

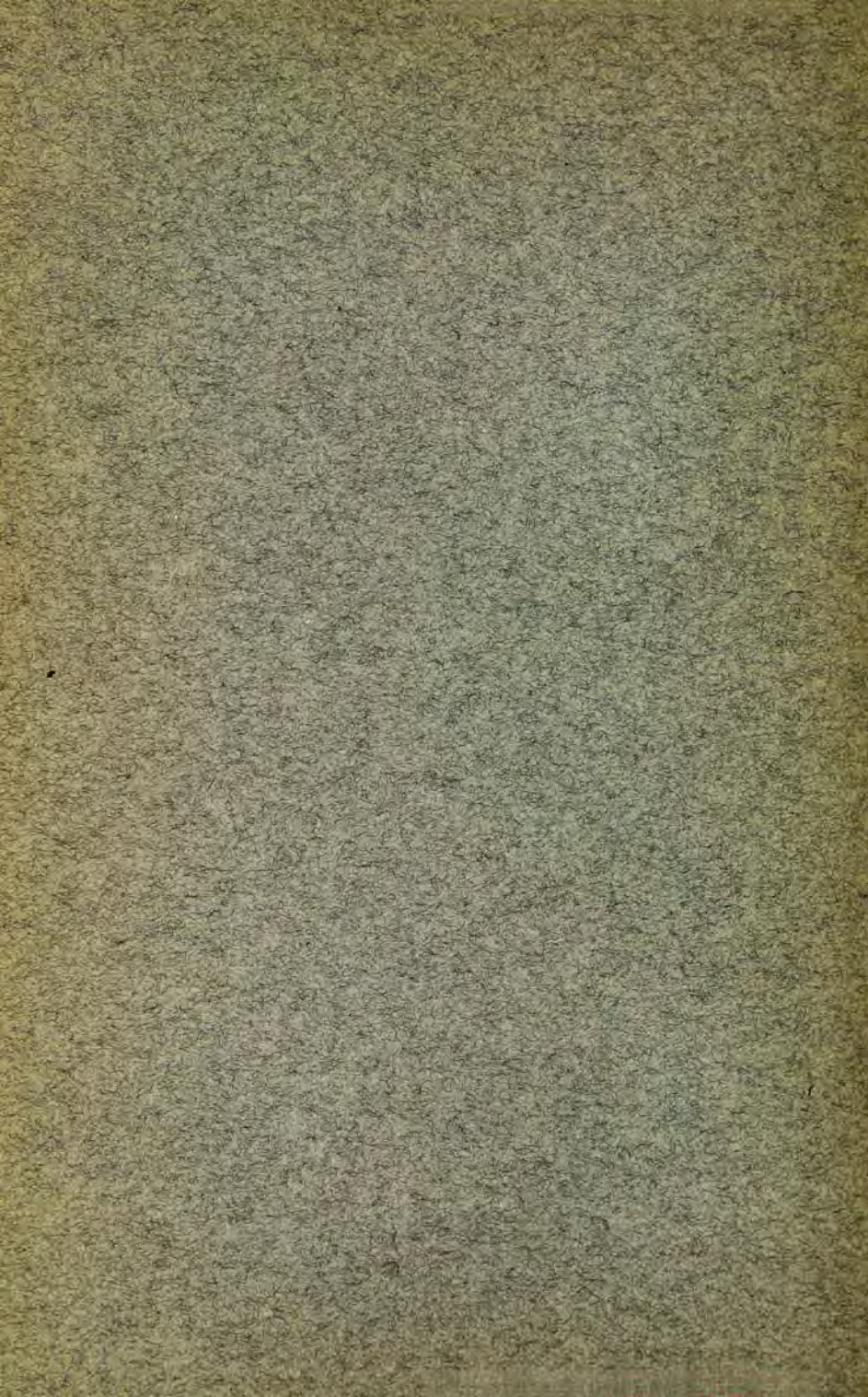
OFFICIAL PUBLICATIONS OF CORNELL UNIVERSITY

VOLUME 1

NUMBER 4

ANNUAL REPORTS OF THE PRESIDENT AND THE TREASURER 1909-10

NOVEMBER, 1910
PUBLISHED BY CORNELL UNIVERSITY
ITHACA, NEW YORK



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VOLUME I

NUMBER 4

EIGHTEENTH ANNUAL REPORT OF PRESIDENT SCHURMAN 1909-10

WITH THE TREASURER'S REPORT, AND REPORTS OF THE DEANS OF
FACULTIES, DIRECTORS OF COLLEGES, THE REGISTRAR,
THE LIBRARIAN, AND OTHER OFFICERS

NOVEMBER, 1910
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PRESIDENT'S REPORT

FOR 1909-10

THE PROBLEM OF RESEARCH

The American University is a composite organization: it consists of the college, the professional and technical schools, and the graduate department. Originally the college was all there was of the American University; subsequently schools of law and medicine were incorporated in the expanding institution; in comparatively recent times technical and other professional schools were added; and in the last twenty or thirty years a number of our largest and best universities have also taken on departments of graduate study and research. These several parts or elements of the typical American university of to-day need to be separately distinguished in any discussion of university development or reform.

The charter of Cornell University requires it to provide liberal and practical education for the industrial classes in the several pursuits and professions of life. The aim undoubtedly was to secure for the educationally neglected classes of the community—and these were the overwhelming majority—the same opportunities of higher education, the same possibilities of scientific training for their pursuits and callings in life, as the older type of classical college and university already offered to the future lawyer, doctor, preacher, and teacher. In mental equipment and in training for practical life, in expert preparation for their several modes of earning a livelihood, the industrial classes were to have all the assistance which modern science could bestow upon them. This mandate of the charter is the authorization of the great departments of engineering, agriculture, and other similar practical and industrial courses in Cornell University. In the eyes of the older and conservative institutions—the advocates of the classic monopoly of “liberal” culture—these things branded Cornell as a utilitarian, if not even a Philistine institution. But experience has

amply justified the new and democratic departure, and Cornell is to-day honored as a leader in that great movement of agricultural and technical education which has not only won universal recognition, but which is the best approved and most widely popular service of our American universities. If Cornell is now in need, as she is sorely in need, of additional endowments to expand and improve her work in technical and industrial education—to secure a larger number of able and well-trained teachers for her overcrowded classes of students and to provide them with laboratories and apparatus for instruction and investigation—she may rightfully feel that her past record justifies a confident appeal to the generosity and philanthropy of men and women who desire to invest their wealth for the greatest good of their fellow-men.

Industrial and technical education has the great merit, not merely of not alienating young men from manual labor, but of keeping them in constant touch and sympathy with it, requiring them to practise the simpler mechanical operations as a part of their curriculum, and training them meanwhile to take up more complex varieties as a life-work after graduation. They go out naturally to the shops, the factories, the railways, the mines, and similar arenas of labor. In these latter days too, large numbers of them adopt some form of farming, which is becoming every year a more popular pursuit for young men, and women too, who have had the advantages of scientific training in raising crops or fruit or stock or making butter, cheese, or other products of the farm. There can be no manner of doubt that practical and technical education, while giving the individual student an excellent mental discipline, has also stimulated the agricultural and manufacturing industries of the country. And at the same time, by binding together the skilled hand and the educated brain, it has wrought powerfully for the maintenance and diffusion of the spirit of social and political democracy.

While the technical departments of the university fit men by scientific training to engage in industrial pursuits, "the college," or academic department, takes no account of the future careers or purposes of its undergraduates. This is at once the source of its greatest strength and its greatest weakness. Of its greatest strength, because it encourages men who love knowledge to devote themselves to study without regard to ulterior purposes; of its greatest weakness, because it permits men who have no intellectual

tastes or interests, if they can find a sufficiency of easy courses or easy-going teachers, to spend four years without much immediate profit to their minds and with ultimate serious damage to their characters in consequence of the formation of habits of idleness, listlessness, and perhaps deception, sham, and "grafting." The ideal for the college is not difficult to formulate. No student should be permitted to remain in it who does not love the arts and sciences for their own sake and who does not show that love by devoted study, unless indeed, he is earnestly pursuing courses with the definite object of preparing himself for some practical work or professional career.

To apply the ideal in practice is more difficult because of the number and variety of intermediate cases. Yet no one can deny that in American "colleges" in general, there are far too many students without serious purpose. They are there because their fathers are alumni, or because their mothers recognize the social value of a degree, or because the boys themselves regard "college" as a place for "a good time." Now the colleges of the country were never designed for such persons; and from the point of view of the public interest and American civilisation there is no reason whatever why they should be admitted, or, if admitted, suffered to remain. Fortunately Cornell has not a social prestige which attracts this class of students in any considerable numbers and the Dean and Faculty are inexorable in their insistence on full satisfaction of the requirements for admission and advancement. And this is the one hopeful course to pursue at the present time. Hard work is the solution of most of the college problems which educators are nowadays discussing. Given an able faculty and capable and studious undergraduates, and neither the preceptorial system (with its danger of coddling) nor the "elective system" (with its danger of snap courses and easy-going professors) would be of the slightest consequence. It is possible to approximate to that ideal situation by classifying students according to their ability and attainments and having those who excel taught in groups by themselves. Like most other reforms this would call for new endowments to secure additional teachers who of course should be of the very highest rank and standing. But no money is so well spent as that used for the education of young men of markedly superior intellectual power and of exceptional diligence and devotion to study.

So much for "the college" and the technical departments of Cornell University. The professional schools of law and medicine, which have been especially considered in recent Reports, and which are now on a very satisfactory basis, call for no further discussion in this connection. It is enough to repeat that the Medical College is now open only to graduates in arts or science, and that the members of the Faculty are devoting much of their energy to research in physiology, pathology, bacteriology, and the other medical sciences. In this respect the Medical College has become a most promising ally of the Graduate School.

The future of the American university is with the graduate school or department of research. It is by the enlargement of human knowledge that progress in civilisation and improvements in the life and condition of mankind are rendered possible. The scientific investigator who discovers new laws of nature does more for the relief, assistance, and uplifting of his fellow-men than all the politicians who deafen the world's ear with their panaceas,—too often, alas, mere sounding brass and tinkling cymbals. And the infallible lessons of human experience for thousands of years—does not the scholar by patient research spell them out and write them down for our instruction? These two—the scientist with his fruitful experiments, the scholar with his productive research—are the seers and accredited leaders of mankind in this twentieth century. In their light we shall see light, otherwise we walk in darkness. And it is such scientists and scholars who constitute the research department of the university.

