAN H. B. FINE,
Princeton University.

MY DEAR SIR:

I have no criticism to make on any of the courses of study offered at Princeton.

A few of our students who would prefer Princeton select another college because they want courses which Princeton does not offer; for instance, Mechanical Engineering, Music, etc.

Although I have known of no instance in which the impossibility to get the degree of A.B. at Princeton without Greek has prevented students from going to that institution, I imagine that this would be an obstacle in some cases. Very few public schools now include Greek in the course of study. Doubtless on account of the small number of students studying Greek in this school, we shall be obliged to discontinue the teaching of Greek within a year or two.

Very truly yours,

JOHN HOLLEY CLARK.
Principal.

THE HILL SCHOOL,
Pottstown, Pennsylvania.

March 30, 1911.

MY DEAR DEAN FINE:

I beg to acknowledge the receipt of your esteemed favor of the 17th inst., and to say that in my own judgment and in that of The Hill School masters generally there are no features of the course

of study at Princeton, or the rules of scholarship or other requirements for the various degrees which deter desirable students from entering the University.

At the same time I beg to bear witness to the eminently sane and satisfactory character of the examination papers, which are by far the most reasonable and best balanced entrance papers that we have had under consideration and observation during many years.

Faithfully yours,

JOHN MEIGS,
Head Master.

PROFESSOR H. B. FINE,
Dean of the Faculty of Princeton University,
Princeton, N. J.

HORACE MANN SCHOOL,
Teachers College,
New York.

March 27th, 1911.

DEAN H. B. FINE,
Princeton University,
Princeton, N. J.

MY DEAR SIR:—

In reply to your communication of March 17th, I would say it is exceedingly difficult for a school man as for a college man to determine what it is that deters certain students from entering certain colleges.

One criticism that I would offer is your insistence upon Greek for the B.A. degree. So far as I know this is the only requirement at your University that decides my boys not to enter Princeton.

The two inquiries just received from Princeton lead me to hope that the next decade will produce such close relations between the secondary school and the college that we shall no longer even discuss the domination of the school by the college.

Princeton has a strong hold on the affections of my student body. The Princeton sentiment in my school has tremendously increased in strength during the last three years. Hence I welcome any movement which looks toward closer relations between Princeton and its fitting schools.

Very truly yours,

VIRGIL PRETTYMAN,
Principal.

Irving School,
New York.

April 3rd, 1911.

Dr. Henry B. Fine,
Princeton University.

My dear Dr. Fine:

Your favor of the 17th ultimo I have delayed answering a few days that I might give the questions asked therein due consideration. As to "course of study at Princeton [or] of the rules of scholarship" I am not competent to speak from personal knowledge. My boys who have gone to Princeton have always returned to me with glowing accounts of the College life and work there, never a dissatisfied word. As to my views on the entrance requirements let me repeat what I have already said to the Princeton faculty.

"My opinion is that for each undergraduate course too much is demanded for admission in each subject. As a result, quality of scholarship is made subservient to quantity of material." (This criticism applies as much to other colleges as to Princeton.)

. . . . . .

Now if Princeton Faculty would decrease the total amount demanded for entrance by thirty per cent. to thirty-five per cent., they could then logically demand higher quality by raising their passing mark for entrance ten per cent.; thereby they would secure more students—and desirable ones at that.

Before closing let me say a word as to the *wisdom* of Princeton's policy in demanding Greek as a requirement for the A.B. degree. Logically and historically the position maintained by the Princeton faculty as to Greek with the A.B. degree is correct and absolutely sound. I congratulate the faculty on this position. Princeton has done her duty where Yale has failed. But with the pressure of competition brought by Yale, Harvard, Columbia, Cornell and Williams, can Princeton afford to maintain her conservative attitude, historically correct though it be? For after all is said and done the college degree par excellence is the A.B. degree; if Princeton can stand the strain of her present position, she will win out in the long run. But if numbers be the object sought, an alternative offered for Greek for the A.B. degree and a decrease in the total quantity required (*without loss of quality*) ought to attain that end.

. . . . . .

Cordially yours,

Louis Dwight Ray,
Head Master.

