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*THE PROPOSED NATIONAL UNIVERSITY.**

THE paper by Hon. Chas. D. Walcott, Director of the U. S. Geological Survey, published in SCIENCE for June 28, 1901, then issued in a separate pamphlet, and now kindly brought to my notice by the author, disposes of the National University movement in the following summary manner:

> But Congress has always looked on the scheme with suspicion, and not one of the various bills offered was ever acted upon by the Senate and House of Representatives. The trend of opinion has been and is that the Government should not found a National University in the sense suggested by Washington and his followers.

At first I thought to let these statements pass without notice, believing that in course of time they would correct themselves. But on reflection I conclude to make a comprehensive review of them, as also some comments on the 'Memorial' scheme so fully set forth in connection therewith, and finally to point out some of the special functions of the proposed National University which so deeply concerned Washington, but which seem never to have been duly considered by those now engaged in promoting an enterprise which its projectors intend shall defeat the establishment of such university altogether.

* A review of Hon. Chas. D. Walcott's paper on 'Relations of the General Government to Higher Education and Research.'

ATTITUDE OF CONGRESS.

Of the non-passage of bills I will speak further on. Let us, first of all, see how far this declaration concerning the attitude of Congress accords with the real facts in the case.

To begin with the House, the only action ever taken by that body on the subject of a national university was affirmative and unanimous. The National Educational Association, having first by a unanimous vote, at Trenton, N. J., in 1869, declared a great American university to be 'a leading want of American education,' and appointed a 'committee consisting of one member from each of the States * * * to take the whole matter under consideration,' and to report thereon, and having twice unanimously adopted the affirmative reports of said committee (at Cleveland, in 1870, and at St. Louis, in 1871), then by unanimous vote created a permanent committee to prepare and offer to Congress a bill to establish a national university.

The committee embraced, besides the chairman, Ex-President Thomas Hill, of Harvard; Editor Godkin, of *The Nation;* State Superintendent Wickersham, of Pennsylvania; Dr. Barnas Sears, of Virginia; Col. D. F. Boyd, President of the University of Louisiana; President Daniel Read, of the University of Missouri; Dr. W. F. Phelps, President State Normal School, Winona, Minnesota; Ex-Governor A. C. Gibbs, of Oregon; Hon. Newton Bateman, Superintendent of Public Instruction of Illinois; Superintendent Emerson E. White, President-elect of the National Educational Association; General John Eaton, U. S. Commissioner of Education; Dr. Joseph Henry, Secretary of the Smithsonian Institution and President of the National Academy of Sciences; Dr. J. Lawrence Smith, of Kentucky, President of the American Association for the Advancement of Science; and Dr. Samuel Elliot, of Connecticut, President of the American Social Science Association.

The bill prepared by these men was introduced in the House during the last session of the 42nd Congress and referred to the Committee on Education, of which Chairman Perce, of Mississippi, and Mr. Hoar, of Massachusetts, were prominent members, and near the end of the said session was unanimously returned to the House with a strong report, of which the following is the closing passage:

> If, then, it be true, as the committee has briefly endeavored to show, that our country is at present wanting in the facilities essential to the highest culture in many departments of learning; and if it be true that a central university, besides meeting this demand, would quicken, strengthen and systematize the schools of the country from the lowest to the highest; that it would increase the amount and the love of pure learning, now so little appreciated by our people, and so improve the intellectual and social status of the nation; that it would tend to homogeneity of sentiment, and thus strengthen the unity and patriotism of the people; that by gathering at its seat distinguished savants, not only of our own but of other lands, it would eventually make our national capital the intellectual center of the world, and so help the United States to rank first and highest among the enlightened nations of the earth—then is it manifestly the duty of Congress to establish and amply endow such a university at the earliest possible day.
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> The committee, therefore, affirm their approval of the bill, and recommend its passage by the House.

It is believed that the success of the university measure in some proper form then required only that uninterrupted attention which, unhappily, a change of circumstances rendered it impossible for its friends to give. The opinion of the National Educational Association, in favor of the establishment of a national university, was reaffirmed by unanimous vote at its annual meeting, held in Detroit, on August 6, 1874, and, as seen by its recent declarations, in the same place, has endured with the years.