This crowning glory of the university is not yet a fact in America; it is only an expectation, or at most a promise. When the realization comes—and come it certainly will, at Cornell or elsewhere—it will mark the final and culminating stage in the development of the university idea. At present the graduate schools of American universities have not been so much departments of research as colleges for the advanced training of prospective teachers and professors. Here and there a university or a department has risen above this routine and recognized its call to make explorations beyond the verge of existing knowledge. But little has been accomplished for two reasons. First, the investigator is burdened with teaching students and comes jaded and distracted to the task of research, which in a superlative degree calls for a mind in the freshness and plenitude of its powers. And secondly, while a

great graduate school and division of research really needs as much money as the present total endowment of the richest of American universities, the investigator to-day finds available for research only such dribblets of funds as are appropriated to his department primarily for the purpose of instructing students. Both evils could be remedied by special endowments for research.

Here is the multi-millionaire's opportunity for the greatest and best investment in America! By means of a large endowment for research (say \$20,000,000, which might be given at once or spread over a period of years) he would make it possible for at least one American university to enter upon the highest stage of university life and activity and to discharge its supreme function to the American public and human civilisation. A university dedicated by such an endowment to advanced work and research would challenge comparison with the best European universities and set an example which would prove contagious among the other leading universities of the United States.

It is essential to the success of the enterprise that productive scholarship and scientific investigation shall have as organ a genuine university. The alternative is either a corporation holding funds which it doles out in such ways for such purposes to such investigators and in such places as its managers deem expedient, or a truncated institution called a university which consists only of professors and graduate students. Johns Hopkins University has renounced the latter character and taken on a college of arts and sciences for undergraduates; and so has Clark University; and in view of their experience, no other institution is likely to essay occupying the ground which they have abandoned. Experience has also demonstrated insuperable objections to the plan of conducting research by agreement or contract between the investigator and a more or less foreign corporation chartered for the sake of holding funds. The true place for research is in the university; for the essential members of the university are professors and students. The men who conduct the investigations are themselves, to all intents and purposes, the very organization which also controls the funds. The work of these men is the very object and function of the institution. That work in its highest form is research and productive scholarship.

If the members of the university are animated by the spirit of science and scholarship, large numbers will be a decided advantage

to the cause of research. The attitude of the faculty of Cornell University towards research is well known and it is once more attested by the important report adopted by the Graduate School in May, 1910, to which reference will hereafter be made. As regards numbers at Cornell the enrollment of students in the University for the last twenty-five years has been as follows:

Year	Attendance	Year	Attendance
1885.....	649	1898.....	2543
1886.....	829	1899.....	2766
1887.....	1022	1900.....	2980
1888.....	1229	1901.....	3293
1889.....	1329	1902.....	3457
1890.....	1390	1903.....	3423
1891.....	1670	1904.....	3841
1892.....	1883	1905.....	4122
1893.....	2040	1906.....	4225
1894.....	2042	1907.....	4465
1895.....	2057	1908.....	4859
1896.....	2105	1909.....	5194
1897.....	2120		

Of this body of students there were registered as graduates engaged in research since the opening of the twentieth century the following numbers:

Year	Number	Year	Number
1901.....	189	1906.....	239
1902.....	201	1907.....	249
1903.....	197	1908.....	310
1904.....	211	1909.....	309
1905.....	232		

The great and rapid growth in the number of undergraduates and of graduates is sufficiently striking. But far more important than these figures even of graduate students, is the attitude of the University towards investigation and research. The weighty report adopted by the Graduate School last spring, on the occasion of the general reorganization, (printed in full in the Dean's report, Appendix III) puts the Faculty clearly and emphatically on record; and the sentiments of the Faculty are heartily endorsed by the President, and, as he believes, approved by the Board of Trustees. The following extracts from that report show the large place which productive scholarship and research occupies in the hearts and interests of the members of the Faculty, and the determination of these scholars and scientists, even though overburdened by teaching undergraduates and hampered by inadequate apparatus and other facilities, to stimulate and "maintain increased

activity in those lines of work which distinguish a true university from a large college, to the end that Cornell may retain the honorable position which she has held in the past, and now holds, among the universities of the country":

"A Graduate School is preëminently a school of research. Its purpose is to contribute to the advancement of knowledge, both by the training for productive scholarship which it offers to its students, and through the investigations carried on by the members of its faculty. . . .

"In this country, recognition of the fact that graduate work and research are essential features of a true university has come only gradually. But the appreciation of the importance of such work is now widespread, both in university circles and among the public generally. Of especial significance is the position taken by the Association of American Universities, which now makes membership in the Association conditional upon the possession of a strong graduate department. This University was among the first to recognize the importance of advanced work, and opportunities for advanced study have been offered almost from the opening of the University in 1868. The first Doctor of Philosophy received his degree in 1872, and since that time more than a thousand advanced degrees, over three hundred of them being doctorates, have been conferred. The high standing attained by the holders of our advanced degrees as teachers and investigators, and in other lines of professional work, is sufficient evidence of the success of our graduate department in the past."

"It must not be forgotten that an increase in the number of undergraduates brings with it an additional burden of administrative work, and that this burden, together with the responsibility of planning the work of instruction so as to handle such large numbers, must fall upon the *permanent* members of the staff. Unless the permanent staff is increased in the same ratio as the whole teaching staff, the time of the members of our Faculty will be increasingly occupied by administrative routine, and advanced work and research must necessarily suffer."

"It is a relatively simple matter for a teacher to drop his advanced work in order to give instruction to elementary classes. But it is a different thing for a man whose time has been occupied by the routine of administration and elementary work to change suddenly to graduate instruction and the direction of research. Again, from the standpoint of a graduate student, the attractiveness of a university is determined either by the excellence of its facilities for experimental work, or by the standing of the members of its faculty as investigators and progressive scholars. Unless our Faculty contains men eminent in their fields of knowledge and prepared to give graduate students the special training and the

inspiration that they seek, and unless the University already possesses the material equipment that is required, graduate students will not come to us. Provision for graduate students must be made years in advance, and not after the need of it has been shown by the returns from the Registrar's office."

"The University is unable to provide the expensive material equipment which is absolutely essential in many lines of advanced work; the time which the members of the teaching staff can give to graduate instruction is restricted; and worst of all, the pressure of administrative work and elementary instruction compels the members of our Faculty to reduce greatly the time devoted to investigation and other scholarly work."

"One of the most effective means of strengthening the Graduate School, and at the same time of maintaining a high standard of undergraduate teaching, is for the members of this Faculty to use their influence, both individually and as a body, to encourage scholarly work among all members of the instructing staff. Let it be understood that each member of our staff is expected to contribute in some way to the advancement of knowledge, and not merely to teach what he has received from others. If there are any who are overburdened with routine teaching, the load should be lightened to such an extent as to make research possible."

"It seems clear, therefore, that if the University is to achieve its highest purpose it must first of all demand of all its teachers those characteristics which are recognized as essential to membership in this Faculty; and having done so, it should assist in maintaining their activity and enthusiasm by encouraging all teachers, young and old, to contribute to progress in their fields of knowledge by scholarly work and investigation. Those who are sufficiently mature should further be given the opportunity of taking part in the direction of graduate work."

"It is important for the interests of the Graduate School and of the University as a whole that the work of teaching be so distributed that all members of the instructing staff may have a reasonable amount of time for scholarly work and research. And it is recommended that all members of this Faculty use their influence, both collectively and individually, to encourage such work by all members of the teaching staff."

"So far as practicable each member of the staff should be given the opportunity of taking part in advanced instruction as well as in elementary teaching."

"Recommendation for appointment and promotion should be contingent upon the possession of ability and activity in scholarly work and investigation, and not merely upon success in teaching."

"May it not be that we can do more good for the cause of education by directing our efforts toward making Cornell the best university in the country, rather than the largest?"

As an indication of the work which the Graduate School, in spite of all the limitations imposed by the entire lack of special endowments for research, has been able to accomplish, reference may be made to the publications of the professors given at the end of this Report. The other function of the School is to train specially qualified college graduates to become independent investigators. The extent of this function is indicated from year to year by the number of doctor's degrees conferred. Of these there were 35 at the Commencement in June, which is the largest figure ever reached.

In *Science* for August 19 last, there are comparative tables showing the number of doctor's degrees granted by the graduate schools of the universities of the United States for a series of years. The seven universities occupying the foremost place in these tables with the figures are as follows:

TABLE I
Doctorates Conferred

	Average of 10 Years 1898-1907	1908	1909	1910
Chicago	35.6	54	38	42
Columbia	32.2	55	59	44
Harvard	33.8	42	38	35
Yale	31.8	32	44	27
Johns Hopkins	30.5	28	27	23
Pennsylvania	22.5	32	29	26
Cornell	18.1	22	34	35

TABLE II
Doctorates Conferred in the Sciences

	Average of 10 Years 1898-1907	1908	1909	1910
Chicago	16.4	37	20	24
Johns Hopkins	16.8	17	20	15
Columbia	13.4	21	23	11
Yale	12.4	16	27	12
Harvard	14.1	13	14	10
Cornell	10.4	15	24	27
Pennsylvania	9.0	18	13	12

The first table comprises doctorates in all the liberal arts and sciences; the second table is limited to doctorates in the sciences. It will be seen that in the year 1910 Cornell conferred more doctorates in science than any other university in America, and also that the total number of doctorates conferred by Cornell both in the sciences and in the liberal arts was exceeded only by those of Chicago and Columbia (in which a considerable number of city school teachers give a portion of their time to studying for advanced degrees). There is also another very striking and encouraging feature of this tabular exhibit. The number of young investigators earning doctor's degrees at Cornell was twice as great in 1910 as it was on the average for the decade from 1898 to 1907, and furthermore, the increase since 1907 has been steady and uninterrupted.

With the spirit of research animating the members of the Faculty who have already accomplished great things with small resources, with the large and constantly growing body of students and especially of graduates who desire to devote themselves to advanced study and original investigation, there is no reason in the world why Cornell, with adequate endowment for research, should not quickly take rank with the foremost of European universities. But this endowment must be measured in terms of millions of dollars. And, as already stated, the need of it gives the multi-millionaire the best opportunity that exists to-day in America for an investment to promote the higher intellectual life and civilisation of the nation. In occupying this field, the man of large wealth will render an invaluable service to society which no other individual is able to discharge and which neither the state nor national governments can be expected to undertake.

THE PROBLEM OF THE PROFESSOR

The fact that there is in American universities a professorial problem itself shows that something is seriously wrong. The university began as a guild of scholars, and throughout the seven or eight hundred years of its history the faculty essentially constituted the university. If here and now other elements of the organized university have pushed the faculty from its controlling position, this illustrates on the one hand, the universal tendency of an organization to suppress the free play of personality and, on the other hand, the human and specially American disposition to entrust the highest interests of mankind—intellectual, moral, and spiritual—to a corporate body whose mechanism and operations easily usurp the place of the ends it was designed to subserve.

Whatever organization may be necessary in a modern American university the institution will not permanently succeed unless the faculty as a group of free individual personalities practically control its operations. This is said with a full consciousness of the fact that there is a large amount of business ancillary to the main object of the university which members of the faculty ought not to be asked to perform. Why should they pretermitt their function as high priests of knowledge merely "to serve tables"? The point is that the men who attend to this business shall not use their position to subject the faculty to extrinsic control or influence.