KISKIMINETAS SPRINGS SCHOOL,
Saltsburg, Penna.

April 22, 1911.

DR. H. B. FINE,
Princeton, N. J.

MY DEAR DR. FINE:—

The entrance requirements and courses of study at Princeton are quite satisfactory, especially since the change made in the C.E. Latin requirements which formerly were manifestly unfair.

. . . . . .

The present rules of scholarship at Princeton strike me as fair. Six of our boys of no unusual ability graduate this year—all who entered.

My opinion is inclined to estimate the entrance requirements as too difficult rather than too easy. I question also the desirability of requiring three languages to enter the Academic course. Might not a science be admitted as at least an optional? Our boys pass the German A or French A sometimes after one year; but I presume it is a two-year requirement, and it does seem to keep a boy at foreign languages almost all the time for at least two years.

However I have not made a study of these subjects, and in general leave the colleges to settle their own requirements.

Incidentally I might say that the new C.E. requirements will shut out many applicants—perhaps a good thing, for many became engineers to get to Princeton rather than went to Princeton to become engineers.

Sincerely yours,

A. W. WILSON, JR.,
Principal.

(In answer to a further letter of query the following was received.)

April 28, 1911.

MY DEAR DR. FINE:

Your letter of the 25th inst. to hand in which you ask an explanation of my statement "Incidentally I might say that the new C.E. requirements will shut out many applicants." This refers simply to the fact that you require an extra half-year's work. A student could formerly offer German A and French A. Now he must offer in addition a year's work in two other subjects.

However, personally I approve of the change as the Latin Scientific requirements are still 1 unit more, and further, the old require-

ment drove boys into the hardest Mathematical course without any talent in that line.

Sincerely yours,

A. W. Wilson, Jr.,

Dr. H. B. Fine,
Princeton, N. J.

Mr. Leal's School for Boys,
Plainfield, N. J.

4/29, 1911.

Prof. H. B. Fine,
Dean of the Faculty,
My dear Prof. Fine:

You may occasionally find some criticism from the outer world which is helpful to you in determining the scheme of studies of undergraduates. I do not now have in mind any thing to offer of criticism or suggestion. I am not aware that desirable students are deterred from entering College at Princeton from any of the causes implied in your question.

Very truly yours,

John Leal.

The Mackenzie School,
Dobbs Ferry-on-Hudson, New York.

March 27, 1911.

Dear Dr. Fine:

I am happy to reply to the series of questions forwarded by Professor Root, and also to your own circular letter.

. . . . . .

I find that the Princeton examinations are the most difficult we have to deal with. We had one boy recently who offered himself for preliminary examination at Princeton, and passed on a little more than half the subjects on your list. A week or two afterwards he took the Harvard examinations, because the question of his final college destination had not yet been determined. This boy won at his preliminary examination for admission to Harvard 24 of the required 26 points, which I think justifies my statement that the Princeton examinations are more difficult than those of Harvard. On several occasions, in view of the fact that all college examinations are held at the School, boys have taken both the Princeton and the Harvard examinations, and invariably, they have done better with the Harvard papers than with the Princeton papers.

We do not object to the difficulty of the Princeton examinations. I am merely stating what I believe to be pertinent facts.

A percentage of our boys complain after admission to Princeton that the courses in Mathematics and Physics are surprisingly difficult. Boys like Ross M. Craig, who have spent six or seven years in the School and proved themselves to be vigorous students, have found the work in Physics at Princeton exceedingly difficult. This would argue either that Physics should be required for admission in all courses, or else that the approach to mastering the subject within the College should be more gradual.

You are, of course, aware that the work in Mathematics at Princeton for a quarter of a century has challenged the best of the best students. Occasionally, I have known boys to be easily influenced to change their choice of college because of their known limitations in Mathematics. Personally, I believe that Mathematics has occupied too large a place, both in the preparation of boys, and in determining the question of their retention in college.

. . . . . .