2. In 1890, when Senator Geo. F. Ed-

munds introduced his 'Bill to establish the University of the United States,' and moved its reference to a special committee, no opposition was made. Had he retained his physical vigor, he would doubtless have made his chairmanship of the committee effective.

3. At the Senate's session of August 3, 1892, when Senator Proctor presented the 'Memorial in regard to a National University' by John W. Hoyt, and moved that it be printed and referred, Senator Sherman moved the further printing of 5,000 extra copies, which was ordered unanimously; also, that at a subsequent session other thousands of extra copies were ordered printed without objection.

4. Although at the opening of the 52nd Congress, Senator Proctor, whose interest was very positive, assumed the chairmanship, by request, he was occupied with important measures already in hand, and submitted his sterling and unanimous report so late in the Congress that other matters prevented its consideration. The committee was a strong one and would have been potential, could they early have taken it in hand, as they would have done a question of commerce, finance or war. The Senate was ready.

5. When the Senate 'Committee to establish the University of the United States' was made a 'standing' committee, there was no opposition to the change.

6. In the 53rd Congress, when Senator Hunton was chairman of the committee, he was so circumstanced that his able report (also unanimous) could not be prepared, submitted and supported, as it was, by his own and other able speeches, until the time had come when appropriation bills had the right of way, and a single negative vote could again prevent action by the Senate.

7. It was not until during the first session of the 54th Congress, when the determination of the executive council of the National University Committee had met with assurances of cooperation from all parts of the country, and the council, with the Chief Justice of the United States presiding and but one of its fifteen members absent, gave three protracted sessions to the framing of a new bill, that there appeared the first sign of opposition, either in or out of Congress.

The members of the executive council at that time were these:

The Honorable Melville W. Fuller, Chief Justice of the United States; Ex-U. S. Senator Geo. F. Edmunds, of Vermont; Dr. William Pepper, Ex-Provost of the University of Pennsylvania; Hon. Andrew D. White, Ex-President of Cornell University, Ambassador to Germany; Ex-Governor John Lee Carroll, of Maryland, General-President Society of Sons of the Revolution; General Horace Porter, President-General Society of Sons of the American Revolution, Ambassador to France; Ex-U. S. Senator Eppa Hunton, of Virginia; Ex-U. S. Senator A. H. Garland, late Attorney-General of U. S.; Ex-U. S. Senator J. B. Henderson; Col. Wilbur R. Smith, of Kentucky University; Gen. John Eaton, Ex-U. S. Commissioner of Education; Hon. Gardiner G. Hubbard, President National Geographic Society; Professor Simon Newcomb, Director of the Nautical Almanac, U. S. N.; Hon. John A. Kasson, Ex-U. S. Minister to Austria and Germany; Hon. Oscar S. Strauss, Ex-U. S. Minister to Turkey; G. Brown Goode, Assistant-Secretary Smithsonian Institution; Ex-Gov. John W. Hoyt, Chairman National University Committee. (In the places of Messrs. Pepper, Hubbard, Garland and Goode, since deceased, there are now: Hon. H. A. Herbert, Ex-Secretary of the Navy; Dr. S. P. Langley, Secretary of the Smithsonian Institution; Lieutenant-General Nelson A. Miles, commanding the Army.)

The bill was unanimously approved by

the other distinguished members of the National University Committee, and gave promise of early success. President David Starr Jordan, of Leland Stanford University, wrote, 'Put it through without the change of a punctuation point.' Its passage was advocated in person, before the Senate university committee, by ex-Senator Geo. F. Edmunds, ex-Provost William Pepper, of the University of Pennsylvania, Professor Simon Newcomb, General John Eaton, Hon. Gardiner G. Hubbard, Hon. John A. Kasson, ex-Gov. John Lee Carroll, Hon. Andrew D. White and John W. Hoyt; and on March 10, 1896, Senator Kyle, chairman, submitted an affirmative report, with the said supporting arguments, and with over three hundred letters from members of the National University Committee, and other papers supporting the university proposition. It was an eminently satisfactory report of 156 printed pages, and for a time was supposed to be without dissent from any member. Adverse influences from denominational and other sources had been at work, however, so that a month later a brief minority report was submitted, with opposing letters from the presidents of Harvard, Yale, Columbia, and the University of Pennsylvania, and five or six small colleges, all denominational. Even with their friends it was beyond comprehension how the minority were willing to appear with so weak a showing.

