

# SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE  
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION  
FOR THE ADVANCEMENT OF SCIENCE

FRIDAY, SEPTEMBER 20, 1907

## CONTENTS

|  |     |
|--|-----|
| <i>The American College for Germany:</i> PROFESSOR HUGO MÜNSTERBERG .....  | 361 |
| <i>The American College:</i> PROFESSOR J. McKEEN CATTELL .....   | 368 |
| <i>Scientific Books:—</i>  |     |
| <i>Bernard on the Poritid Corals:</i> DR. T. WAYLAND VAUGHAN .....   | 373 |
| <i>Discussion and Correspondence:—</i>   |     |
| <i>The First Species Rule, an Objection:</i> S. S. BUCKMAN. <i>Holothurian Names:</i> W. K. FISHER .....   | 378 |
| <i>Special Articles:—</i>  |     |
| <i>The Occurrence of Middle Tertiary Mammal-bearing Beds in Northwestern Nevada:</i> PROFESSOR JOHN C. MERRIAM. <i>Physiographic Changes bearing on the Faunal Relationships of the Russian and Sacramento Rivers, California:</i> PROFESSOR RULIFF S. HOLWAY. <i>Fowler's Toad:</i> H. A. ALLARD. <i>Preliminary Note on a New Disease of the Cultivated Vetch:</i> PROFESSOR GEO. F. ATKINSON and C. W. EDGERTON | 380 |
| <i>Marine Biological Association of San Diego</i>  | 386 |
| <i>Newspaper Science</i> .....   | 388 |
| <i>Reorganization of the Journal of Morphology</i>   | 389 |
| <i>Scientific Notes and News</i> .....   | 389 |
| <i>University and Educational News</i> .....   | 391 |

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

## THE AMERICAN COLLEGE FOR GERMANY<sup>1</sup>

It seems so natural and so delightful to listen on such festival days of college joy and of college pride to the voices of men

<sup>1</sup>Address at the celebration of the seventy-fifth anniversary of the founding of Lafayette College.

whose memories are intertwined with the noble traditions of the celebrating college. Those who passed the happy days of inner growth from the immaturity of school work to the maturity of life work on the lovely campus of Lafayette are the welcome speakers, indeed, at this symposium on college ideals, and their words, filled with gratitude, transform this huge assembly into a mighty family circle. But harsh and disturbing seems in such hours of intimacy the word of an outsider who never before enjoyed the charm and the inspiration of this place. If you are yet generous enough to invite the stranger's intrusion into your assembly of alumni; yes, if you kindly welcome the messenger of the Harvard faculty, your motive, it seems, can be only one: on such a day of historic retrospection Lafayette College desires to acknowledge the unity of the country's growth and academic development, desires to remember, venerable to-day herself, those places of learning which were venerable when she began her successful career, and therefore looks back in friendly fellowship to the oldest university of the land. Simple arithmetic leads us quickly back to those ancient days. It was seventy-five years ago that Lafayette College was born; if we double the figure, exactly 150 years ago, in 1757, the gallant Frenchman was born for whom this college was named; and if we double that figure, exactly 300 years ago, in 1607, was born the pious Englishman who founded the first American college, John Harvard. What a glorious national development in the life-

time of a few generations! John Harvard's foundation is flourishing to-day in the midst of hundreds of other colleges, of which even the least stands higher than the Harvard of the old days. And Harvard College never looked with misgivings on the wonderful growth of her young rivals; on the contrary, Harvard knew that her own steady progress resulted first of all from the spreading of the collegiate spirit over the country; every college which devotes itself with earnestness to the high task helps every other college, and if a younger institution can prove that through three quarters of a century it has lived up to the noblest ambitions and to the most idealistic hopes, then it is a matter for sincere rejoicing to the older colleges, and for none more than to the oldest. To be allowed to bring to you to-day the message of such Harvard sentiments and the sincere congratulations of America's largest university, is the privilege which makes me most grateful.