In reply to the fourth question of Professor Root's paper, I desire to say that on paper I am very favorably impressed by the method recently adopted at Harvard. I had the opportunity of going over the scheme personally with two Harvard professors, Dean Sabine and Professor Ropes. With their personal explanations, I was quite won over to the method. It seems to me that colleges should make more of the daily work of the schools in determining a candidate's fitness. . . . But the cardinal merit of the proposed Harvard method is of very great importance, namely, that it proposes to make it possible for any boy in any good school to fit for Harvard University. As matters now are, an unduly large number of boys are persuaded that the only way to get into Harvard, Yale or Princeton is to enter a certain fitting school. Harvard was first among the American colleges to enjoy the imaginary benefit of such exclusive preparation. She is the first to discover that there was a measure of suicide in the method. A more ideal distribution of suitable fitting schools for the different colleges is in the interest of a general improvement in the work of the fitting schools, and tends to serve more perfectly the larger cause of education; and of course, there results from the undue exaltation of a special fitting school a corresponding narrowing of the preparation. In other words, such a school becomes a refined kind of coaching school. It seems to me that Princeton, Yale, and Harvard should get away from this mistaken policy as far as possible.

You are doubtless aware of the fact that the objections to the old Harvard scheme began with the consideration of the special fitting school, and in their announcements in the Boston papers, Harvard has gone so far as to declare that the certificates of a special Harvard school in Boston will not be considered under the new method, so flagrantly had that school only galvanized for purposes of examination the candidates it offered Harvard.

. . . . . .

In conclusion, let me add a suggestion which I have made to the Harvard gentlemen, which they have promised to give serious consideration, namely, that some test shall be made at the time of examination of the candidate's practice and skill in using dictionaries and grammars in the preparation of work. This is a feature of Cambridge examinations, and seems to me a very important one. Every school should form in its language pupils sound habits of work in translating the different languages. An unseen and somewhat difficult passage could be set, and the grammar and dictionary supplied, and the boy invited to show what he can do under such circumstances. He could not do well unless he had been taught to use his tools previously, and if he has not been taught to use his tools, he should have been. If the language work is to yield its largest results, we must get away from the superficial methods of preparation now so largely used. There are boys going to college every year who have never had a dictionary in their hands, and have no local familiarity with their grammars. Translations, keys, and the friendly assistance of comrades have precluded the necessity of anything like original mental processes, but I realize I am quite alone in urging this particular feature of an examination, and offer it only to indicate the possibility of improvement.

Very truly yours,

JAMES C. MACKENZIE,
Principal.

DEAN HENRY B. FINE,
Princeton University,
Princeton, N. J.

NEWARK ACADEMY,
Newark, N. J.

March 25, 1911.

MY DEAR DEAN FINE:

In reply to your circular letter of March 17th, I shall confine myself to my personal experience with students, and not refer to any-

thing that may have come to me from other schools or teachers.

1. The rigidity of the present Princeton Curriculum, especially in the Freshman and Sophomore years, distinctly tends to turn some of the most desirable college candidates in other directions. The fact that a boy must continue subjects which he has studied several years and found distasteful and unprofitable, and the fact that he cannot begin to study early in his college course some of the subjects for which he is anxious, and in which he wishes to do four years of college work, does not appeal to many mature, earnest students who are seeking, primarily, not social life or athletics, but who have a distinct scholarly purpose.

2. The impression that has gone abroad of the wholesale dropping of students at Princeton, and especially the impression that even a fair student is likely to pay a very heavy penalty for temporary foolishness, illness, or accident, unquestionably turns students away from Princeton. Probably the majority of these are of the less desirable type, but I find that parents of good boys make this one of the factors in their choice of a college. The feeling that the dropping rule is operated arbitrarily, and that the individual is not considered, does not appeal to the outside public.

3. The requirement of Greek for the A.B. course has kept away from Princeton very few, if any, of our pupils. I am told, however, that it has a decided effect on high school pupils, especially in some parts of the country. The rigidity of the requirements for the B.S. and Litt.B. courses, especially in the requiring of Advanced Mathematics from all students, has a distinctly deterrent effect. Specific instances of this kind occur in our school nearly every year.

Yours very truly,

Wilson Farrand,
Head Master.

Dean H. B. Fine.

The Peddie Institute,
Hightstown, N. J.

April 5, 1911.

