dents (not including the students of the medical college in New York city) were $339,769.49 for tuition fees, $59,936.19 for laboratory fees, and $41,187.06 for incidental fees. There was received from the United States under the second Morrill Act $25,000, under the Nelson Act $15,000, under the Hatch Act $13,500, and under the Adams Act $8,775. The income from invested funds amounted to $440,546.52.

The expenditures of the university exceeded the income for the year by $33,375.79. These expenditures included as an extraordinary item $34,643.80 to extinguish the debt on Goldwin Smith Hall.

Cornell University is supported by its old students and alumni, by the state of New York and the United States, and by rich men and women who recognize the value and importance of its work. For the millions of dollars it now needs the university must look to the generosity of this latter class—the millionaires who are seeking the highest and best investments for their surplus funds.

The United States is an industrial democracy, and the civilization of the United States must develop on that foundation. Cornell University stands both for the industrialism of America and the idealism of Athens. Its technical courses represent the one, its liberal arts the other. Human civilization in an industrial democracy must embrace both. This comprehensive curriculum, which starts with the industries of the people and soars to the laws of nature and the historic life of mankind, is enormously expensive to maintain. That is to say, the number of teachers must be exceedingly large to cover so varied a field of subjects. And so it happens that besides endowments for research, the supreme need of the university is of endowments for a large number of professorships, especially in science and in the technical branches, affording stipends sufficient to attract the ablest men and to dignify the teaching profession.

A third great need of the university is the superior student, the youth of talents and ability decidedly above the average. It is this saving remnant of students of distinction who make the higher work of the university well worth while. It is the highest function of a university to catch these youths whom nature herself has ordained to art, literature, philosophy, science or invention, and train them for the work they are specially fitted to do. Society, too, is profoundly concerned for their intellectual nurture; for on them the progress of civilization depends. Why is it we are always complaining of the dearth of talent in politics, in literature, in the professions? Is it not because we do not draw from a sufficiently large area? Education and natural talent are not always made to meet. The precious seed is allowed to be wasted.

Lastly, says President Schurman, the local habitations and the physical appliances of these intellectual workers, investigators, teachers, students, are sadly inadequate. And the report concludes with an appeal for half a dozen new scientific laboratories, a gymnasium, an auditorium and one or two other buildings for general university purposes, and a score of residential halls for the thousands of young men for whom the university has not to-day a single dormitory.

THE RELATION BETWEEN COLLEGE STUDIES AND SUCCESS IN LIFE

THIS year, for the first time in more than a quarter of a century, the entering class at Harvard College finds its choice of studies restricted by a constructive modification of the elective system. This is the

most conspicuous of all the motley array of plans for compulsory concentration and distribution of studies, for it comes at the close of the longest and most liberal experience with the elective system in the history of education. After more than forty years of consistent, acknowledged leadership as the modern champion of freedom, followed in each step at the respectable distance of about a decade even by Yale and the lesser powers within her sphere of influence, Harvard College requires of the class of 1914 some degree, both of scattering and specialization in the choice of courses for the A.B. degree.

The rules now require every student to take at least six of his courses in some one department, or in one of the recognized fields for distinction. In the latter case, four must be in one department. Only two of the six may be courses distinctly elementary in character. For purposes of distribution all the courses open to undergraduates are divided among four general groups. Every student must distribute at least six of his courses among the three general groups in which his chief work does not lie, and he must take in each group not less than one course, and not less than three in any two groups. The groups are: (1) Language, literature, fine arts, music; (2) natural sciences: physics, chemistry, astronomy, engineering, biology, physiology, geology, mining; (3) history, politics, economics, sociology, education, anthropology; (4) philosophy and mathematics. The committee is instructed in administering these general rules for the choice of electives by candidates for a degree in Harvard College to make exceptions to the rules freely in the case of earnest men who desire to change at a later time the plans made in their freshman year, and to make liberal allowances for students who show that their courses are well distributed, even though they may not conform exactly to the rules laid down for distribution. In making exceptions to the rules, a man's previous training and outside reading are taken into account. The central principle of the whole plan is that each student must take a considerable amount of work in some one field and that the rest of his courses must be well distributed.

Two questions of general interest at once arise: to what extent will these restrictions actually influence the choice of studies, and to what extent does the choice of studies promote success in life?

The best available evidence on the first question is the program of study actually chosen under the elective system. Of the men who graduated from the Harvard Law School *cum laude* for a decade previous to 1908, only one seventh did not take six courses in some one field. The students in the Harvard Medical School whose undergraduate courses were examined had distributed their courses, but had not concentrated nearly so much as the honor men in the law school. Only about one sixth of them had taken six courses in any one field. Of 1,000 men from the classes of 1908 and 1909 in Harvard College, only about 20 per cent. met all the requirements of the new rules. Had those restrictions been in force, about half of these students would have been compelled to change one or two courses. Only a very few would have needed as many as five changes in their programs.