But I feel that your choice of a speaker must have been influenced by still another motive. To bring on such collegiate occasion the greetings of another college, you would have hardly selected a man who, as you know, never went through an American college at all. You ask a foreigner, and I can not help feeling that he was meant to come to-day as such a messenger from the non-American world. On your celebration day, which is in any case a day of pride for all American colleges, you desire not to miss in the chorus a voice of appreciation from those lands which never knew, and do not know to-day, a counterpart of the American college in their own educational systems. "To see ourselves as others see us" is always a most natural desire—natural when we are dissatisfied and want the criticism of the outsider in the service of reform, but still more natural when, as to-

day, the work has been tested and has been found successful beyond hope. It seems to me, therefore, that I may enter best into the spirit of this hour if I emphasize less that I am a teacher in another American college, and emphasize more that I was a student of no college whatever; in short, that I come to you as a German with an education "made in Germany," and thus with an in-born tendency to look on every new life experience from the German standpoint and with German prejudices.

And yet I come to sing a song of praise for the American college. I believe in its mission, and, in spite of the pressure from the high schools below and from the professional schools above, I believe in its essentially unchanged future. I see in the college the most characteristic expression of the American genius, the most important condition for the healthy development of the national life. I can calmly use such high-pitched phrases, as I am weaponed against the suspicion that my enthusiasm may be invented for this special occasion. I have sufficient witnesses in print to prove that this is not flattery made up for my commencement part. No, whenever I have spoken to my German countrymen, for instance, in my book on the Americans, written entirely for German consumption, I have said in definite words, "The college is the soul of the American nation."

Of course, I am not blind to the wonderful achievements in all the other parts of the educational system, from the kindergarten of the city suburb to the professional institution of the large university. The energy with which the American primary school shapes the little descendants of a score of races into the uniform product of the future American citizen, is admirable and marvelous. And the progress which in the last two decades scientific research and productive scholarship have made in

the highest graduate schools of the New World, justly surprises the Old World. Yet the most beautiful feature remains, after all, the quiet intellectual and moral work done in the college halls from the Atlantic to the Pacific. It was my growing acquaintance with the college life that gave me ever new inspiration to tell my countrymen the story of American idealism. You know the traditional European prejudice did not admit that idealism could be at home here. America seemed the land of commerce and industry, and all for the sake of gold; the wild chase for outer gain seemed the whole meaning of American effort. No wonder that every educated European who comes with open eyes and has a chance to see not only the outer, but the inner life, feels still to-day like a belated Columbus, who has yet to discover the true America, the land of ideal desires and ideal energies. And certainly, of all idealistic emotions of this people, there is none deeper, none purer, none more blessed, than the demand for instruction, for learning, for self-perfection, with its climax in the desire for collegiate education.

I do not want to be misunderstood, as seeing no fault in the American system of instruction. There are not a few wrong tones in the symphony, wrong tones which hurt the ear of the newcomer, discords to which he will never become insensible. But those fundamental errors belong rather to the school than to the college. It is enough to point to the most devastating one: the lack of mental discipline at the very beginning of intellectual growth. The school methods appeal to the natural desires, and do not train in overcoming desire; they plead instead of commanding, they teach one to follow the path of least resistance instead of teaching to obey. The result is a flabby inefficiency, a loose vagueness and inaccuracy, an acquaintance with a hun-

dred things and a mastery of none. Public life has to suffer for it; a community which did not get a rigid mental discipline through home and school influence must always remain the plaything of the lower instincts. Such a community will continue to follow without check its untrained impulse; it will prefer the yellow, big headline paper to the serious newspaper which appeals to sober thought; it will prefer on the stage of the theater and on the stage of life the vulgar vaudeville and the cheap melodrama to the refined and the noble play; it will be impressed by every glaring outer success and by showy size, by quantity instead of quality and value; it will be swept by every passion of the crowd, applauding mediocrities, enthusiastic for every one who poses for the uncritical, and a quick victim of every short-sighted fancy. And yet can there be any doubt that it is just a political democracy which ought to be protected against such an inner foe? And no one has to suffer more from these sins of the school than the college. How much more the American college might have been able to produce if it could have received into its freshman class young disciplined minds, trained in accurate and careful learning, and in the restraint of primitive impulses. The college would not have been burdened by wasting much of its costly time in repeating the elements of learning and patching up the slang-disfigured English language. It would not have been vexed by the hysterical excitement which so often turns the recreating pleasure of sport into a ruinous passion.