My dear Dr. Fine:

Replying to your question in your favor of March the seventeenth, I have just indicated in answer to a similar question from Prof. Root our criticism of the requirements for admission to the A.B., B.S., and Litt.B. courses.* We have no criticism of the new requirements for admission to the C.E. courses.

I do not know of any features as to the course of study at Princeton or the rules of scholarship which deter desirable students from entering the university.

Very truly yours,
R. W. Swetland,
Principal.

Prof. H. B. Fine,
Princeton, N. J.

* The criticism is as follows:

A general criticism of your requirements for admission to the A.B., B.S., and Litt.B. courses is that the number of hours' work required of the student seems to be more than can well be covered in four years of preparation, unless some subject or subjects are sacrificed. In the A.B. course, for example, your requirements call for four years English, four years Latin, three years Greek, three years Mathematics, two years modern language, and one year History, making a total of seventeen years work. It is fair to assume, I think, that the average pupil can carry but four subjects each year for four years, or a total of sixteen years, or units, of work. The extra year to make seventeen must, therefore, be secured either by the sacrifice of some department like English or by extra work on the part of the student. I am, of course, aware that most colleges now reckon but three units credit for English, though it does not seem to us possible to fit a student properly in English in the length of time represented by that number of units. As the same amount of work is required for the B.S. and Litt.B. courses, the same criticism applies. Your C.E. course seems to require one year less of work.

I thoroughly believe that Greek should be required for the A.B. degree.

William Penn Charter School,
Philadelphia, Pa.

March 28, 1911.

The radical difficulty in this whole situation is that there is no man nor any set of men in this country competent for the task and able to give effect to their conclusions, who are studying this whole question from kindergarten to graduate school, hence, chaos. There are certain fundamental subjects which should form the basis of *all* intellectual advancement, subjects that every boy should know. There are men in this country who could find these. We

specialize on too narrow a basis. The American college was the first educational institution founded in this country. It was serious. It did vast good in its day. Modernized on the right lines it has a magnificent mission still.

The elective system is a *fata morgana*. No boy between 18 and 20 years of age is capable of placing his judgment against trained experience. Choice there should be. That is, of what avenue of human endeavor to enter upon. But how to reach that avenue should be at the direction of those who *know*. There should, therefore, be in these three last years of college carefully laid down lines of preparation for the leading avenues of intellectual endeavor among men. These are not numerous. When once the choice of which of these to enter upon is made, choice should end. Just as is the case in the technical schools. The Freshman year should be required of all, every letter of it, the class cut up into workable divisions, a born teacher of experience, able to *lead*, placed in charge of each. Dispense with tutors, guides and camp followers. The do-nothing class is the blighting influence in education to-day. Don't legislate to care for these fellows, but to get rid of them. Right Freshman training will do this. Catalogue fattening is their only *raison d' être*. For them, the elective system was born. To get rid of them it should die. A properly trained Freshman class would enable you to decrease the requisites for admission and thus raise immeasurably the quality of the work of preparation.

Richard M. Jones,
Headmaster.

The Princeton Preparatory School,
Princeton, N. J.

March 30th, 1911.

Dean H. B. Fine,
Princeton, N. J.

My dear Harry:

Your letter of March 17th was received, also the circular letter from Prof. Robert K. Root.

. . . . . .

Personally, I strongly advocate all your present requirements for entrance to Princeton with the one exception, that we consider the French and German examinations too difficult.

However, from the standpoint of students, I believe that many

desirable boys are kept from entering Princeton University for the following reason: Yale University is our natural rival. The requirements for entrance to the Sheffield School are decidedly easier than for entrance to the B.S. or the Litt.B. department at Princeton. They differ by fully one half year of school work. Yale requires less Latin, also less French or German, also their examinations in French, German and Latin are much easier. From my own experience, I am sure that many desirable boys enter Yale in preference to Princeton for the above reason.