As American universities are now organized the faculty has a partner in the board of trustees, which, if legal rights be asserted, is undoubtedly predominant; it has its own administrative officer or dean who of necessity gathers up its business in his own hands and may, therefore, be suspected of arrogating to himself the functions of his colleagues; and both faculty and trustees have a representative in the president who as head of the university with powers and duties and responsibilities impossible to define may, especially if he succeeds in gaining public confidence, acquire and exercise functions which properly belong to the trustees or to the faculty and of which they have been deprived, either by unchallenged acts of usurpation on his part or perhaps merely by the natural gravitation of human affairs under the influence of the activity of an individual and the inertia of a multitude. At any rate American professors have come to feel that their independence is imperilled and their proper influence in the university organization seriously impaired by the activity of deans, presidents, and trustees. And if the complainant is a junior teacher over whom there is a departmental head he may declare that the domination of his colleague is more intolerable than any other form of tyranny practised in the university. It seems that in universities, as in states and municipalities, whoever has power tends to magnify it and is liable to abuse it. And the offender may be a trustee, president, dean, or director—or even the professor who denounces *their* invasion of his just rights!

Unless state legislatures are ready to make the scholars and scientists who are the soul of the university its corporate body also—as is the case, for example, with the ancient colleges of Oxford and Cambridge—there will be no way of legally establishing the faculty as the controlling power of the university. There seems no likelihood of this revolutionary change in the State of New York, whose laws now actually prohibit a professor becoming a trustee in the institution of which he is a member. But the end in view can readily be accomplished without state legislation or even without institutional reorganization. Let the faculty recommend what after due consideration it deems important for the university to do or not to do, and so far at any rate as Cornell University is concerned, not only the President but the Board of Trustees will be too thankful for the recommendations to think of raising any question of jurisdiction or prerogative. The welfare, the best interest,

the advancement of Cornell University as an organ of higher education and research is the supreme object in every mind and heart, and the Faculty should know better than any other body or than any individual how this end is to be attained. No greater good could come to Cornell University than a quickening and deepening of the Faculty sense of responsibility for its welfare. Too often the faculties of American universities have rolled all responsibility on the president and trustees.

A faculty will not be dominated or over-ridden which justly asserts itself. Yet not only trustees but administrative officers are likely to remain; the positions are necessary or at any rate appropriate organs of the institution. Possibly the headship of the department may disappear, and a committee consisting of all the members of the department take its place, as has now been done in several of the departments of Cornell University. Probably the office of director will be abolished as the colleges having such heads become firmly established and democratically organized, and the work of the head is less largely devoted to non-academic objects. But the dean as executive agent of the faculty is indispensable; and it will be due to the laches of the members of the faculty themselves if the dean ever exercises their powers. It is for them to keep the institution democratic. And nowhere else is democracy so important as in the university. For the professor's function is an intellectual one, and freedom is the law and life of the spirit.

There remains the office of president. Of course the university must have a head. And a large American university composed of a board of trustees which conducts its business and invests its funds, and of a half a dozen or a dozen faculties knowing nothing of one another's affairs engaged in instruction and research, and of different and largely segregated groups of students and graduates—an institution which spends from \$1,000,000 to \$2,000,000 a year and has a corresponding volume of business, much of it complex, some of it delicate, all important—an institution having vital and varied relations and obligations to the public to whom also, in a democracy, its work should be made known and its aims constantly re-stated and re-interpreted—such a university needs not merely a head but a permanent head as a condition of harmonious co-operation, effective work, and continuous progress. And this head, while of course he need not control, must participate in all phases of the life and activity of the university, not only

because the university as a whole is entitled to his service but also in order that he may have the knowledge and experience qualifying him to be a faithful exponent and representative of the institution both in the academic community and in the larger world beyond.

Now, if stress is laid on duty and service and not on rights and prerogatives, if the university is conceived not as a monarchy or aristocracy or "mobocracy" but as a genuine brotherhood in which the president is merely the first servant of the institution, there would seem to be little difficulty, given a reasonable amount of tact and forbearance, of administering the American university as at present organized to the satisfaction of all parties. One danger indeed lurks in the disposition of some presidents to identify themselves with the board of trustees, to adopt an exclusively administrative attitude, to become merely men of business and men of affairs, and to lose touch with the work and sympathy with the aims and ideals of the faculty, which, of course, constitute the supreme object of the institution. If by any kind of reorganization this danger can be averted, the reorganization should be cordially welcomed. A university whose president does not embody and faithfully interpret the spirit of the scholars and scientists who essentially constitute the institution, is to all intents and purposes without a head. It is doubtful, however, whether any kind of organization will save our universities from occasional disasters of this sort. The one remedy is cultivation by the faculty of a sense of responsibility for the welfare and advancement of the institution and a readiness to advise on all matters directly or indirectly connected with the essential functions of the university of which they are the constituted organs and guardians. And so far as Cornell University is concerned, the President, and he doubts not, the Trustees also, would welcome recommendations on any subject affecting the welfare of the institution in regard to which the Faculty after calm discussion and careful deliberation believed they could offer pertinent and helpful advice. The report of the Faculty of the Graduate School published at the end of the year 1909-10 is an admirable example of faculty co-operation in determining fundamental policies for the university. By such action the faculty asserts itself, even under the present corporate organization of the university, as a potent element in its government. And the feeling that the university is *their* university, that *they* are influential in its control and that they themselves are free and

independent in their several positions, enhances the happiness of professors and stimulates them to their largest and best endeavors as teachers and investigators.

Respect for personality, the spirit of brotherhood, devotion to scholarship and science, and zealous co-operation in making Cornell University a worthy organ of their dissemination and advancement will ensure harmony, efficiency, and progress even under the present form of university organization and administration. But that is not all. In proportion as a university advances to the highest forms of its activity, it leaves behind the sphere of organization and officialdom and is embodied in the personality of its productive scholars and scientists. A Kelvin, or a Pasteur, or a Mommsen represents in his field the whole university; his work is beyond the reach of officers of government and administration; in his library or laboratory, surrounded with the facilities requisite for research, this solitary spirit, unvexed by rules and ordinances, broods creatively over the mysteries of nature and the life of man. The problems of government and administration that harass our universities in their caterpillar stage disappear in the highest phase of their development. At Cornell, for example, a well-endowed Graduate School and Division of Research would know nothing of them. All that is needed is that the different departments of science and scholarship shall have a certain portion of the income of the endowment assigned to them. That done, the investigator is his own board of trustees, faculty, and staff of administrative officials! Alone he "intends his mind" (in Newton's phrase) to wrest some new discovery from the vast sphere of the unknown.

This same development of the university through a reinforcement and new vitalization of the work of research will also solve another problem which now worries the professor. This is the problem of salary. Undoubtedly the teaching profession is falling into disrepute in America, and in consequence of the smallness and meanness of the salary or reward which prevails, it fails to attract a fair share of the best brains of the country. Now here as elsewhere, reform must begin at the top. And a man who has the rare ability and prolonged training requisite to qualify him to become an original investigator will surely be recognized by the public (if teachers are not) as entitled to a compensation at least as high as the lowest salaries for State judges in New York. As Bacon said in his "Advancement of Learning":

It is necessary to the progression of sciences that readers be of the most able and sufficient men; as those which are ordained for generating and propagating of sciences, and not for transitory use. This cannot be, except their condition and endowment be such as may content the ablest man to appropriate his whole labour and continue his whole age in that function and attendance; and therefore must have a proportion answerable to that mediocrity or competency of advancement, which may be expected from a profession or the practice of a profession.

THE PROBLEM OF THE STUDENT

This is a problem at once of numbers and of quality. So far as numbers are concerned it has been created by the great and rapid expansion of the University in recent years. The following table shows the enrollment of students since the opening of the present century, the first column of figures including the Summer Session and the Winter School in Agriculture, the second excluding them:

Year	Total Number of Students	Total Number of regularly matriculated Students
1900-1901	2980	2521
1901-1902	3293	2845
1902-1903	3457	3022
1903-1904	3423	3091
1904-1905	3841	3318
1905-1906	4122	3461
1906-1907	4225	3523
1907-1908	4465	3734
1908-1909	4859	3985
1909-1910	5194	4227

The number of persons who received instruction in the University in 1909-10 was 5194, an increase of 335 over the total attendance for the preceding year. And the number of regularly matriculated students, which did not reach 2000 till the nineteenth century was closing, in 1909-10 not only passed 4000 but touched 4227, an increase of 242 in a single year.

These 4227 regular students were distributed among the courses indicated in the following table, which for purposes of comparison covers five years:

YEAR	Graduate School	Arts and Sciences	Law	Medicine	Veterinary Medicine	Agriculture	Architecture	Civil Engineering	Mechanical and Electrical Engineering	Total exc. duplicates
1905-1906	232	705	222	394	88	230	81	425	1096	3461
1906-1907	239	748	211	348	86	278	82	466	1081	3523
1907-1908	249	820	206	320	82	348	100	511	1127	3734
1908-1909	310	902	225	221	94	415	133	569	1162	3985
1909-1910	307	970	264	201	100	539	140	559	1186	4227

The increase of regularly matriculated students is very marked in Arts and Sciences, in Law, and in Agriculture. The restriction of the Medical College in the City of New York to graduates in arts or sciences continues of course to deplete the attendance as was foreseen and assumed. The increase in the number of engineering students is inconsiderable. But the article giving the registration statistics of the leading universities of the United States published in *Science*, December 24, 1909, shows that "a general depression is noticeable in the case of the engineering schools," a few, indeed, recording insignificant gains but the great majority showing losses, in the case of several "quite marked." The article goes on as follows:

Cornell continues to maintain its lead in the number of scientific students, Michigan and Illinois being the only other institutions to attract over one thousand students to their schools of engineering; these are followed by Yale, Ohio, Pennsylvania, California, Wisconsin, Columbia, Minnesota, Missouri, and Nebraska, each of these universities attracting over five hundred students to their scientific schools.

Of the 4227 regular students 397 were women. In 1908-09 out of 3985 regular students 401 were women; and in 1907-08 out of 3734 regular students 403 were women. Although the total attendance of regular students has increased from 2845 in 1901-02 to 4227 in 1909-10 the number of women has remained stationary; it was 400 in 1901-02 and 397 in 1909-10. The enrollment of these 397 women was as follows: in the Graduate School, 34; in Arts and Sciences, 274; in Law, 1; in Medicine, 25; in Agriculture, 57; in Veterinary Medicine, 1; and in Architecture, 5.