But I would rather contemplate, and must admire the more, what, in spite of all these hindrances, the American college has made and makes to-day and will make in the future out of the entering freshman in the few years until he receives his bachelor diploma. He came as a boy and goes out

as a man. He came from a school where ready-made knowledge was imparted to a passive immature mind; and, when he leaves, he goes out into the world for practical work or professional schooling with that senior maturity which relies on independent judgment. Secluded from the rough battle of the outer world, he can pass four years of inner growth and self-development, of learning and comradeship under the influence of scholars who devote their lives with ever-young enthusiasm to all that is true and good and beautiful. He does not seek there, and ought not to seek there, the specialized research work which belongs to the graduate school. Certainly investigation, which focuses the energies of a whole man on a circumscribed field, is the highest aim of scientific study; but it fits a professional specialist only, who has completed his broad course of general culture. This broad culture alone is the abounding gift of the college, secured by those methods which can not be those of the school-teacher nor of the researcher. Neither the time before the college, nor that after the college years, can open the heart and widen the mind, can inspire enthusiasm and deepen the personality like college days passed in living contact with true college teachers—and no one is a true college teacher who does not make even the most abstract science a living and refreshing source of culture and humanity.

It is this breadth of culture gained in work and in play, in the class room and in the club, in the laboratory and in the chapel, which gives unity and community to all who have had the good fortune of collegiate education. Whether their way leads on to law or medicine, to banking or railroading, to teaching or preaching, to politics or commerce, makes no essential difference; essential remains only that which is common to all of them. The pro-

fessional work seems, then, only like a garment which can be laid off; the collegiate work belongs to the personality itself. It is this phalanx of the collegiate alumni which has to represent the educated public opinion, imparting to the nation the thoughtfulness and earnestness without which the trivial instincts of the crowd would be unchecked. When the masses, misled by the coddling education of early youth into a happy-go-lucky spirit, rush into the path of the cheap and vulgar, it is the collegiate community which has to prove its belief in lasting values. When the masses act in the laissez-faire temper, which begins with the lack of discipline in the schools and ends with the indulgence of public graft and corruption, it is the collegiate community which must show its training in the spirit of civic duty and lofty ideals.

You all know that there is one way of praise which is more eloquent and significant than any words of enthusiasm, and it is the effort of imitation. The value which belongs, in my opinion, to this unity of collegiate culture and to this national community of the best educated men, independent of their various activities in later life, can easily be measured by this strongest test. With sincere devotion I have upheld the, at first sight, revolutionary proposal that Germany should imitate the American example and found colleges on German ground. What is the situation over there at present? Every one knows that the German universities are not surpassed by any scholarly institutions the world over. It is not by chance that for nearly a century a steadily growing stream of young American scholars has poured through Göttingen and Heidelberg and Giessen and, later, through Leipzig and Munich and Berlin. And those young scholars brought back with their German Ph.D. the spirit of sacred devotion

to the true advancement of knowledge and to productive research; that spirit which founded in the last three decades the famous graduate schools of Johns Hopkins and Harvard, of Columbia and Yale and Chicago, and which spread thence to all the graduate departments of the large universities. But these model universities of Germany are not and were never intended to be colleges in the American sense, and whoever, misled by the loose application of the word university in this country, carelessly plays with the comparison needs only to be reminded that the strong intellectual life of Germany is satisfied with twenty academic institutions, while the United States has nearly six hundred. The kingdom of Saxony has only one, the University of Leipzig; while the city of New Orleans alone has four. It is evident, therefore, that institutions are in question which are not to be compared. The German university is a system of professional schools, conducted by the state for the intellectual training of the future physicians and lawyers, ministers, teachers and scholars. They have been just that for nearly six hundred years. Their unity lies in their method; the teachers are productive scholars who impart to their students not information, but the critical attitude and scholarly independence of judgment. But this method presupposes intellectual maturity and expansive knowledge. The entrance conditions presuppose, therefore, an amount of information which about equals that which the average junior of the better American college is expected to acquire. This goal is reached two years earlier than in America through the stricter mental discipline in the schools, and it is reached entirely by school methods.

All this has necessary consequences. There is no middle ground between the school and the professional or graduate

university department. The boy, who at nineteen leaves the gymnasium in his native town with all its school discipline, enters the freedom of the university only to study law or medicine, science or divinity. The freedom of academic life comes thus exclusively to those who enter the so-called professional careers. Those, on the other hand, who want to go over into practical life, perhaps into industry or commerce, have no opportunity for contact with the university. They are confined to the limitations of the schoolroom, and, as they do not aim at the entrance examinations to the university, they are inclined to prefer from the first schools with a simpler curriculum.