The dominant purpose of all disinterested plans for administering the courses of study of undergraduates is to promote the success of men and women in the life beyond commencement, however variously success may be defined. A comparison of the courses of study of successful graduates with a random selection ought, there-

fore, to furnish evidence of considerable value on various obscure problems of college administration. If a man's success in life is in any marked degree correlated with the subjects studied in college, or the grades attained in college, or the extent of distribution or specialization of his courses, then scientific studies of the programs of successful men contrasted with the programs of men taken at random will reveal such correlations. The results of such studies would enable us to say at least this much: that successful men do or do not elect more courses in classics, chemistry, etc.; that they do or do not attain higher standing in scholarship; that they do or do not scatter or concentrate more than college students as a whole.

The initial difficulty in any such study is the definition of "success." The mode of selecting men for distinction will seriously affect any conclusions that may be deduced. And, obviously, whether or not the conclusions of such a study will influence the administration of college curricula depends in part on the extent to which those in authority agree, in their conception of "success," with the adopted definition. "Who's Who in America" has been taken by many investigators as the sole criterion of distinction. Professor Dexter used this in ethod in attempting to answer the question, What is the best college?[1] His conclusion that the small New England colleges are the best is unwarranted from his evidence, for the reason that the errors incident to the use of "Who's Who" as the measure of success have the least effect on the older, small New England colleges. Professor Jastrow, on the other hand, in his study of the distribution of distinction in American colleges, has used "Who's Who" with greater care. He has assumed merely that the average of distinction of those persons mentioned in "Who's Who" overwhelmingly exceeds the distinction of the average citizen; and that, considered in large groups, the people selected for this distinction represent the uppermost level of ability, in some callings, in American life. With the treatment of large groups by approved statistical methods, and with due allowance for the various probable errors of compilation, "Who's Who" may be made the basis of trustworthy studies. For our purposes, however, the main objections to this definition of success are that certain callings are still unduly weighted, and that prominence overshadows inconspicuous worth. There is a kind of life which does not express itself in offices or publications or advertised philanthropy, which, nevertheless, the best men of our best colleges would be glad to promote, if possible, by the course of study.

For a single study in this field, three men were asked this year to select from the class of 1894 of Harvard College the students who since graduation had won success. The judges were LeBaron R. Briggs, dean of Harvard College when these students were undergraduates, Edgar H. Wells, secretary of the Harvard Alumni Association, and Frederic E. Farrington, adjunct-professor of educational administration at Teachers College, Columbia University, and a member of the college class in question. Each judge was asked to make his own definition of success. That is to say, he was asked to choose those men who had achieved the kind of success which he would be glad to have Harvard College promote, if possible, by the administration of its curriculum. The only qualification was that men whose careers appeared to be greatly aided by social position or hereditary wealth should not

[1] *World's Work*, April, 1903.

be included in the successful group. The independent selections of these three judges furnished a list of twenty-three men each of whom was marked successful by at least two of the judges. The exact and complete college records of each of these twenty-three men were then copied from the college books, together with the records of twenty-three men chosen at random, being every fifth name in an alphabetical list of living members of the class of 1894.

The number of individuals in each group who took at least six courses in a single subject is shown in Table I. The average number of courses taken by the successful men in their major subject is 6.4; the average number for the whole class, as shown by the random group, is 5. This is a really notable difference. Only seven of the successful men failed to elect six courses in one subject; thirteen of the other group failed to do so. Or, if we recognize history and economics as a field for distinction and concentration (as any wise committee instructed to interpret the rules freely would do) we find that 56 per cent. of the random group, as opposed to only 17 per cent. of the successful group, failed, under the elective system of 1890–94, to concentrate as much as the Harvard rules of 1910 require. This single study of a single class, therefore, tends to support the conclusions of all the previous studies on this one point, namely, that the better scholars in college and the better men after graduation, by whatever standards we have thus far measured them, do specialize to a significantly greater degree than other students.