What is now called a university was originally designated a *studium generale*: a place of study, not merely for students of the locality, but for students from other and all localities. Cornell continues to exhibit in a marked degree this cosmopolitan character of the historic university. It draws about half its students from the State of New York, and the other half from all the other States of the Union, from North, Central, and South America, and from Europe, Asia, Africa, and Australia. The following table shows in detail the geographical distribution of the student body in 1909-10:

New York	2289	Kentucky	12	India	5
Pennsylvania	338	Maine	12	Ecuador	4
New Jersey	234	New Hampshire ..	11	Nicaragua	4
Ohio	175	Delaware	10	Russia	3
Illinois	129	South Carolina ..	10	Turkey (Europe) ..	3
Massachusetts	104	West Virginia ..	9	Turkey (Asia) ..	3
Maryland	88	Hawaii	9	Australia	3
Connecticut	59	Alabama	9	Transvaal	3
Dist. of Columbia ..	48	North Dakota ..	7	Sp. Honduras	2
Indiana	42	Oklahoma	7	Brazil	2
Missouri	40	Louisiana	7	Peru	2
Michigan	37	Mississippi	7	Costa Rica	2
Colorado	31	Montana	7	South Africa	2
California	32	Arkansas	7	Switzerland	2
Wisconsin	29	South Dakota ..	7	England	1
Iowa	25	Rhode Island ..	4	France	1
Virginia	24	Wyoming	2	Greece	1
Utah	21	Florida	2	Bulgaria	1
Minnesota	20	Idaho	2	Germany	1
North Carolina	19	Arizona	1	Uruguay	1
Washington	19	Nevada	1	St. Lucia (W. I.) ..	1
Texas	18	Alaska	1	Panama	1
Nebraska	17	Yukon Territory ..	1	New Foundland ..	1
Porto Rico	17	China	37	Guatemala	1
Tennessee	14	Cuba	26	British W. I.	1
Georgia	13	Canada	12		
Oregon	13	Mexico	11	Total	4227
Kansas	12	Argentine Rep ..	9		
Vermont	12	Paraguay	6		
Philippines	12	Japan	5		

The facts and figures given above indicate the student problem so far as numbers are concerned. Cornell University is undertaking to educate several thousands of students every year and its resources are now inadequate to the task laid upon it. And the numbers of students go on increasing in spite of successive advancements made in the requirements for admission and graduation and marked and growing strictness in administering them.

The solution of the problem is difficult. If the endowments of the university were augmented as numbers increase, and in

somewhat the same proportion, the embarrassment would be happily disposed of; but wealthy philanthropists, perhaps because ignorant of the splendid opportunity offered, have not yet appeared to make this large and growing investment. In some divisions of the University, notably in Agriculture, the State provides appropriations for carrying on instruction which is offered to students without charge; and the State will, it is hoped, by means of constantly increasing appropriations, enable the University to maintain these divisions on a high plane of efficiency. But under the most hopeful future outlook these State-supported departments will embrace only a small proportion of all the departments of the University. And if the others are to grow they must have additional funds, which can come only by way of gift or bequest. To raise the fees for tuition, which are already quite high enough, would tend to restrict the University to the children of the wealthy and the well-to-do; while the majority of people in the country are of narrow means and Cornell was founded primarily to help the industrial classes in the several pursuits and professions of life.

The charter of Cornell University dedicates the institution to research as well as instruction. Might the problem of over-crowding not be solved by turning the University into an institution of research? There are objections in the interest of research itself to this limitation of the institution to investigators with the exclusion of all undergraduates, which have been mentioned in an earlier section of this report. But there is another and equally serious objection. While the charter of Cornell University specifically authorizes the institution to engage in research, it also puts it under primary obligation to teach and instruct students "in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

Undoubtedly it would be possible to limit the attendance. But what criterion shall be applied for this purpose? The educational standards have already been greatly advanced, and it is a serious question how much farther in this direction, if any, it is wise to go. Shall then an arbitrary number be selected as the maximum of permissible registration of students? If so, to what courses shall these students be admitted? Shall there be 1000 students in Arts and Sciences and 1500 in Engineering and 1000 in Agriculture and 300 in Law, or what other numbers? And, again,

on what geographical areas shall the numerical restriction be imposed? The State of New York furnishes slightly more than half the students at Cornell. Shall this State be deprived of the educational advantages of the University it chartered for the liberal and practical education of its industrial classes? On the other hand, if students from other states and foreign countries are excluded, the University will forfeit that cosmopolitan character which is one of its greatest glories and which has so long made it a genuine *studium generale*. Besides, many of the best prepared and most advanced students come from outside the State of New York; to this class belong the great majority of the 222 students entering from other colleges who were admitted to advanced standing in 1909-10, and also the 3200 students who have been admitted to advanced standing from other colleges in the last twenty-four years.

This last circumstance suggests a hopeful field for the future development of Cornell University. The colleges and universities of the United States address themselves to the average student; and in a democracy there will always be a strong feeling, which is also perfectly natural and just, that higher education should be open to all the boys and girls of the country who are able to pass the requisite examinations. The practice of this theory necessarily tends to make the college and university of the country revolve about the *average* student with a strong pull in the direction of mediocrity. But the student of superior endowments is apt to be sacrificed to the general average. Now it might be possible to retain the advantage of universal higher education for all who are qualified to enjoy it without sacrificing those youth of superior or extraordinary endowments among whom will always be found the men who advance civilisation, who move the world forward in the course of progress. Those glorious "sports of nature" (to apply Darwin's botanical phrase to corresponding human beings) have in their unique endowments the possibility of higher things for their species, provided only it is developed by favorable environment and suitable training. Why might not Cornell University become the peculiar nursery of such promising spirits? A seminary for the aristocracy of talent would be the highest and noblest institution in the world. And no other service to a democracy could compare with this: for to form the mind and character of one man of marked talent, not to say genius, would be worth

more to the community which he would serve than the routine training of hundreds of average undergraduates.

A destiny and function of this high character could not be arbitrarily assigned to or artificially imposed upon any university. There could be a happy issue only when the germs of such possibility were already inherent in the organization and operative in its activities. A claim of this sort may be made for Cornell University. If it is still far from the ideal seminary for the aristocracy of talent, the beginnings of that development are visible in the membership of the Medical College and the Graduate School with their enthusiastic and untiring devotion to independent research and productive scholarship—an intellectual function which none but superior minds can successfully discharge. And, in the second place, while many and indeed the majority of undergraduates, even though hard-working students, may be intellectually torpid and remain impervious to the force of new ideas, there is a minority, a saving remnant, not only in the course of liberal arts and sciences but also in the courses in agriculture, engineering, and other technical subjects who exhibit keen intellectual interest, who become enamoured of knowledge, and who develop an ambition to distinguish themselves as scholars or scientists. Perhaps the justification of a large, even a disproportionately large student body, from the point of view of the ideal university of the future, is that the assemblage at least brings together a small number of young men of superior ability with intellectual yearnings and scholarly ambitions. At Cornell such picked men are found, not only in the liberal arts, but especially in the sciences; and, what is still more surprising, the agricultural, technical, and practical departments (which form so large and vital a part of the University) furnish at least their proportionate quota of them. These latter students come to the University to qualify themselves by scientific training to follow some industrial pursuit and earn an honorable livelihood; but science is apt to captivate those of them who possess unusual intellectual gifts and interests and to make them devotees of her own, perhaps with a sacrifice of pecuniary advantage to themselves but with obvious gains to the community and to civilisation.

Thus in the Graduate School, the Medical College, and the "saving remnant" of undergraduates one may already discern the membership of the ideal university—the seminary for the aristocracy of talent, unvexed not only by the inferior but also by the average

student. But there remains another source from which Cornell University might draw such picked youth. The University stands in relation with the school system of the State of New York; it confers one free scholarship annually on each of the 150 assembly districts of the State, in all 600 scholarships. The growing reputation of the University steadily attracts better candidates into the competitive examinations which the State Education Department holds for these Cornell scholarships. And as the University continues to improve, these scholarships are likely to be sought by the ablest youth of the State.

There is another method of securing students of superior endowment which cannot be too strongly recommended. This is by the endowment of scholarships or exhibitions to enable boys of marked ability, but of limited means, as soon as they graduate in any high school or academy of New York State to come at once to Cornell University and pursue their studies. There are some 800 or 900 high schools in the State, and by correspondence with the principals, by special examinations, and, if need be, by personal inspection, the President and Faculty of the University would be able to make a wise selection of candidates. The plan is limited to New York State, because Cornell University has special obligations to its home state and because other states may be left to the care of their own universities. The object is to catch the talented youth of the State and give them, at the earliest possible time, an opportunity to develop their talents. Through poverty, through neglect, through ignorance of opportunity, many of these promising youth, whose fathers till the soil or work in shops or factories, are to-day lost to the republic of science and letters. These endowed exhibitions would enable Cornell University to go out in quest of them to every town and hamlet, to every high school district in the State of New York.

A genuine university consists of able professors and students devoting themselves to scholarship and science. If this fact is once recognized the proposal here made will be seen to be at once important and promising. It is, in short, that students shall be selected with as much care as members of the instructing staff, at any rate for the highest division of the University. It will not be practicable, and in all probability it would not be desirable, for Cornell University to exclude the student of average ability if he can pass the prescribed examinations. But let the superior student

be regarded as the supreme object, let the men of talent be segregated and instructed by themselves. Of course, all this would involve more endowments and additional teachers. But what is better worth while in the world than provision for the instruction of the world's best minds and the moderate satisfaction of their bodily needs, that they may pursue their studies not only undisturbed, but under the most favorable and stimulating conditions?

If endowments were forthcoming to foster a qualitative development of this sort at Cornell University the problem of numbers would take care of itself. For this high spirit would gradually take possession of the entire University. The criterion of excellence would be applied to all departments. The inferior student could not stand the pace set and maintained by the superior student and he would seek elsewhere a more congenial environment. In other words, the enthronement of superiority would have, as incidental result, an automatic tendency to limit the attendance of students.

THE PROBLEM OF SUBJECTS

The act of Congress of July 2, 1862, which donated to the several States public lands for educational purposes, had for its primary object the promotion of the study of the sciences related to agriculture and the mechanic arts "in order to promote the liberal and practical education of the industrial classes." The charter of Cornell University, which is the beneficiary of that federal grant, provided that any "other branches of science and knowledge may be embraced in the plan of instruction and investigation." In this way the founder combined with the narrower purpose of the act of Congress his own comprehensive conception of a university which he had formulated in the memorable words: "I would found an institution where any person can find instruction in any study." No one before or since has ever given such a perfect definition of the true university.