For the rest, it is sufficient to say that the rule of courtesy which allowed the minority time to get ready, the printing of affirmative reports, and other causes, resulted in a postponement of action by the chairman of the Senate committee until the following session of Congress.

8. The 'Reply to Views of the Minority,' by the chairman of the National University Committee, when submitted to the Senate by Chairman Kyle, with many additional letters of indorsement from distinguished friends of the measure, was promptly received by the Senate and ordered printed.

9. At the opening of the second session of the 54th Congress, papers in support of the National University proposition, by Professor William H. H. Phillips, of South Dakota, and President David Starr Jordan, of Leland Stanford University, were, upon motion of Senator Kyle, ordered printed by the Senate, without dissent.

10. Before the Senate committee's report could be conveniently called up in the second session of the 54th Congress, Chairman Kyle was called to his distant home, and, although confidently expected from week to week, so that neither Senator Sherman, who was next on the committee list, nor any other member thought it fit to act in his stead, he did not actually return until within three days of the end of that Congress.

11. Upon the opening of the 55th Congress, the appointment of Senator Wellington, of Maryland, to the chairmanship was a surprise to the National University Committee, because of assurances touching the continuous and earnest work of Senator Kyle. It also proved to be without result; for, notwithstanding assurances from Chairman Wellington of his deep interest in the university cause and his purpose to do everything possible to further it, not even a meeting of his committee could be secured during the said Congress.

12. Notwithstanding these facts, coupled with the readiness of Senator Chauncey M. Depew, always a warm friend of the national university idea, to take the lead and carry the measure forward, Chairman Wellington (still in possession, under Senatorial usage), because of assurances of action, held over. And there was at last a meeting of the committee, during the first session of the 56th Congress, and an agreement, without dissent, upon the new bill offered by Senator Depew with the approval

of the National University Committee. A report was also made ready and, with one hundred additional letters (including those from Ex-President Benjamin Harrison, from ex-senators, heads of national organizations, and the presidents of sixty additional colleges and universities, beginning with the University of Virginia and embracing ten of the leading Methodist institutions), was at one time on Chairman Wellington's desk, in the Senate, for presentation. They were never submitted, however. And of course there were requests many, appeals many and promises many.

Such is a brief history of both Senatorial and committee action on the subject of a national university during the past few years. It proves unmistakably that the talk of 'suspicion' on the part of Congress is without so much as the shadow of a foundation—that there has been none but affirmative action from first to last; that Congress has in fact done everything that was ever asked of it or of either House; and that in nearly, if not in every, case such affirmative action has been prompt and unanimous. There have been trying delays, but those of the last decade are not chargeable to the Senate, but to individual members of its university committee. And it may not be improper to add that there were Senators not a few, and among the most active and influential, who were as emphatic in their expressions of disappointment at the obstructive course of a chairman chosen because of his declared friendly attitude, as were the members of the National Committee themselves.

'THE TREND OF OPINION.'

After the showing thus made of the friendly attitude of Congress, first, last and always; of the views of leading men of the nation in all the great pursuits, including the heads of all but five or six of the colleges and universities appealed to; and, last of all, the marked demonstration again made by the National Educational Association at Detroit, it is hardly worth while to spend a moment discussing the 'trend of public opinion.' Dr. Walcott should know that it 'has been and is, that the Government' *should* 'found a national university,' and that, too, 'in the sense suggested by Washington and his followers.' I mean in the broad sense, and for the accomplishment of the great ends he had in view. There have been such advances in science and such development of educational institutions since his day as he could not foresee, and as would necessitate a different sort of university work, in some respects, from that of his day, and yet not different in that it was to be, and is to be, the highest possible—and that, too, with help rather than hindrance of all other institutions, and with a fulfilment of special offices to which it alone would be competent, as I shall show at the end of this review. The Depew bill (last before the Senate), like its forerunners, makes sure of the national university's limitation to this high field.

OPPOSITION BECAUSE OF MISCONCEPTIONS.