Quite the contrary is true with respect to scattering. As shown in Table II., the average number of subjects elected by the individuals of the successful group was 10.2, as opposed to 11.9 for the other group. Only one man in the random selection

TABLE I

Number of Elections by Each Student of Each Group in His Major Subject

	Group A "Successful" Men		Group B Random Selection	
	Subject	No. of Elections	Subject	No. of Elections
1.	Geology	6	History	5
2.	English	6	English	6
3.	English	4	French	5
4.	English	12	French	5
5.	History	6	History	8
6.	German, French, English	each 4	English	5
7.	Latin	7	English	8
8.	English	8	Economics	6
9.	Latin	6	English	7
10.	Music	6	Latin	10
11.	History, English, Economics	each 5	Mathematics	6
12.	English	7	History	5
13.	English	5	English	5
14.	Geology	6	History	6
15.			English	4
	English, History	each 5	English	4
16.	Greek	7	English, History	each 3
17.	Fine Arts	6	English, French, History	each 4
18.	English	7	Chemistry	5
19.	Latin	8	French, Economics	each 5
20.	English	7		
21.	Semitic	9	English	6
22.	History	5	English	6
23.	English	5	History	5

Distribution of the Above Table

No. of Courses	Group A	Group B
3	0	1
4	2	3
5	5	9
6	7	6
7	5	1
8	2	2
9	1	0
10	0	1
11	0	0
12	1	0
Average,	6.4	5.0
Mode,	6	5

TABLE II

Number of Different Subjects Taken by Each Student in Each Group

	Group A "Successful" Men	Group B Random Selection
1	11	10
2	11	10
3	13	14
4	10	11
5	10	10
6	12	15
7	9	11
8	10	10
9	7	10
10	9	9
11	8	10
12	10	13
13	12	13
14	13	14
15	7	13
16	13	16
17	11	11
18	9	9
19	13	10
20	8	13
21	7	13
22	11	12
23	11	15

Distribution of Students with Reference to Number of Different Subjects Elected

	Group A	Group B
7	3	0
8	2	0
9	3	2
10	4	6
11	5	3
12	2	1
13	4	6
14	0	2
15	0	2
16	0	1
Average,	10.2	11.9
Median,	10.7	12

failed to satisfy the complicated requirements for distribution set forth in the new Harvard rules, whereas nine of the successful men failed to scatter as much as the new rules require. Only two men omitted more than one of the four Harvard groups, and only one man specialized wholly in one of the four groups. If the class of 1894 is fairly representative of all classes and if the number of cases and the method of treatment here used are adequate, the new Harvard rules for scattering, if enforced, would interfere mainly with those students who are likely to achieve the greatest success in life. Nothing but *a priori* reasoning has so far been offered in favor of compulsory scattering of college studies.

Although the study of an individual program always suggests unwarranted generalizations, it will not be without profit at this point to consider the most extreme case of specialization in the class of 1894. One man elected all his courses from the language group. His career is the one in this class that would have been most interfered with by rules for scattering of electives. Yet he has achieved such distinction in his published studies and in his professorship at one of the leading universities of America that he would be selected as successful according to any creditable criterion. Of his life in college and of the elective system, he says:

> My life at Harvard was a quiet one, as I kept pretty closely to my books. Despite this, however, my interest in all branches of college activity, although passive, was keen. I took no part in sports, although I enjoyed out-door life and spent nearly every summer from my eighth year up to my graduation from college in camping, swimming, canoeing, etc. On competitive trial, I was elected a member of the Harvard Debating Society, but that was the end of my activity in that organization. I was again absorbed in my books, not only those in my own line, but in various branches, some allied to my work, some not. Languages and literature formed my chief interest. My linguistic curiosity eventually carried me off the beaten path of college study. From Greek and Latin, French, Spanish and English, I was attracted to Arabic and Hebrew, Assyrian and kindred tongues. German, I kept up all through my course. A Detur, Phi Beta Kappa, *summa cum laude*, commencement oration and final honors in Semitic make up the sum of college distinction. If I had my course over again, I should go in for debating, try my hand at athletic sports

and send in some contributions for the college journals.

I have no criticism to make of the elective system, except I favor concentration on fewer courses, with more hours a week in each course. For the student who is in earnest, it is certainly the best that can be devised. If the student does not know what he wants, or does not care what he gets, no system will ever solve his problem satisfactorily.

It is evident that this man followed just such a plan of studies as a Darwin, or a Huxley or an Edison would have chosen with delight, but a plan entirely unsuited to the genius of the weaklings in any college.

The results of this investigation are in accord with previous studies, though not in accord with popular opinions. A Harvard committee found, from the programs of a thousand recent graduates, that

> The high scholars, the men who were studying earnestly, almost invariably concentrated enough to come into the plan we are speaking of, but they were very likely to concentrate too much. They were apt to leave some one of these groups wholly untouched, or with only one course, where they ought to take two. In other words, we found that their courses, though profound, were comparatively narrow. When we came to the men whose idea of the development of the brain consisted of developing it more through the muscles, we found that they were less apt to concentrate, and that the system would interfere with them because they did not concentrate enough. They were apt to diffuse, to distribute their courses.