The curriculum of Cornell University should aim to be as broad and all-inclusive as human knowledge itself. To cultivate adequately such an infinite domain, however, would call for an army of scholars and scientists far beyond the number of the members of the largest university faculty in the world, and for equipment, resources, and endowments which no educational administrator has ever dared, even in his most hopeful dreams, to imagine, much less to estimate. Nor is this a discouraging circumstance. There are

many universities; they should work together; and no institution alone should attempt a task which will always tax the combined energies of all. It is for each to develop along its own lines, and to work its own work. Now, by the terms of its charter, by its spirit and by its actual achievements, Cornell University is dedicated first of all to the sciences and, notably, to the fundamental sciences which lie at the base of the practical and industrial as well as the intellectual civilisation of mankind. But this primary object of the University is, according to the charter, to be accomplished not only "without excluding other scientific and classical studies" but by "embracing" them "in the plan of instruction and investigation," so that the University may provide a "liberal" as well as a "practical" education. It is obvious that such a programme necessitates provision for the liberal arts,—language, literature, philosophy, history, economics, and politics,—as well as for the sciences.

A certain primacy, however, may be claimed for the sciences. And this prerogative is recognized and illustrated in practice. The quotations made above from *Science* show that in the year 1909-10 Cornell University had more "scientific students" in its undergraduate courses than any other university in America, and also that of its graduate students engaged in research a larger number were awarded doctorates in science than any other university conferred. ("Cornell, on the other hand, conferred this year 27 degrees [doctorates] in the sciences, surpassing all other institutions.")

There are two ways of determining the rank of the sciences. On the one hand a classification may be made on the basis of abstract generality, beginning with mathematics as the science of numbers, and continuing with physics as the science of energy, chemistry as the science of elements, geology as the earth-science, biology (including botany and zoology) as the science of life, and ending with psychology as the science of mind. But the order of relative importance of the sciences in America must be inferred from the attention they receive in the universities. And figures should be given both for the undergraduate and graduate departments. The article in *Science* (August 19, 1910) gives the distribution of doctorates conferred in June last by the universities of the United States among the different sciences. There were in chemistry 48, in physics 23, in zoology and physiology 28, in mathematics 23, in psychology 20, in botany 10, and in geology 10. With the exception of mathematics and psychology, the order of this list of sciences

corresponds with the distribution of graduate students in Cornell University in 1908-09, when there were enrolled in chemistry 54, in physics 23, in zoology and physiology 18, in botany 12, and in geology 11. In 1909-10 there were enrolled of graduate students in Cornell University in chemistry 53, in botany 27, in physics 24, in zoology and physiology 19, and in geology 10. It will be observed that the order for both years is the same except that, in consequence of the recent and rapid development of the College of Agriculture, there has been a large increase in the number of advanced students specializing in botany. Of undergraduates in Cornell University the number receiving instruction in the different sciences was in 1909-10 as follows: physics 2283, chemistry 1946, geology 1540, mathematics 952, zoology and physiology 589, botany 438, and psychology 398. These numbers, it remains to be added, were furnished by the heads of the departments mentioned, and no allowance was made for duplication in the case of students registered in more than one course except in physics, although from figures submitted by some of the departments it seems fair to assume that with all duplicates excluded the numbers given would not be reduced in any case by more than one-sixth, and in most cases not by so much.

As far as the sciences are concerned, therefore, Cornell University already has a large, well-adjusted, and efficient organization by which it strives to vitalize the industries of the country, discipline the minds of students, and enlarge the boundaries of existing knowledge. The next step is to develop this scientific establishment to the highest potency of which it is capable in this twentieth century. And the means to that end are perfectly simple. Able men, free from sordid cares, enjoying abundant leisure for research, and having ample laboratories and equipment and all the delicate apparatus which modern refined methods of investigation make necessary,—such men could erect on the splendid foundations already laid at Cornell University a temple of science unequalled in America and unsurpassed in the world. The demand for scientific investigators, for laboratories, and for instrumentalities of research come to the President from all departments. Some of the professors have thought out plans of development which would necessitate an expenditure of \$2,000,000 or \$3,000,000 in a single department. And the problem is not for one, but at least for seven fundamental sciences; namely, chemistry, physics, zoology and physiology,

botany, geology, mathematics, and psychology. The President asks for these departments of Cornell University an endowment of from \$1,000,000 to \$3,000,000 each, and he will undertake to satisfy any munificent and philanthropic investor with the returns which the scientists will give him on his money. To begin with, every one of these departments, with the exception of physics (for which Mr. Rockefeller has provided), needs a large and modern laboratory which would cost from \$200,000 to \$500,000 each.

Besides the sciences are the humanities which can never be absent from that scheme of "liberal" education which the charter of Cornell University requires it to furnish. The College of Arts has been increasing markedly in the number of undergraduates in recent years. But there has not been a corresponding increase in the number of graduate students, though there has been a gain in philosophy, history, and economic and political science. This condition at Cornell reflects the general situation throughout the country. The article in *Science*, already quoted, on the doctorates conferred by American universities in June last, sums up this matter as follows:

In the case of the subjects not ranked under the natural and exact sciences, most degrees have been given in English, history, economics, and philosophy. The number of degrees in the languages appears to be small, when the large number of teachers in these subjects in our colleges and schools is considered. Teachers of French and German are, however, largely foreigners, and Americans who study these subjects would perhaps be more likely than others to take their degrees abroad.

At Cornell University the sciences have a potent stimulus in the large and flourishing technical departments. The liberal arts have no such extrinsic support. Furthermore, while the old conception of liberal education has been undermined in America, no definition applicable to the new conditions has yet been formulated. If the college of liberal arts is to hold its place in the educational system, it was suggested in the Report for 1906-07 that it must train men for definite careers. The proposal was "to give the undergraduate guidance in the choice of his studies and inspiration in the pursuit of his work by having him in his arts course study, among other subjects, a goodly number of those which bear directly upon his future life-work. It may even be that American educators will recover the now obscured idea of liberal education by carefully training students for the various intellectual vocations. And it would undoubtedly

promote greater seriousness and studiousness among undergraduates in arts if, by eighteen or nineteen years of age, they were urged to select their future vocations, as prospective engineers and lawyers often do at the present time, and to pursue their studies with reference to them."

This view has recently been advocated by one of the ablest champions of liberal culture in the country. In an editorial in *The Evening Post* (April 9, 1910), it is claimed that for men of letters, critics, historians, philosophers, editors, publishers, clergymen, college presidents, diplomats, and statesmen, an education in languages, literature, history, philosophy, etc., is "the most definite kind of training for 'success in life.'" And the article concludes as follows:

In this age of intolerance for purposeless and indolent Goodness and Beauty, perhaps the hope of future usefulness for the college of liberal arts lies in frank competition with its rivals not for the women and weaker brethren, but for the young men of ambition and promise desiring to qualify themselves for the careers, more numerous now than ever before, open to liberal scholars and gentlemen. If it would but condescend to inscribe over its portals, "We, too, train for life," it could reduce the chaos of election, form an educational policy, give what is now demanded of every college, and at the same time gain what it privately desires.

Nowhere is such a conception of the functions of the college of liberal arts more natural than at Cornell University. Of course it is not necessary that every institution in the land should accept it. But Cornell University ought not to be afraid of the new departure. It is authorized by its charter to train students not only by practical but also by "liberal education" for the pursuits and professions of life. And it is also authorized to engage in research. Here are two functions for the Faculty of Arts. The one is to train students for those intellectual careers to which liberal culture is the condition of admission and the means of success. The other is to become productive scholars, historians, critics, economists, philosophers, antiquarians, or investigators in any portion of the vast field covered by the life of mankind. In this college as elsewhere throughout the University all problems disappear before an able faculty and student body devoted to research and to studies in which they are vitally concerned. Of course this leaves ample place for the man who loves knowledge for its own sake and thinks nothing of its utility to himself or to others.

COLLEGES AND DEPARTMENTS

The report of the Secretary of the University Faculty (Professor Hammond), printed as Appendix II, records the action taken by the Faculty on football—insisting on a thorough-going and effective reform as a condition of its continuance at Cornell—and also discusses the exhaustive investigations conducted by the Faculty Committee on Student Affairs into the conduct of students as a result of which the committee estimates "that 99 per cent of the students in the University are above reproach, so far as their moral conduct is concerned. They go about their daily work regularly and in every way maintain the traditions of the University as regards good behavior. A small contingent, however, probably not in excess of one per cent of the entire student population, have, for one reason or another, false standards of living and fall into dissolute habits and waste their time until they are dropped from the University rolls by their faculties."

The important report of the Dean of the Graduate School (Appendix III) has already been freely cited and discussed. Here it is enough to add that Professor Merritt's first year's service as Dean amply confirms the wisdom of the appointment.

The report of the Dean of the Faculty of Arts and Sciences (Appendix IV) describes the principal legislation enacted by the Faculty, guided by the recommendations of its committee on Educational Policy (which held eleven meetings during the year), the Administrative Board in charge of freshmen and sophomores (which held five meetings), and the hard-worked committee on Academic Records (which held twenty-six meetings). The most important feature is the adoption of the policy of concentrated work for freshmen and the consequent substitution of five-hour and six-hour term-courses for the three-hour year-courses formerly given in the languages and in history. The intensive study of three or four subjects is bound to produce better educational results than the diffusion of the student's energy over half a dozen subjects. And it will also enable the underclassman to get an earlier and fuller knowledge of certain subjects which, like modern languages, may be regarded as the tools of further study. At the same time, the repetition of five-hour courses in the second term furnishes to mid-year matriculants, whose numbers seem to be growing, a greatly augmented schedule of studies so that, indeed, they can now begin their course in February with a facility and

advantage as great as that enjoyed by those who enter in September. Elsewhere in this Report it is claimed that Cornell University should be a place for earnest, hard-working, and especially talented students. And Dean Hull very justly observes that "the scholastic standards of the College are far more debased when a man of known capacity sinks to the passing mark than they are elevated when half a dozen incompetents are somehow driven just above it."

The report of the Dean of the Faculty of Law (Appendix V) shows that the students entering have been adjusting themselves to the new requirement of at least a year of college work for admission, so that the diminution in the attendance may not be so great as was anticipated. Mr. Fraser, the librarian, has suffered a temporary break-down from overwork, and some effective means should be found to restrain the excesses of his devoted labors, if the professors and students of law are to continue to enjoy unimpaired in the future the invaluable assistance of his scholarly services.

In the reports of the Directors of the Colleges of Architecture, Civil Engineering, and the Sibley College of Mechanical Engineering (Appendices X-XII) the burden is more room: larger class rooms, larger laboratories, larger shops and drafting rooms. There is a demand too for strengthening some of the faculties. And in mechanical engineering it is thought that the time has arrived for instituting a division of research. Those great schools of applied science are splendid objects for an investment of millions of dollars.

The report of the Director of the Summer Session (Appendix XIII) records an attendance of 987 persons, of whom 377 were teachers—160 in high schools, 15 in normal schools, and 26 in colleges. For summer study Cornell has certain advantages which Director Bristol summarizes as follows:

First, this is a favorable situation for living in midsummer. While we have days of considerable heat, it is seldom that more than two or three such days come together, and almost without exception the nights are cool and comfortable. The great majority of our students live on East Hill and under favorable conditions for their physical comfort. This is particularly true of the women in Sage College and Cottage. Secondly, the situation of the University is particularly favorable for all forms of field work. The country in the immediate vicinity is remarkably rich in material for illustration and demonstration in botany, zoology, geography, and geology. The importance of this can hardly be overstated. It permits systematic and serious study to be combined with out-of-door exercise and a most healthful manner of living.