There were, in 1896, a few opposing senators, but, since none of them have offered valid reasons for negative action (see 'Reply'), we are not without hope that they will yet concur. If they are endowers, graduates or patrons of some half-dozen leading universities, it is difficult to believe that on this account, and right here, in the midst of unparalleled facilities for a true university—facilities provided at a cost of some $40,000,000 to the whole people of the country, and maintained and utilized at a cost of several millions annually—they would be glad to prevent the establishment of an institution which would at once do honor to the nation and be a practical friend of their favorites. Surely any such senators will upon reflection come to agree

with the multitude of statesmen and scholars of a hundred years, the views of whom are so emphatically reaffirmed by Ambassador Andrew D. White, who just now again says, from Berlin : "It would in many ways make itself helpful to every school, college and university in the land"; and by President Harper, of the University of Chicago, when he wrote me not very long ago: "I have always believed in such an institution and will continue to believe in it. There is everything to be gained and nothing to be lost." They will see with Dr. Cattell, the able editor of SCIENCE, that "all the arguments which have been urged against the establishment of a national university turn out to be in its favor." Nay, more, it is hard to believe that any right-minded, unbiased senator or representative will fail at length to see that such an institution as is planned by the National University Committee would also serve to give the United States a new dignity and importance among the nations.

Under this head should also be embraced all friends of the national university movement who, whether they have done aught to advance it or not, or have inquired into the causes of delay, are now tired of waiting for the grand result, and have been induced to lend their influence to a scheme whose origination and inauguration have been with those who intend that it shall prevent the establishment of the university. They, too, will surely right themselves, when rightly informed.

Of course the hindrances common to great movements for intellectual advancement have not been wanting in this one ; such as the extent to which legislators accounted the best are often absorbed in questions that concern industrial development, commerce, finance and international differences involving war—matters all of them so related, moreover, to the ascendency of political parties as at times to fill the whole field of vision ; causes such as the growing passion for increase of wealth and power as means of supremacy among the nations, and which leave out of consideration the no less necessary and still higher conditions of a superior civilization ; such, indeed, as lie in a spirit of denominational ambition, which in some of the churches is stronger than the spirit of religious freedom or anything else. And last of all, possibly in this case more serious than all others, there is the very nobleness of the national university idea, on account of which so many eminent and influential citizens, who should make themselves felt in every practicable manner, rest in the hope that every other friend of the pending measure will do his full duty, and themselves do little or nothing—in other words shift the responsibility on Providence, forgetting that Providence helps those who first help themselves, and that no great end is realized except through sacrifice.

OTHER OPPOSING FORCES.

Lastly, there are others, the grounds of whose opposition I will not even make a subject of conjecture, confining myself to a statement of facts of interest and to the pointing out of a few faults and the total insufficiency of the 'Memorial Institution.' The author of the paper under review was himself but lately interested in the national university, as will appear from his letter of December 20, 1894, which reads as follows :

"I fully believe in establishing such a university in the interest of higher education, and I cordially indorse the statements made by the late President James C. Welling, printed on pages 95-7 of your Memorial on the subject. The statements and views expressed in the Memorial are so exhaustive and comprehensive that I do not know that I could add to them, except to record my personal approval of the movement."

The following is an extract from President Welling's letter to which Dr. Walcott here refers:

"Such a university as I here prefigure would come into no rivalry with any existing institution under the control of any denomination. It would aim to be the crown and culmination of our State institutions, borrowing graduates from them and repaying its debt by contributing in turn the inspiration of high educational standards, and helping also in its measure to train the experts, * * * who should elsewhere strive to keep alive the traditions of a progressive scholarship. * * * It is not enough that our colleges should perpetuate and transmit the existing sum of human knowledge. We must have our workers on the boundaries of a progressive knowledge if we are to establish our hold on the directive forces of modern society."

It may be added that, within a very few months, Dr. Walcott, who is still a member of the National University Committee, avowedly shared the writer's indignation on account of delays, and expressed regret that he could not contribute more to the progress of the national university movement.

FAULTS OF THE 'MEMORIAL' SCHEME.

Now, while I have neither plan nor purpose to make war upon the 'Washington Memorial Institution,' and might never have said a word concerning it but for this strange attempt upon the life of the national university movement, it seems my duty, as the matter stands, to point out some reasons why the said 'Memorial Institution,' if established exactly as its friends would have it, is not likely to meet their expectations. I do so for the benefit in particular of such of its patriotic members as, being without time for a careful study of the whole subject, may have thought of it as a possible practical beginning of the national university in which they have believed.