In two other respects, the record of the class of 1894 supports the conclusions of President Lowell in the studies he has just made of the honor men and pass men in the Harvard law and medical schools. In the first place, contrary to the popular notion, success in college as indicated by marks attained in college courses *does* give promise of success in later life. Only one man in the Harvard Law School in twelve years has found his way to the *cum laude* rank, who in college attained no better average than "the gentleman's grade." The parallelism between success in college and success in professional school is striking for every group of students in every class, for the past twelve years, in both the law school and the medical school. The same result is shown in this study of the class of 1894. The men in this class who have attained success were awarded as undergraduates nearly four times as many high-

TABLE III

Relative Rank in all Courses of the Two Groups

	Group A "Successful" Men	Group B Random Selection
A	**196**	**56**
B	180	183
C	156	247
D	33	75
E	11	16
Absent	8	8
No returns		1
	584	586

TABLE IV

Number of Elections in Each Subject

	Group A "Successful" Men	Group B Random Selection
2 Botany	8	9
1 Comparative Lit.	1	0
2 Chemistry	26	35
Philology	2	0
Engineering	4	8
1 English	116	99
1 Fine Arts	19	23
1 French	40	53
2 Geology	22	26
1 German	44	40
3 Government	15	17
1 Greek	43	18
3 History	59	84
1 Italian	9	5
1 Latin	49	30
4 Mathematics	29	31
1 Music	8	2
4 Philosophy	19	24
3 Economics	45	45
2 Physics	4	11
1 Sanskrit	1	0
1 Semitic	11	10
1 Spanish	3	10
2 Zoology	7	4

est grades as the random selection—196 as opposed to 56. This is the most significant fact in Table III. In the second place, as President Lowell's more extensive data based on a different definition of success clearly show, it appears to make little difference what subjects a student elects. There is no evidence that social sciences are a better preparation than anything else for law or that natural sciences are better for medicine. Furthermore, the number of elections in each subject by each group of the class of 1894 shows no marked correlation, not otherwise accounted for, between subjects elected and success in later life.

WILLIAM T. FOSTER

BOWDOIN COLLEGE,
September 23, 1910

INBREEDING IN THE INSTRUCTIONAL CORPS OF AMERICAN COLLEGES AND UNIVERSITIES

BY inbreeding is here meant the election of alumni or alumnæ to the instructional staff of their alma mater. This practise seems peculiarly American in that it obtains in our schools to a far greater extent than in the schools of Europe. In the German *Gymnasium, e. g.,* it is comparatively rare, and when it does occur the instructor is elected to his alma mater only after a long course of study or teaching elsewhere.

In American schools this case is the exception rather than the rule, especially in the less reputable schools where the rule is to elect the inbred instructor soon after graduation, or even before. The reasons for a high per cent. of inbreeding in our schools, as a study of inbred faculties suggests them, are: (1) Inbreeding as a set policy, since it is believed that the alumni are truer to their alma mater than outsiders. This is rather unusual. (2) Financial considerations in that recent graduates can be had cheaper than more seasoned and better trained men elsewhere. (3) Lack of outlook on the available candidates on the part of persons electing. (4) Sectarian considerations in church schools and race considerations in race schools which tend to narrow the field of selection, and even to restrict it to some degree to the alumni of such schools themselves. (5) Belief in "home product." Thus for a good many schools there can be shown to be a certain territory from which each draws the additions to its faculty. (6) Fond teachers who bring about the election of their students to their own faculty. (7) Family or friendly relations of the inbred instructor to the persons electing.

On the results of inbreeding and therefore on the advisability of it as a plan, it is difficult to give tangible evidence. To be sure, inbreeding in plants and animals has been generally considered disastrous, hence the stigma popularly attached to the term.

In the breeding of animals and plants, inbreeding is never advantageous unless you have almost perfect animals to start with and unless vigorous selection is practised. Then, with great care and good judgment the best individuals are generally produced by it.

But because inbreeding with average stock in plants and animals is mostly disastrous does not prove that inbreeding in college faculties must be so. The analogy is a very loose one. In the one case a definite biological process, governed by fixed laws: in the other, merely a social-intellectual corporation, influencing its fledglings in a less exact and measurable way, who in turn would influence their students in the same way, and so on.

What really happens in inbreeding in faculties is this: A more or less constant body of professors has a certain range of ideas and a certain range of ability: Intellectually, morally and socially. These ideas and capacities they transmit to a greater or less extent to their students. These students are elected to the corporation without taking on any considerable number of new ideas or capacities from elsewhere. Thus if we grant that the older men are not steadily deteriorating and that the professors impart themselves fully to their pupils, the range of intellectual, moral and social potencies would remain about constant.