If we consider that this has been the situation for centuries, it becomes evident that the result must be a public situation entirely different from that of the United States. Here in America it was, of course, also from the first necessary to have schools for ministers and lawyers and so forth, but they were considered as private affairs, and every one had a right to enter practically without any previous education. Public opinion was thus imbued with the correct idea that these professional studies did not in themselves guarantee a high level of culture. The real culture, on the other hand, the making of a gentleman, was left to the college, which was taken over from England. The collegiate alumnus is thus the cultural leader. He may be later a preacher or a banker, a physician or a railroad man. Of course, the entrance condition to the professions was slowly raised. The highest professional schools to-day demand the bachelor degree at their threshold. Yet the old historical conviction has remained; not the professional, but the collegiate study gives to a man the stamp of the highest education. How could it be otherwise in a country which had to bend all its

massive energies toward the opening of the gigantic land, toward the building up of its democratic commonwealth, and which had thus for a long while little leisure for science and art, for scholarship and literature? How could it be that the business men and the men of affairs would be ranked there behind the professional specialist?

In Germany the opposite development has led historically to the opposite valuation. The professional men, who alone through centuries had the privilege of widening their minds in the atmosphere of the university, had to stand, therefore, in public opinion high above the men of practical interests who had nothing but a school diploma. To go into business or industry and practical affairs thus meant a second-class occupation, with which those had to be satisfied whose brain or whose pocket-book did not allow those years of university study. Every social premium and every social ambition became attached to these learned professions, in common only with the position of the nobleman and the army officer, who, for historic reasons of another sphere, seemed equally exalted beyond the masses of those pitied money-makers. And this traditional prejudice was in good harmony with the Germany of the day before yesterday, when the population was poor and their leaders were poets and thinkers.

But the times have changed. Just as America has added to its material culture a rapidly growing ambition to rival the Old World in the production of science and art, so Germany has added commercial and industrial ambition to its spiritual aims. Germany has grown prosperous, a mighty rival in the markets of the world. There may be not a few who complain of this rapid Americanization of the world, but they can not change the fact that the Germany of William II. is no longer the Germany of Schiller and Kant. With political

unity, with the inheritance of Bismarck's constructive work, with the triumphs of Germany's technique and industry, a thorough change in the social estimate has set in. The practical walks of life are more honored day by day; the sons of the best families press on more and more into the economic life, and thus it becomes daily more incongruous that the inspiring influence of academic life should be withheld from all those who do not seek a professional career. To attend the present universities and technical schools with their specializing professional work would be, indeed, inappropriate for them. That which is needed for the Germany of to-day, and still more for the Germany of tomorrow, is an academic institute of a new type—a university where the full freedom of academic life can be joined to studies of purely cultural character, where young men may enter two years before they have reached the present goal of the professional university, and where a three or four years' course would prepare them for the duties of life without any thought of their later occupation; in short, what is needed to-day is, in its essentials, an American college.

Of course, there would be hardly any chance for new experiments in the famous old universities. They are certainly rejuvenating themselves steadily by adding new departments and introducing new methods, by admitting women as regular students, and so forth; but the development must remain an internal one without an external change of the classical form and of the framework of the four professional faculties. The whole state organization is too closely bound up with the system of the university and the gratitude of the nation too much attached to its time-honored features to allow any tampering in the interest of the unprofessional disciplines. A new foundation would thus be the better oppor-

tunity, and, if possible, a foundation in one of the smallest federal states in which no other university exists and in which, therefore, no traditions are to be broken and no academic inequalities to be feared. Good luck seemed to open such opportunity. The little state of Hamburg, which is practically the large old Hansa city and its surroundings, has no university. It is the greatest commercial place of the country, and the vivid pulsation of its economic life seems to have excluded for centuries the idea of a real university. But in recent years a sentiment has grown among her leading citizens that Hamburg ought to become not only the center of seafaring, but a center of intellectual influence as well. Large donations from rich Hamburgians were in sight, and the state government seemed inclined to yield to the public demand. In this situation the president of the supreme court, who was the soul of the whole movement, invited me in the name of friends to make suggestions for the new university and to elaborate a plan. I did so, and the gentlemen over there published my voluminous memoranda as a pamphlet last year. It has been discussed beyond expectation. It has been heartily welcomed by many and has been sharply attacked by not a few who wish the new university in Hamburg to follow exactly in the path of the old ones. Wealthy citizens have given millions during the last year and there is now no doubt that Hamburg will have a university in a not far distant time.