In the first place it is to be regretted that, as devised and constituted, it is not better calculated to represent the ideas of him whom it affects to honor—that it is fragmentary and does not contemplate a final national university.

The friends and promoters of the national university movement had duly considered the question of making the best practicable beginning they could, on the scientific side, without waiting for direct Congressional authority, but soon concluded that it would be wiser to go forward and secure the desired Congressional action. The country had waited a hundred years and could wait a little longer. A proper charter then seemed within easy reach. A liberal charter is still bound to come, and at no distant day, now that the schemers have boldly thrown off the mask, on the one hand, and that the National Educational Association has again, for the fifth time, by an overwhelming vote, declared for a national university of the highest rank.

Secondly, Washington wanted a true university, for supreme work only, and for reasons first national, then universal, located at the national capital, and sustaining such relations to all other institutions and educational agencies of the country and to the government itself as would make it in a superior sense a stimulating and guiding, as well as elevating, force and influence for the universal good.

It is also such an institution as this that the truly patriotic people of the United States want to-day. Nothing less will ever satisfy, as the able advocacy of earnest men in all the past, the persistent efforts of the National University Committee, the liberal action of the U. S. Senate and the recent renewal of supporting declarations of the country's educators plainly show.

Passing these two considerations, ethical and patriotic, the scheme of the Memorial Institution is itself of a character to challenge serious criticism, as its originators will find when they come to a practical test.

According to Dr. Walcott, it is to be a private foundation, without Government support or control. But he also tells us: "The policy of the Government, as expressed, is to aid in higher education by granting [to the Washington Memorial Institution] the use of such facilities as are at its command in the District of Columbia"; and again, "The Government's part in the work of the Washington Memorial Institution, when once under successful headway, will be to enlarge the quarters of the various bureaus concerned." To be sure, he hastens to add: "This will be necessary eventually, even if no student assistants are provided for." But it is apparent that if the Memorial Institution is to utilize the Government's collections and facilities for scientific research at Washington, such collections and facilities, now inadequate to such utilization, must exceed the Government's own demands, and exceed them in proportion to the utilization by the Memorial Institution; in other words, that Congress must make constantly increasing appropriations for the benefit of the Memorial Institution. Indeed, this enlargement of Governmental collections and facilities at Washington is the very *sine qua non* of the Memorial Institution. Yet we are told the Memorial Institution is to be without Government support.

This is not all. The Memorial Institution is to be also independent of Government control, says Dr. Walcott. But he then goes on to inform us that the Cabinet and various other Government officials are largely to constitute the advisory board of the Memorial Institution, and that the character and extent of the student-assistants' work in the various departments of the Government is to be defined by the heads thereof, so that the same may be without detriment to the public service. And so, after all, there will be considerable opportunity and indeed necessity for Government control.

It thus appears that the Memorial Institution is to avail itself of the very assistance, and is to be subject to the same influence which its promoters condemn when proposed, to a less extent, in connection with a national university.

Other difficulties will present themselves after a little careful reflection; such as these, for example:

1. The three particular functions of the Memorial Institution—to ascertain and publish the opportunities for students in the Government Departments at Washington; to receive, enroll and direct such students to the places awaiting them; and to record their work and certify it, when requested, to any institution of learning—require no such widely scattered board of trustees as is provided, but could be as well, and indeed more effectively, performed by a small local committee. Unlike a national university, with plans and policies to be developed, the Memorial Institution begins with a fixed plan, whose operation will be largely subject to the dictation of the men whom the fortuities of politics have placed in charge of the Government Departments. The number and distribution of the board in question seem but a vain pretension to the nationality to which they are confessedly opposed.

2. The number of students of the Memorial Institution being limited (very limited, in the absence of Congressional appropriations), what is to prevent the institution in whose interest the Memorial Institutions was primarily worked up from having an undue share of student-assistant places? What is to safeguard the interests

of the four hundred or more colleges and universities of the country, by insuring them equitable representation in the opportunities which the Government provides and which the Memorial Institution proposes to dispense?