The report of the University Adviser of Women (Appendix XIV) describes in some detail the problems connected with the life, health, work, and social intercourse of the women students. The subject of women's vocations is also considered, both from the point of view of the education of women students and also of the future careers which are to-day open to them. This is a matter which the Adviser has very much at heart and on which she has spent much time, thought, and energy. It only remains to add that Mrs. Martin has filled the difficult position of Adviser, to which she was so recently elected, with a success universally and emphatically recognized.

The report of the Librarian (Appendix XVI) shows that the library now contains 383,696 volumes and 57,000 pamphlets. At the present rate of increase there will be about 400,000 volumes in another year. This rapid rate of growth is creating a serious housing problem. The Librarian says:

The overcrowding of the shelves has again begun to be felt. More shelf room is urgently needed and, unless some steps are promptly taken to provide it, we shall soon have to resort again to the unsatisfactory and inconvenient expedient of packing away large numbers of our books in boxes, or removing them to some other building, and thus decreasing the usefulness of the library. I, therefore, respectfully urge that immediate provision be made for additional shelf room to relieve the congestion.

The condition, work, and prospects of the Infirmary are described succinctly in the following report from Mr. C. D. Bostwick, chairman of the Infirmary Committee:

This year has again demonstrated the increased usefulness of the Infirmary, and the success of the operation of the fixed fee plan. During the two years this plan has been in operation, while the total University registration, excluding the Summer Session, has increased only 5%, the number of patients admitted to the Infirmary has increased 76%, and the total number of days' service 51%. I do not think these figures mean that the privilege of free care is being abused, but that students are taking advantage of the care there received, rather than, when not sufficiently ill to be confined to their beds, remaining in their rooms or about their boarding places. Students are encouraged to avail themselves of the Infirmary when if it involved an extra expense they would refrain from doing so.

Plans for an addition, to occupy most of the lot west of the present building, were nearly completed, when the former home of Mr. George

W. Schuyler, a charter member of the University, and its first Treasurer, came into the market and was purchased by the University Trustees as an addition to the Infirmary grounds. This was a needed and most opportune addition, and it will permit the placing of the new building, with future additions probably sufficient for many years, north of the north line of the present building, and will preserve the lawn and the beautiful view from the home of Mr. Sage.

The following statistics for the year are of interest:

	Infirmary	Outside	Total
Number of patients.....	837	83	920
Total number days' service	4752	1269	6021
Average cost per day per patient	2.27	2.81	2.38
Average daily service	17.6	4.7	22.3
Average days per patient	5.6	15.3	6.5
Maximum day's service (Mar. 1st)	37	10	47

THE STATE COLLEGES

The needs of the New York State College of Agriculture and the New York State Veterinary College were presented in some detail in the President's last Report (pp. 30-36). The Trustees of the University presented to the legislature last winter a detailed plan of development of these Colleges for the next ten years calling for appropriations for buildings alone of over \$2,000,000. The legislature passed a law providing that for the beginning of this development the Trustees of the University be authorized to contract for the erection of a general class-room and laboratory building at a cost of \$113,000, a building for the poultry department at a cost of \$90,000, and a building for the department of home economics at a cost of \$154,000, and appropriated for immediate expenditures on these objects the sum of \$200,000. Further, the regular appropriation, carried in the appropriation bill, for the maintenance of the State College of Agriculture was raised by action of the legislature from \$175,000 for the year 1909-10 to \$200,000 for the year 1910-11, and the supplementary maintenance appropriations carried in the supply bill were increased from \$10,000 for 1909-10 to \$12,000 for 1910-11.

The enlargement of material facilities just described will relieve the over-crowding in the State College of Agriculture in the departments mentioned, but it leaves other great departments of that college just as they are, notably animal industry, biology and entomology, plant physiology, plant pathology, plant breeding, and others, while the new buildings authorized cannot be used till

appropriations have also been made for a central heating and power plant. Furthermore, none of the improvements outlined in the Trustees' plan of development for the New York State Veterinary College were authorized by the legislature, and that College is therefore still without the hospital it needs so much for its work in animal clinics.

The College of Agriculture enrolled in 1909-10 a total of 968 students. In 1908-09 the figures were 838, and in 1907-08 they were 660. Of these 968 students, 371 were in the Winter Course and 58 were graduates. Nearly three-fourths of the students enrolled came from New York State, 706 out of 968, while 213 came from other States of the Union and 49 from foreign countries. A large and rapid increase in the number of students must be anticipated, as the people of the State are now beginning to realize what agricultural education can do for them, and the State Granges and other agricultural organizations are everywhere urging the importance of the application of science and scientific methods to agriculture. Any provision for the development of this College in the near future, however large and generous, is likely, therefore, to prove inadequate. It is a question at once of more students, more professors, and more subjects. Among the latter, forestry has hitherto had no place in the curriculum; and the importance to the farmer of the proper management of his wooded tracts makes it imperative on a good college of agriculture to furnish the necessary instruction.

The College of Agriculture lays great emphasis on extension work among the farmers of the State. As the vast majority of farmers can never come to the College, the College aims to carry instruction to farmers on their farms. To this end, reading courses and lecture courses have been established, and a large correspondence bureau maintained. During the past year special railway farm and fruit-trains were utilized more largely than heretofore for lectures and demonstrations in different parts of the State, in northern, north-western, north-eastern, and central New York. As the trains were fitted out in Ithaca, it was possible to take along for illustrative purposes, not only apparatus, but also cows, poultry, fruit, etc. These demonstrations and exhibits were accompanied by lectures on practical phases of horticulture, agriculture, dairying, stock-breeding, etc., and the work as a whole proved exceedingly instructive, and it was everywhere heartily welcomed.

The College of Agriculture is also co-operating with business concerns in the solution of agricultural problems in which they are interested. These firms furnish funds for the stipend during a period of one, two, or more years of a specially prepared graduate student who is required to undertake the investigation of a specific scientific problem. It is a species of fellowship, unendowed but salaried. And the compensation ranges from \$750 to \$1500 a year. As the work of the holders of these industrial fellowships is precisely that of a graduate student, carried on in the same way, and subject to the same conditions, it is of course accepted by the University in satisfaction of the research requirements for an advanced degree. It is a case in which the interests of business, of science, and of the graduate student are in complete accord. How important a part of the functions of the College of Agriculture is the work of research is evidenced by the fact that there were in 1909-10 no fewer than 58 graduate students in the college.

Professor Bailey, the Director of the New York State College of Agriculture, was absent on sabbatic leave during the year 1909-10. His place was ably and successfully filled by Professor H. J. Webber, who was appointed Acting Director. Special attention is called to his report (Appendix IX).

In the New York State Veterinary College there was disappointment that the legislature did not, as mentioned above, make an appropriation for the much-needed hospital for animal clinics. In the present temporary quarters and with the equipment now available, the teaching of clinical medicine for veterinarians is bound to be unsatisfactory. It is earnestly hoped that the legislature will not long defer the requisite relief.

The number of students enrolled in 1909-10 was 101; there were 44 freshmen, an increase of 15% over the corresponding class of the preceding year. The effect of the advance of entrance requirements in 1905 in checking the enrollment has now exhausted itself. With the extension of the north wing, for which the contract has been let, there will be laboratories and class-rooms enough in the near future for this growing body of students with two exceptions. One is the Department of Clinical Medicine, for which the legislature was last winter asked to make immediate provision. The other is the Department of Pathology which, with its multiplying experiments and investigations, will before many years need a separate building or a new wing.

On the farm provided by the University and with an annual appropriation of \$10,000 provided by the State, Director Moore is developing a Veterinary Experiment Station which is now engaged in investigations into certain phases of some of the more important diseases of cattle, swine, and poultry. These embrace bovine tuberculosis, infectious abortion, granular venereal diseases of cattle, and infectious maladies of poultry. And besides this work in the Veterinary Experiment Station, findings of value have been made by members of the Faculty of the College. New data have been collected relative to rabies, glanders, and tuberculosis, the *Gid* parasite has been discovered in a fatal disease among sheep, and Dr. Fish has made a valuable contribution to methods of branding animals for purposes of identification.

In the extension work of the College the answering of the numerous individual inquiries received in regard to methods for preventing various diseases and disorders of animals is a function of very considerable importance. Lectures were given and exhibits made at state and county fairs and elsewhere on topics of veterinary hygiene and preventive medicine. In January a two-day conference for veterinarians was held at the College at which more than 10 per cent of the practitioners of the State were present. The State is also getting the benefit of a report on the methods employed in Europe for the control of bovine tuberculosis which was made to the State Commissioner of Agriculture by the Director of the College. In the fall of 1909, Dr. Moore was appointed a member of the International Commission on this subject.

Reference is made to the Director's report (Appendix VIII).

THE MEDICAL COLLEGE

The Medical College in New York City is in a state of transition from an institution which received matriculants fresh from the high school, immature, narrowly educated, and ignorant of science, and which drilled them in the elements of the medical sciences as their former classmates were drilled in colleges and technical schools, into an institution with doors closed to all but college graduates who have not only been disciplined in the liberal arts but who have already been trained in the fundamental sciences and who, having outgrown the stage of drill and recitation, are in the four years of their professional course not only to assimilate existing medical knowledge, but to practise in the laboratories the methods by which

it has been acquired, and perhaps themselves make some original contribution, however small, in the way of new facts, new interpretations, or even new theories or laws. It will be one year more before the Medical College is confined exclusively to these maturer students with their better general and special education and higher outlook on the medical course. During the interval it will be well to ponder over the problems which the College has to solve and the best method of grappling with them. Reference is accordingly made to the reports of Dean Polk and of Secretary Kerr printed herewith as Appendices VI and VII. And besides these documents referring to the Cornell University Medical College there is now also available a wealth of data, suggestions, and recommendations in the exhaustive, illuminating, and absolutely trustworthy report on Medical Education in America which was published last spring by the Carnegie Foundation and which immediately took its place as the standard authority on the subject. Dr. Pritchett, the President of the Foundation, in his introductory summary of the findings of the report says (pages x and xi) that the significant facts revealed by the study are:

(1) "For twenty-five years past there has been an enormous over-production of uneducated and ill trained medical practitioners."

(2) "Over-production of ill trained men is due in the main to the existence of a very large number of commercial schools."

(3) "Until recently the conduct of a medical school was a profitable business, for the methods of instruction were mainly didactic. As the need for laboratories has become more keenly felt, the expenses of an efficient medical school have been greatly increased."