Again, the University of Pennsylvania, in their Wharton School of Finance, have introduced a broad course purely in preparation for business life. Has not Yale introduced the same this year by changing their requirements for entrance to Sheffield? I refer to their dropping Latin as a required subject for entrance and replacing it by an intermediate requirement in French and German. Of course, personally, I do not believe in this change, but nevertheless it is the fact, that some desirable boys who intend to enter business life, who did not start Latin young and who now wish to take a college course, are kept from entering Princeton University due to Princeton's severe requirements in Latin. At the present time, we have in our school two boys of more than ordinary ability who do not wish an engineering course and who have not studied Latin. These boys will probably enter Sheffield due to the fact that Latin is not required.

I suppose it is out of the question for Princeton to introduce entrance examinations in English Grammar and Arithmetic. I am sure, however, that these requirements would greatly help the secondary schools and also the University.

One other thing, we believe that too large a count is given to French and German in your present count system for the entrance examinations. As French and German are not studied in college in the C.E. department, why should both French and German be required for entrance? Would not one language be sufficient and then increase the entrance requirements in Mathematics, either in amount or quality.

Kindly pardon this long letter, but when once started, I thought I would give you all my views such as they are.

Yours very truly,

J. B. Fine,
Headmaster.

RIVERVIEW ACADEMY,
Poughkeepsie, N. Y.

March 27, 1911.

DEAN H. B. FINE,
Princeton University,
Princeton, N. J.

MY DEAR SIR:

Your circular letter of March 17th is before me. Judging from our experience there are some boys we have had in Riverview who give up the idea of entering Princeton because of the requirement of Greek for the degree of A.B., and in several cases they have been extremely desirable boys. Personally, I am strongly in favor of every boy studying Greek, but the trend seems to be away from the so-called unnecessary studies. Wherever possible we encourage this study but in the majority of cases we must abide by the objection of the parent.

Very truly yours,
JOSEPH B. BISBEE,
Principal.

ST. GEORGE'S SCHOOL
Newport, R. I.

April 25, 1911.

H. B. FINE, ESQ.,
Princeton University,
Princeton, N. J.

MY DEAR MR. FINE:

I am sending under separate cover a few answers to the questions relating to the entrance requirements at Princeton. In reply to your question as to whether any of the features of the course of study at Princeton or of the requirements for the various degrees there deter desirable students from entering the University, I would say that they do not. We have not sent a great many boys to Princeton, but I have never known of a case of a boy's being deterred from going on account of the requirements for the various Bachelor Degrees.

In the absence of Mr. Diman, the Head Master of St. George's School, I am taking the liberty of answering these questions so far as I am able in his place.

Sincerely yours,
S. P. CABOT,
Acting Head Master.

ST. PAUL'S SCHOOL,
Concord, N. H.

St. Paul's School replies to Dean Fine's letter with the single word, 'No.'

SAINT PAUL'S SCHOOL,
Garden City, New York.

March 23, 1911.

DEAN H. B. FINE,
Princeton, N. J.

MY DEAR DEAN FINE:

Replying to your circular letter of the 17th instant, I would say that in general I have no criticism to make with regard to the details suggested, and that I do not believe that any desirable students from this school are deterred from entering the University because of the details mentioned. Personally, I am not in sympathy with what seems to me to be the over-emphasis placed upon descriptive geometry in the C.E. course, but I know that is a matter of opinion. As I said in my letter to Prof. Root, I do not believe in the artificial barrier existing between the A.B., B.S., and Litt.B. degrees. It creates too high a wall of protection about Greek.

Yours sincerely,
WALTER R. MARSH,
Head Master.

TRINITY SCHOOL,
New York.

March 24, 1911.

DEAN H. B. FINE,
Princeton University,
Princeton, New Jersey.

MY DEAR SIR:

In reply to your inquiry as to whether there are any features of the course of study at Princeton which deter desirable students from entering the University, I have no criticism whatever to present. From the standpoint of the teacher, I consider Princeton second to no institution in the country for my boys to attend. I find that my boys who go to Princeton become most loyal and satisfied members of the University and I have never heard from them the slightest complaint about conditions there. We have absolutely no fault to find with your rules and requirements.

Very truly yours,
LAWRENCE T. COLE,
Rector.

DATE ISSUED	DATE DUE	DATE ISSUED	DATE DUE
[illegible]	AUG 1 '55		