3. The Departments will not readily cooperate with a non-Governmental agency calculated to interfere with its own work.

4. If the Memorial Institution claims to provide opportunities for original research and investigation, it will sadly fail, for the Government does not carry on general scientific investigations, but confines itself to certain lines of work, which are not only special, but routine. If the Government expert himself cannot be an original, independent investigator, much less can the student-assistant.

5. The Memorial Institution repudiates the idea of instruction. Yet how will the investigations by its student-assistants, in scientific work, be carried on without instruction, and pretty systematic instruction, at that, to say nothing of any work it may attempt on lines not strictly scientific?

6. Even on the very limited lines proposed by the Memorial Institution, more money will be needed than such a concern is calculated to obtain from private sources. And how is the Memorial Institution to placate its Congressional patrons, when every student-assistant, especially if he becomes a Government fixture (and the Memorial Institution anticipates that a majority of them will remain in the Government service), closes the door to just so much Congressional patronage?

7. What shall be said of the ethics of an institution which encourages scientific work by students in the Departments at Washington as a means to the attainment of degrees at certain universities whose equipments are insufficient to such degrees? It has decidedly the appearance of giving credit where credit is not due, and will eventually discredit the institutions it favors by such means.

8. It is said that the *esprit du corps* so desirable in every student-body could not be developed by Congressional action, in connection with scientific investigations at Washington, because it would be 'a violent departure from all precedent,' and in the next breath we are told that this happy result has been obtained by the legislation of March 3, 1901, which nominally extended the utilization of the Government's scientific equipment at Washington to all the educational institutions of the country.

9. In view of the land-grant colleges and the U. S. military and naval academies, what sense is there in the talk of 'a violent departure from all precedent' involved in a provision for a crowning university of the United States?

10. What argument that justifies a State university would not justify a national university?

11. Contrary to the views of the Memorial Institution's advocates, no university is national, whatever its 'constituency,' 'support,' 'policies' and 'sympathies,' which is not vitally and distinctively of and by the Government of the United States.

12. People are most interested in that to which they contribute, and they cannot be so easily interested in a private institution as in an institution to which they have in some form contributed, which they may justly claim to be their own, and in which alone they could have a national pride.

13. The plan of the Memorial Institution necessitates practical duplication of Government experts and scientific apparatus, a thing which the Government could properly effect only in the interest of an institution of its own creation and in due measure subject to its control.

14. If there should be a measure of competition between a national university and a few other universities, that would by no

means be a serious matter. Among existing institutions competition even proves a means of rapid growth. Neither Harvard nor Columbia collapsed when the Johns Hopkins and Chicago Universities were established. Moreover, on the national side there would be the least possible of this element, for two important reasons, namely: First, because the purpose to do a work for the most part beyond existing institutions—that is, to occupy a field especially its own—would be both controlling and constant; and, secondly, because, by reason of its origin, aims and connection with the Government, there would not only be no room for a spirit of competition with the other institutions of the country, but rather, on account of direct relations with them, a sincere and never-failing desire to promote their advancement.

15. If the existing institutions already 'far more than supply the needed opportunities for higher study and research in the United States,' why do the richest of them strive for greater facilities; why do thousands go abroad annually for facilities which cannot be obtained in this country; and what is the need of the 'Memorial Institution'?

16. If the national opportunities sought to be utilized through the Memorial Institution are of a 'genuine university character,' why not have a genuine national university to utilize them?

It thus appears that while, on the one hand, the Memorial Institution contemplates no sort of advantage which in due measure the friends of a national university have not considered and set forth, on the other it has agreed on and published certain definite and independent plans for use of the Government Departments and bureaus such as no private institution but this would be likely to venture, and which the National University Committee has not felt warranted in planning for the University of the United States.

OVER-ESTIMATES OF EXTENT OF OPPOSITION.

Citizens here and there, with a supreme interest in certain institutions, cannot immediately subordinate all personal, local, and denominational ambitions, so as to take the national and world view of this matter. Or, if seeing rightly, as it is believed some of them do, they have not yet made up their minds to suffer the temporary losses and reproaches liable to follow a patriotic declaration of independence. If, therefore, I have at any time spoken of the half-dozen institutions whose present executive heads do not concur, as opposing the national university idea, the remark was too sweeping, for I am now satisfied that many of the broadest of the men thus embraced are in heart with us, that the opponents in these institutions constitute a minority only, and that of these many will be found on the affirmative side when fully informed concerning the national university proposed.