"Colleges and universities have in large measure failed in the past twenty-five years to appreciate the great advance in medical education and the increased cost of teaching it along modern lines. Many universities desirous of apparent educational completeness have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support."

(4) "A hospital under complete educational control is as necessary to the medical school as is a laboratory of chemistry or pathology."

The following quotations are from the body of the report itself:

"For purposes of convenience, the medical curriculum may be divided into two parts, according as the work is carried on

mainly in laboratories or mainly in the hospital; but the distinction is only superficial, for the hospital is itself in the fullest sense a laboratory. In general, the four-year curriculum falls into two fairly equal sections: the first two years are devoted mainly to laboratory sciences,—anatomy, physiology, pharmacology, pathology; the last two to clinical work in medicine, surgery, and obstetrics." (Page 57)

"The curriculum of a medical school, requiring for admission at least a competent knowledge of physics, chemistry, and biology, offers in the first two years systematic instruction in the following subjects:

First year: Anatomy, including histology and embryology; physiology, including bio-chemistry.

Second year: Pharmacology, pathology, bacteriology, physical diagnosis." (Page 61)

"A university department in one of the fundamental medical sciences, none too elaborately provided, cannot, then, on the average be effectively maintained for less than \$10,000 to \$15,000 per annum. At the moment, of course, the departments are not all equally expensive. Anatomy and pathology cost more than pharmacology and bacteriology. But the average is not thus seriously disturbed; for the former will extend above the line as much as the latter can be reduced below it. All of them, as they are developed, tend to cost more. Where the sum named has not yet been reached, the tendency towards it is unmistakable." (Page 129)

"We may then assume that the five departments of a properly organized medical school, capable of handling 125 students, in its first two years can hardly be properly sustained on a total budget of less than from \$50,000 to \$75,000 annually." (Page 129)

"Wherever a department has been acceptably cared for, the expenditure is apt to exceed our schematic estimate: Johns Hopkins now spends \$16,750 a year on anatomy, \$14,171 on pathology (not counting \$4791 spent on the clinical laboratory), \$13,246 on physiology and physiological chemistry. Columbia spends \$29,259 on anatomy, \$18,400 on pathology, \$17,838 on physiology. Cornell (New York) spends \$37,000 on pathology, histology, and bacteriology, \$15,895 on anatomy, \$14,940 on physiology. These appropriations are not extravagant. On the contrary, they are closely approached—sometimes exceeded—wherever modern methods are effectively employed: At Ithaca, Cornell (18 students) spends \$9500 on anatomy and \$13,500 on physiology and pharmacology; New York University (408 students) spends \$15,000 on pathology; Washington University, St. Louis (178 students), spends \$9640 for anatomy, \$8550 for physiology and pharmacology; the University of Wisconsin (49 students) spends \$10,000 for anatomy and \$8100 for physiology.

Anatomy costs the University of Michigan \$14,300 a year, and the University of Iowa \$13,525." (Pages 134, 5)

"The modern medical establishment that spends \$50,000 or \$75,000 upon its fundamental laboratories will, if it is to be equally productive in clinical medicine, spend an equal sum on teaching and investigation during the latter two years,—quite apart from the current maintenance of hospital and dispensary. That is to say, \$100,000 to \$150,000 will be required at the start to pay the minimum cost of a four-year school of medicine." (Page 133)

"The initial cost of the hospital establishment may vary within large limits: a plain, but serviceable structure, capable of accommodating 200 patients, with proper teaching facilities, may be erected for a few hundred thousand dollars; or it may cost millions. The cost of maintenance also fluctuates considerably according to situation and scale of support. In the city of New York, it is roughly estimated that it takes \$1000 to maintain one bed for one year; a 200 bed hospital may thus readily involve an annual expenditure of \$150,000 and upwards." (Page 131)

"In what relation is the medical school to stand to its hospital if the methods above described are to be instituted? Exactly the relation which it occupies to its laboratories generally. One sort of laboratory may as well be borrowed as another. The university professor of physics can teach his subject in borrowed quarters quite as well as the university professor of clinical medicine." (Page 99)

"The control of the hospital by the medical school puts another face on its relations to its clinical faculty. What would one think of an institution that, requiring a professor of physics, began by seeking someone who had his own laboratory or had got leave to work a while daily in a laboratory belonging to someone else? That is the position of the medical school that, in order to gain even limited use of a hospital ward, has to cajole a staff physician with a professorial title! When the hospital belongs to the medical school, appointments are made on the basis of fitness, eminence, skill. A man is promoted if he deserves it; if a better man is available elsewhere, he is imported. Opportunities are his in virtue of the university's choice: it is absurd to reverse the order. The men thus freely selected will be professors in the ordinary acceptance of the term: they hold chairs in an institution resting on a collegiate basis,—a graduate institution, in other words. They will be simultaneously teachers and investigators. Non-progressive clinical teaching involves a contradiction in terms. The very cases which are exhibited to beginners have their unique features. New problems thus spring up. Every accepted line of treatment leaves something to be desired. Who is to improve matters, if not your university professor, with the hospital in which he controls conditions, with a dozen laboratories at his service for such

aid as he summons, with a staff who will be eyes and ears and hands for him in his absence? These conditions exist in Germany, and clinical science has there thriven; they are lacking here, and clinical medicine droops in consequence." (Page 101)

TRUSTEES AND FACULTIES

In the death of Walter Craig Kerr on May 8, the Board of Trustees lost an able, experienced, and faithful member, who for thirty-five years as student, instructor, and trustee, had been connected with the University. He served on many important committees of the Board, especially those concerned with technical education and with the material development of the University, and his scientific training, wide practical experience, good judgment, and sturdy common sense made his reports and recommendations unusually valuable. Mr. C. C. Dickinson died nine days after Mr. Kerr, before completing the first year of his trusteeship to which he had been elected by the alumni.

At their meeting in June the Associate Alumni elected Messrs. John H. Barr and Robert T. Morris as trustees to succeed themselves, and Mr. Ira A. Place to fill the vacancy caused by the death of Mr. Dickinson. In June also, the Board re-elected Trustees Henry R. Ickelheimer, Henry B. Lord, and Andrew D. White to succeed themselves for a further term of five years. The Governor of the State, with the advice and consent of the Senate, appointed Mr. John N. Carlisle to succeed himself as Trustee for a full term of five years. No successor to Mr. Kerr has yet been elected.

Three members of the University Faculty, Professors Wilder, Hewett, and Wait, retired in June from active service and were immediately elected to emeritus professorships, the Board of Trustees at the same time causing the following minutes to be spread upon their records:

Resolved, That on the retirement at the close of the present academic year of Burt Green Wilder, Professor of Neurology and Vertebrate Zoology, the Trustees record their appreciation of his long and devoted service, beginning with the day that the University first opened its doors to receive students and continued through two and forty years until the present time, a lifetime freely and unselfishly given to the cause of science, and an inspiring example to hundreds of his students of that eager love for truth characteristic of him as it was of his own masters, Gray, Holmes, Wyman, and Agassiz. Recalling the fact that he is the last of the original faculty in active service, the Trustees earnestly wish him many years of health and continued activity in the chosen field of his labors.

Resolved, That on the retirement of Waterman Thomas Hewett, Professor of the German Language and Literature and head of the Department, at the close of the present academic year, the Trustees place upon record an expression of their high regard for his long and faithful service extending through a period of forty years, their recognition of his broad scholarship, embracing not alone his special field but a large group of kindred studies, and their appreciation of the writer, investigator, and editor who improved and set a standard for modern language text books. Deeply do they regret that the closing year of his labors was clouded with illness, and they extend to him their sympathy and best wishes for health and continued devotion to scholarly and literary work.

Resolved, That on the retirement at the end of the academic year 1909-1910 of Professor Lucien Augustus Wait, who has faithfully served the University in the Department of Mathematics for forty years and been in charge of its administration for a third of a century, the members of the Board of Trustees hereby place upon record their high appreciation of his services to the University as a devoted professor and efficient administrator in one of its largest departments; and that this Board (many of whose members have been among Professor Wait's pupils) join with hundreds of Cornell Alumni in paying hearty tribute to his worth as an educator and a man, and in wishing for him many years of health and happiness.

The following sabbatic leaves of absence for the year 1910-1911 have been granted: Professors J. W. Jenks, G. R. McDermott, and J. E. Creighton, and Assistant Professor Northup for one year; Professor H. S. Jacoby for the first term; and Professors Kingsbury and Hutchinson and Assistant Professors Blaker and Schoder for the second term. Professor G. S. Hopkins has been relieved from his work at the Veterinary College during the second term of 1910-1911, and directed to make investigations into the methods of anatomical teaching and research work in the leading veterinary colleges of Europe.

Professor E. B. Titchener was appointed Sage Professor of Psychology in the Graduate School and relieved of undergraduate work in order to devote his time to research and the instruction of graduate students. Professor Bristol was appointed Director of the School of Education. The following promotions to professorships were made among the assistant professors of the University: J. S. Shearer, to be Professor of Physics; J. I. Hutchinson, to be Professor of Mathematics; V. Snyder, to be Professor of Mathematics; A. B. Faust, to be Professor of the German Language and Literature; E. M. Chamot, to be Professor of Sanitary Chemistry

and Toxicology; A. W. Browne, to be Professor of Inorganic and Analytical Chemistry; E. H. Wood, to be Professor of the Mechanics of Engineering; H. D. Hess, to be Professor of Machine Design; A. C. Gill, to be Professor of Mineralogy and Petrography; D. H. Udall, to be Professor of Veterinary Medicine and Hygiene; and J. P. Bretz, to be Professor of American History. Appointments to assistant professorships were made during the year as follows: A. Livingston, to be Assistant Professor of the Romance Languages and Literatures; H. L. Jones, to be Assistant Professor of Greek; G. A. Everett, to be Assistant Professor of Oratory; and A. W. Bœsche, to be Assistant Professor of the German Language and Literature.

The number of members of the instructing staff during the year was as follows:

	At Ithaca	In New York	Total
Emeritus Professors	10	1	11
Professors	93	13	106
Clinical Professors	—	21	21
Assistant Professors	73	9	82
Lecturers	—	5	5
Instructors	157	53	210
Assistants	169	32	201
	502	134	636

GOLDWIN SMITH

In the death of Goldwin Smith on June 7, Cornell University lost one of its most devoted friends, its oldest emeritus professor, and the most illustrious scholar who ever sat in its faculty. He came to Cornell University as professor at its opening in the fall of 1868 from the oldest and most famous University in the English-speaking world, and his great reputation as a man of letters, an historian, and a publicist at once reflected lustre upon the new and struggling institution just founded by Ezra Cornell.