Whether that new institution of the future will realize some of these suggestions, no one can say to-day. But if I had to bring the plans which I sketched for it into a short form, I should say: my scheme proposed to erect a German university with the substructure of an American college. My model was naturally Harvard, not only because I knew her best, but because Harvard

is the only American university which has, besides its college, a graduate school of arts and science, a law school, a medical school and a divinity school, and which demands for all four of these professional faculties a bachelor degree as entrance condition. The idea was that in Hamburg, just as in Harvard, the youth ought to get in common in years of academic freedom the inspiration of cultural work in history and economics, in literature and philosophy, in art and natural science, before their ways are divided to go either to the professional schools of the typical German university or to the practical enterprises which commerce or industry or agriculture or politics may offer. While many new technical schools have sprung up with the new requirements of our practical age, Germany has not founded a university anew for a whole generation. The spirit of the Germany of to-day has not yet found its real characteristic expression. If Hamburg really has the courage to add to the old German plan an American college, then its university will be significant for the German Empire of to-day just as the foundation of the University of Berlin a hundred years ago was an expression of the new moral energies of the ascending Prussia.

But those ideas have found too much root in the sentiments of the German nation to be lost even if in Hamburg, as it well may be, the old traditions shall once more prevail. It was, indeed, only in connection with the Hamburg project that I wanted to see an American college in the Harvard way in immediate contact with the upper parts of the university. But I used from the first many an opportunity to urge that, just as in America, the college itself be added to the national system as a free and independent institution. Hamburg would need a real Harvard, but I know many a lovely town in my Fatherland where an

Amherst or a Lafayette would be a blessing for the true progress of the nation, and I never forget to add with enthusiastic heart that a Bryn Mawr and a Wellesley and a Vassar must follow. I know the time for all that will come, and if not to-morrow, the day after to-morrow will bring it surely. And from Germany it will spread all over the European continent.

That will be at last a gift of the New World to the Old, which will return the stimulation and impulse that the United States received from Germany. The German influence gave to America the method of research, the Ph.D. work, the graduate school. America will now give to Germany in return the college with its broadening influence and with its democratic spirit, which imparts culture to all alike, within and without the scholarly professions. We hear so much, and sometimes perhaps too much, of the exchange of professors between the United States and Germany. Such exchange of persons may be well. It has gone on, after all, for decades, as German scholars have come to this country in a steady flow, and American scholars have always visited German universities. But more important than the exchange of men is the exchange of institutions. The German graduate school, once imported here, has had an influence which can be felt in every corner of the intellectual life of America. And thus, I trust that the American college, once imported to Europe, will never cease in its beneficial influence for the culture of the non-professional men and women. In this sense I feel that I can add in my congratulations, brought to one of the most successful colleges of the country, a new dignity to the many claims of the American college. Each true college has been, and will be in the future, not only the stimulating benefactor of its students, not only the helpful comrade of the other

colleges of the land, but, at the same time, an inspiring guide for the collegeless countries of Europe. May Lafayette flourish and grow in that threefold renown through the last quarter of its first century and for many generations of happy students thereafter.

HUGO MÜNSTERBERG

HARVARD UNIVERSITY

---

*THE AMERICAN COLLEGE<sup>1</sup>*

WHEN Lafayette College opened its doors seventy-five years ago, Harvard College had ten professors and two hundred and sixteen students; Columbia College, six professors and one hundred and twenty-five students. Harvard was then one hundred and ninety-six years old, Columbia sixty-eight years old. To-day Lafayette has twenty-three professors and four hundred and eleven students. Should Lafayette grow as Harvard and Columbia have grown, then when our grandchildren and great-grandchildren gather to celebrate the hundred and fiftieth anniversary, they would find here five hundred professors and ten thousand students. The alumni would be invited to contribute toward an additional endowment of twenty million dollars.

The days to be, even more than the times of the past, are for us a book with seven seals. None knows what things lie on the knees of the gods; it is more than we can do to re-collect what has been strewn from their hands. But we at least believe that the American college was an important factor in the higher life of our country during the nineteenth century, and that the part of Lafayette, in the days of its adversity and in the days of its prosperity, has been no mean one.

The citizens of Easton who met at

<sup>1</sup> Address at the celebration of the seventy-fifth anniversary of the founding of Lafayette College.