SPECIAL OFFICES OF A NATIONAL UNIVERSITY.

Neither the above mentioned nor the unenlisted of whatever class or quarter have yet realized that the efforts made for a national university are not so much because we are still without a single exclusively post-graduate university in America, and are therefore properly regarded by the foreign world as in the second rank, with thousands of our graduates annually going abroad for the facilities we do not furnish, but rather because the national university we seek to have established at Washington would fulfill special offices of national importance which none other, whether private, denominational, or state, much less this Memorial Institution, could by any possibility fulfill—among them these:

1. It would serve to supplement, coordinate, guide, inspire and finally perfect the whole series of public educational agencies in the United States and thus entitle us to speak of 'The American System

of Education '—a system such as this great republic certainly should have without further delay.

In the words of the editor of SCIENCE, issue of February 5, 1897, "A great national university would be the head of our educational system. It would not interfere with existing universities any more than these interfere with our colleges, or our colleges with our schools. Our present universities consist chiefly of professional schools, on the one hand, and of colleges for the instruction of boys on the other. They are indeed developing toward true universities, but nothing could better hasten and direct this development than a national university."

2. A national university could more properly than other institutions, with less embarrassment to the Government, and with great common advantage, still further utilize the resources already at Washington in the form of libraries, museums, gardens, laboratories and observatories, at a cost of $40,000,000 to the whole people, and all of which, together with the $7,000,000 a year for maintenance and utilization, and the possible help of scientific and practical experts, are, in some part, as I have said before, an enormous capital running to waste.

3. A national university would powerfully influence ambitious students in the public schools of whatever grade, even though purposing to make their college studies, or even a measure of post-graduate study, in denominational institutions of their preference. They would keep it in view as the final goal, the place of final preparation for special spheres of activity in life.

4. Moreover, a national university would at the same time in many ways help, and in nowise hinder, all the other institutions of the country; for in the first place, being without general academic courses of study, like a college, it would receive college and university graduates for special studies only, leaving the general work looking to purely academic degrees (certainly those below the doctorate) to existing colleges and universities; and, secondly, being free from both local and denominational ambitions, it would naturally deal with all institutions of high rank and doing any work supremely well, in a most liberal manner, and in harmony with the best system of cooperation that could be devised.

5. When in full operation the national university would be more effective than all other institutions in keeping at home the three to five thousand of our graduates who now annually go abroad for the completion of their studies. The honor of its approval would soon come to be esteemed before any that could be offered by the foreign world.

6. A national university would at length attract thousands of students of high character and attainments from other lands, whose return, after years of contact with a prosperous, cultured and happy people living under free institutions, would tend to promote the cause of liberal government everywhere.

7. A national university would be able, as would none other, to attract to its own service, as lecturers, expert workers, guides, and directors, many of the most gifted and best qualified of those in the Government service at Washington, with the triple advantage of economy to the university, of increase of revenue to those so employed, and of an improved service in the Government through the added attraction thus furnished to superior men and women who now hesitate and ofttimes refuse to enter the service because of insufficient salaries and the less than satisfying dignity of many positions on this very account. In other words, men of genius and rare acquirements would accept places in the Government, and of lower grade than otherwise,

because of promised or probable connection with the world's leading university.

8. As could none other, a national university would attract men of genius and distinction from every quarter of the world to its professorships, lectureships and fellowships, thus increasing the cultured intellectual forces of both university and country.

9. A national university, to an important extent, and as could no other institution, whatever its rank, would make itself a coworker with the Government in the several Departments; meeting their demands with the least possible delay; making trustworthy answers (as in the military and naval Academies) to important questions; taking up, on request, the solution of difficult problems of every sort; and supplying the Government with experts of supreme ability in greater number because drawn from the field of the world.

10. A national university would create an atmosphere at the national capital that would be influential for good in all departments of the Government, and so increase the demand for public men of character and culture as to furnish a new guaranty of wise legislation, and justice of judgment, as well as of faithfulness and efficiency of administration.

11. A national university, thus honored and encouraged, would powerfully stimulate and strengthen the patriotic sentiment of the country. The people universally would come to feel a pride in it as a sign of intellectual supremacy and of exalted aims, while to students in the schools and colleges of the States it would furnish a juster conception of what is meant by the field of learning, as well as new incentives to higher, and the highest possible, attainments; thus contributing in a degree beyond calculation to make us an educated people, and filling us with the determination to become the most cultured of all peoples.