Goldwin Smith more than once said to the President that no event in his life gave him more satisfaction than his participation in the founding of Cornell University. A generation ago, when the institution was the object of cruel attacks, he stood on this campus and defended both its founder and its management, while at the same time, dark and hopeless as the outlook then was, he prophesied for it a bright and glorious future. "I believe," he said, "it will be

a great and good institution, and one which any man will feel it an honor to serve. I have believed it an honor to serve it. My affections for it are unchanged. My hopes for it are unabated."

Through forty-two years his loyalty and devotion to Cornell University continued unabated. And in recent years the University occupied an ever increasing place in his interest and affections. His sentiments were expressed in his last will and testament, under the terms of which Cornell University as residuary legatee will receive about \$700,000 out of an estate of \$833,000.

This splendid legacy is enhanced by the history of the origin and growth of the estate, which, in part, Goldwin Smith inherited from his father, but, in large part also, accumulated by prudent investments and economy in expenditures. It is capital saved, and wealth created by himself and his father, that he dedicates to the advancement of liberal studies at Cornell University. And the noble and felicitous language of this testamentary disposition will be remembered as long as successive generations record the history of Cornell University. It will recall to them Goldwin Smith and Ezra Cornell, the American nation and the English speaking races, Cornell University and the highest civilisation of mankind. Here is the passage:

ALL THE REST AND RESIDUE of my estate I give, devise, and bequeath to Cornell University in the State of New York, United States of America, absolutely to be used by the Board of Trustees for the promotion especially of liberal studies, Languages, Ancient and Modern, Literature, Philosophy, History and Political Science, for which provision has been made in the new Hall which bears my name and to the building of which my wife has contributed.

In confirming this bequest my desire is to show my attachment to the University in the foundation of which I had the honor of taking part; to pay respect to the memory of Ezra Cornell; and to show my attachment as an Englishman to the union of the two branches of our race on this continent with each other, and with their common mother.

The following resolutions on Goldwin Smith were drafted by the Committee of the University Faculty appointed at its meeting on June tenth:

By the death of our beloved colleague, Goldwin Smith, this Faculty has lost its senior member, and Cornell University one of its truest and most sympathetic friends. From its opening, in 1868, through all its existence he has identified himself with the University's interests. During its earliest years, while he was resident with us, by his brilliant and inspiring lectures and not less by his

personality he was an inestimable influence. His very presence was a power. After his retirement to Canada he still for many years continued to return to us for his courses of lectures; and always his coming was hailed, alike by Faculty and students, as a great and inspiring occasion. None were too mature to listen to him gladly; and, whether in the class room or in that social converse to which he so generously welcomed even his boys, he was not only a rare intellectual force but a potent inspiration to character. Who of us can ever forget that spare and stately though slightly stooping figure,—that face so eloquent of thought and of experience, so noble in its grave and lofty calm,—that mirthful and mirth-provoking smile which ever and anon broke like a sunbeam through its sadness,—that quizzical twitching of the mouth which heralded and softened his satire,—that voice, so quiet yet so expressive? These, with his pure and noble life and his loyal and unselfish services to Cornell, will be a memory long cherished by this Faculty. He will stand out in the history of the University as one of those who did most to shape and to vitalize its early career.

FINANCES

Excluding the funds for the maintenance of the Medical College in New York City, the total property of the University, including endowment, real estate, buildings, and equipment, was on August 1, valued at \$15,178,174.81. The productive funds included in this total amounted at the same time to \$8,687,274.05. The rate of interest received on the investments averaged a trifle over 5 per cent.

The income for the year from all sources amounted to \$1,657,331.66. Of this income \$281,687.59 was received from the State of New York for the regular maintenance of the State Colleges of Agriculture and Veterinary Medicine, and the receipts from and for the Medical College in New York City were \$228,667.23. The receipts from students (not including the students of the Medical College in New York City and of the State Colleges) 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 among extraordinary items \$34,643.80 to extinguish the debt on Goldwin Smith

Hall and \$13,114.62 for the installation of a new organ in Sage Chapel. The budget of succeeding years, though relieved of these unusual expenditures, was augmented to a considerable extent by increases in the salaries of members of the instructing staff.

As has been stated, the deficit on the year's operations amounted to \$33,375.79. The University, however, has carried a deficit of over \$70,000 as an inheritance from the disastrous epidemic year of 1903; and this amount had been subsequently augmented to defray the cost of new buildings and reconstructions. On the other hand premiums had been received from investments sold. By a draft on these accumulated premiums to meet the adverse balance of the year it resulted that the total accumulated deficit on August 1, 1910, stood at \$104,572.46.

The donations for the year aggregated \$228,554.37. The largest item was \$173,000 from Colonel Payne towards the maintenance of the Medical College in New York City, and \$15,766.75 from the same generous benefactor for alterations in the building of the College. From the estate of Willard Fiske \$15,000 was received, from the estate of Charles A. Hasbrouck \$10,000, and from the Honorable Frederick C. Stevens \$2,500.

Gifts made during the year, though funds have not yet been actually paid over, include \$50,000 from Mr. Andrew Carnegie to defray the cost of an addition to the chemical laboratory, and a bequest of about \$700,000 under the will of Goldwin Smith elsewhere mentioned in this Report. The appropriations made by the legislature of the State of New York for the State Colleges of Agriculture and Veterinary Medicine have been elsewhere described in this Report. A detailed list of donations will be found in the Treasurer's Report. Gifts of apparatus, equipment, books, etc. are mentioned in the reports of the directors of the colleges and the Librarian of the University.

Although the old students and graduates of Cornell University are on the average a youthful body, they have followed the example of the older alumni of the eastern universities in organizing and collecting funds for their Alma Mater. Their organization is known as the Cornellian Council. It has a permanent secretary who gives his whole time to the work. Although the work began comparatively late in the year, collections amounting to over \$2,500 in excess of expenses have already been received. This practical interest of Cornellians in their Alma Mater is a most

helpful and encouraging circumstance. It must also be borne in mind that the alumni and former students had before the organization of the Cornellian Council already contributed \$82,000 in cash for the grading and construction of the Playground and Athletic Field, besides \$80,000 additional in pledges yet to be collected.

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.

NEEDS

The ideal university is an aristocracy of talent freely engaged in research, teaching, and learning and forming a perfectly democratic community. Its members consist of investigators, teachers, and students; buildings and equipment are the physical instrumentalities of their intellectual work or social life and intercourse. In terms of this ideal it is easy to set forth the vital needs of Cornell University. She needs superior investigators, superior teachers, superior students, and, having these, she needs superior material facilities for their life and work.

As to research, details have been given in earlier pages of this Report. The supreme importance of this function and the duty of a university like Cornell to discharge it are impressively set forth in an article in *Science* for August 26 last. The writer says:

Our universities have often been deterred from the most effective encouragement of research or have entered only half-heartedly into it, owing to the large expense involved.

The attitude of these bodies toward research is becoming of greater and greater importance to mankind, for the hope of civilisation lies in him who sees the light beyond the confines of our knowledge of today.

Too many of us still believe the fostering of research to be a mere detail of secondary importance, but it is in fact of vital primary importance to each and every one of us, and its utmost advancement is a necessary and absolute duty for those who control the destinies of our colleges.

I fear it will be all too apparent to those who have the highest welfare of science at heart that our colleges have not yet awakened to a sufficient realization of the importance of research or of their

heavy responsibility in the matter of its advancement. President Eliot in his recently published book upon "University Administration" presents in his masterly manner the wisdom gained through a lifetime of experience, yet not in one paragraph does he deal with the special relation of the university toward research. The American university remains to-day the overgrown college, and conservation of the old rather than the revelation of new truth is its ideal.

This is *not* the ideal of Cornell University. The quotations from the report of the Faculty given on pp. 11 and 12, show a very different ideal, the ideal of a great Division of Research and Graduate School.

But Cornell University will remain a teaching as well as an investigating institution. It is an organ for the liberal and practical education, first of the industrial classes and then of all classes ("any person in any study"). The United States is an industrial democracy, and the civilisation 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 civilisation in an industrial democracy must embrace both. Concerning the proposed scheme of reform of Oxford University recently issued by the authorities a *London Times* editorial declares that the root of the problem is "the necessity of bringing our educational system into line with the national purpose." Through its departments of technology, of pure science, and of liberal arts, Cornell University is already in line not only with the purpose but with the life and work and aspirations of the American people. 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. And it is an incalculable loss

not only to the individuals themselves, but to the community, when youth endowed with rare gifts and capacities are suffered to grow up without receiving the highest training. These glorious sports of Nature might have been of untold benefit to society had not "chill penury repressed their noble rage, and froze the genial current of the soul." And so small a percentage of the population is born with these exceptional talents that no nation can neglect them with impunity. According to Mr. Galton, only one person in four thousand is endowed with special aptitudes, and only one in a million has a soul pregnant with that celestial fire which is called genius. No one can tell whence these exceptional children come; their appearance baffles all insight into organisms and environments; but it is certain that, as there are more cottages and hovels than there are palaces, most of them emerge among the masses of the people. Now, as with the masses of the people their daily labor merely suffices to meet their daily wants, it follows that the highest education will not be accessible to the majority of young persons who have been endowed with rich natural gifts unless special arrangements are made to supplement the efforts and stimulate the ambition of their parents and of themselves. 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 civilisation depends. It is to encourage and assist indigent scholars of distinguished capacity that Cornell University needs endowments for the foundation of scholarships and the establishment of loan funds, as well as for the augmentation of the general endowment of the University which will enable the administration to keep the charges for tuition within reach of the great majority of the people. On this subject of the importance of facilitating the path of higher education for students of limited means Professor Jowett of Oxford University, the foremost English educator of the last generation, spoke admirably at the Scott Centenary in Glasgow many years ago:

Scotland has reason to be proud of her universities. . . . There is one point above others in which I think they have a claim to honour and gratitude—I mean in the manner in which they have assisted young men of merit, bringing them forward out of obscurity into the light of day. That I hold to be the greatest

glory of the Scottish Universities. I think it is a great advantage to a nation when its youth, deserting the more usual paths of trade and commerce—though, indeed, a great moralist has told us that “there are few things in which a man can be more innocently employed than in making money”—but still I venture to say that it is a great advantage to a country when that other ambition takes possession of the mind of youth, and they feel a desire for the higher education which they attain through the University. 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, the local habitations and the physical appliances of these intellectual workers, investigators, teachers, students, are sadly inadequate. New laboratories, with additional equipment and apparatus, are imperatively needed in botany, zoology, geology, chemistry, civil engineering, and mechanical engineering; there are needed also an assembly hall for convocations and for lectures and addresses to the entire university community, a gymnasium for the physical training of the great body of undergraduates who do not participate in athletic games, a new armory, an addition to the library building, and finally, a score of residential halls for the thousands of young men who, in the absence of a single hall owned by the University, are now scattered and poorly accommodated in private houses at increasingly high prices with the still more serious loss of social intercourse with fellow students and mutual education under a common roof.

JACOB GOULD SCHURMAN,
President.