12. Having duly established a university of the United States and made it capable of fulfilling all these offices, so important, shall we not have gained for our country that rank and influence among the nations to which not all our vast and varied material resources, the genius and wonderful energy of our people, and all our conquests in war are alone equal? Heirs to the better part of this great continent, with its vast resources of every sort, we have indeed made a wonderful growth in area, population, wealth and power; and meanwhile there has been a corresponding development in the boundless realm of the sciences, so that the national university we should now establish must differ in some respects (those of extent and greatness) from that which would have been founded in the days of Washington. Nevertheless, the special reasons which he so clearly had in mind have not only remained, as they ever must, but have strengthened with the years. They inhere in the nature of the case and should be regarded as conditions of a real supremacy of the American republic and of its becoming the world's most effective promoter of human advancement.

Other offices to be fulfilled by a national university will suggest themselves; but are not these enough to satisfy and forever silence the query, "Do we really need another and national university?"

The establishment by Congress of a national university is an undertaking of so great importance, of such origin, and of such advocacy throughout the whole period of the nation's life as to have gained an abiding place in the hearts of the people. It is an undertaking, the necessity for whose success is a firm conviction among the men most worthy to be heard in the interest of American education, and one the leadership in which, from first to last, has been as purely patriotic as any that was ever known, in peace or war. Such an

undertaking will surely triumph. Schemes skilfully devised may delay, but they cannot prevent, the establishment of a University of the United States.

JOHN W. HOYT,
Chairman National University Committee.

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*ADDRESS OF THE PRESIDENT OF THE PHYSIOLOGICAL SECTION OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.**

WHEN the British Association met in Glasgow twenty-five years ago I had the honor of presiding over Physiology, which was then only a subsection of Section D. The progress of the science during the quarter of a century has been such as to entitle it to the dignity of a section of its own, and I feel it to be a great honor to be again put in charge of the subject. While twenty-five years form a considerable portion of the life of a man, from some points of view they constitute only a short period in the life of a science. But just as the growth of an organism does not always proceed at the same rate, so is it with the growth of a science. There are times when the application of new methods or the promulgation of a new theory causes rapid development, and there are other times when progress seems to be slow. But even in these quiet periods there may be steady progress in the accumulation of facts, and in the critical survey of old questions from newer points of view. So far as physiology is concerned, the last quarter of a century has been singularly fruitful, not merely in the gathering in of accurate data by scientific methods of research, but in the way of getting a deeper insight into many of the problems of life. Thus our knowledge of the phenomena of muscular contraction, of the changes in the secreting cell, of the interdependence of organs illustrated by what we now speak of as internal secretion, of the events that occur in the fecundated ovum and in the actively growing cell, of the remarkable processes connected with the activity of an electrical organ, and of the physiological anatomy of the central nervous organs, is very different from what it was twenty-five years ago. Our knowledge is now more accurate, it goes deeper into the subject and it has more of the character of scientific truth. For a long period the generalizations of physiology were so vague, and apparently so much of the nature of more or less happy guesses, that our brethren, the physicists and chemists, scarcely admitted the subject into the circle of the sciences. Even now we are sometimes reproached with our inability to give a complete solution of a physiological problem, such as, for example, what happens in a muscle when it contracts; and not long ago physiologists were taunted by the remark that the average duration of a physiological theory was about three years. But this view of the matter can only be entertained by those who know very little about the science. They do not form a just conception of the difficulties that surround all physiological investigation, difficulties far transcending those relating to research in dead matter; nor do they recollect that many of the more common phenomena of dead matter are still inadequately explained. What, for example, is the real nature of elasticity; what occurs in dissolving a little sugar or common salt in water; what is electrical conductivity? In no domain of science, except in mathematics, is our knowledge absolute; and physiology shares with the other sciences the possession of problems that, if I may use a paradox, seem to be more insoluble the nearer we approach their solution.

The body of one of the higher animals—say that of man—is a highly complex mechanism, consisting of systems of organs, of individual organs and of tissues. Physi-

* Glasgow meeting, 1901.