standpoint of physical exercise; this standpoint has limited the scope of the department to the possibilities that lie within the range of physical exercise. It has restricted the preparation required of teachers of physical instruction to those subjects or experiences bearing on some one or more phases of physical exercise, and it has made possible and deserved many criticisms because of its unacademic character and its opportunities for the commission of injury to individuals.

Second: There have always been a few directors of physical instruction who feel that their field of work is larger than that of physical exercise, and that it is concerned with human health.

Third: Physical instruction is now being handled more and more from the standpoint of human health. This point of view broadens the scope of the department so that it includes medical, sanitary and hygienic supervision and instruction concerning the simple fundamental laws of health and the various phases of physical exercise. This broader departmental scope necessitates the employment of experts upon the staff whose special training has fitted them for medical, hygienic and sanitary supervision and instruction as for instruction in the various and important phases of gymnasium and athletic work.

In conclusion, gentlemen, permit me to state that we who are interested in these tendencies in physical instruction believe they are tendencies in the right direction. We believe that our professional and pedagogical aim has in view the achievement and conservation of human health through the regulation of physical instruction from the standpoint of hygiene. We believe that this broad field belongs logically to us. We believe that if we can develop and conserve health in human beings, and teach them how to exercise an intelligent policy of personal health control, we shall have utilized whatever special scientific, medical, hygienic and pedagogical training we may have, for the best interests of humanity of which we are a part and of the world in which we live.

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THE CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING

The annual reports of President Eliot to the corporation of Harvard University have in certain respects been the most interesting educational documents of past years; their place will now be taken by the reports of President Pritchett of the Carnegie Foundation. In these reports and in the intervening bulletins, there are not only given lucid and complete accounts of the activities of an institution of vast importance for higher education, but also careful studies of the educational system of the country. In this respect the foundation sets an example to the General Education Board, which keeps for its private use the information that it collects, and does not even publish the financial statements that should be required by law from every corporation, and first of all from those exempted from taxation.

President Pritchett's third annual report, which covers the year ending September 30, 1908, shows that the new grants made during the year amounted to $113,765. The grants in force amounted to $303,505, an increase of $101,360 over the preceding year. Should this increase continue for two further years, the income of the foundation would be exhausted. The retiring allowances in force were: On basis of age, 86; on basis of length of service, 81; for disability, 15; to widows of professors, 29. The average age of those retired for length of service is 65.7 years, so that it would appear that more than half of them are entitled to retirement for age. The average value of the retiring allowances is $1,532.58. The institutions drawing the largest sums are: Yale, $25,195; Cornell, $16,570; Harvard, $16,305; Tulane, $14,365; Columbia, $14,055; Stevens, $11,075.

Valuable data are given in the report in regard to institutions on the accepted list and the state universities, together with a discussion of political interference in tax-supported institutions with special reference to the University of Oklahoma. Other topics treated are: the exchange of teachers between Prussia and the United States; uniformity in financial reports; teachers' insurance; college requirements for admission; special students; amount of instruction given by teachers; professional education; denominational education.

The foundation adopted during the year two new policies of great importance—one the admission of tax-supported institutions for the cost of which Mr. Carnegie has undertaken to give $5,000,000, the other the provision that a widow shall receive half the pension to which her husband would have been entitled.

There is no valid reason why the states should not accept a gift from Mr. Carnegie for their universities. In so far as the money came originally from the people, and especially from the agricultural regions of the central and western states, through the workings of the tariff, this was imposed by the representatives of the states, and the best use of the money is to return it to those from whom it was taken. Nor is the fact that the fund is in the form of bonds of the United States Steel Corporation significant. All our universities hold bonds of railway and other corporations whose activities have not always been beyond reproach.

The real questions are whether a centralized pension fund is for the advantage of our universities, and, if so, whether a fund can be provided sufficiently large for the purpose. The writer dissents from most of his colleagues in doubting the desirability of a uniform and centrally administered pension fund. I have always been prejudiced against annuities and those who buy annuities; it is distasteful to me to be thrust by force of circumstance into this class. The president of one of our leading universities has stated in a report to the trustees that the annual value of the pension to a professor in middle life is $1,200. I should prefer to have this increase to my salary now when I have children to educate; or, if it could be saved, to have it as capital to be used for such purposes as may be desirable and to be bequeathed to my family. The withholding of part of a professor's salary to be paid ultimately after good behavior in the form of an annuity will tend to increase the autocracy of university administration and to limit not only the freedom of action but also the freedom of speech of the professor. It will also limit the freedom of action of the administration, for a professor can not be dropped honorably when part of his salary has been reserved for a pension. It seems from the decision of the courts in the case of Professor Capps against the University of Chicago that this can not be done legally, and there will probably arise complications which have not been fully foreseen.

It is not intended to imply that the office of the professor should be subject to the commercial law of supply and demand. On the contrary, he should have life tenure, only forfeited by the violation on his part of the conditions implied in accepting the office. It would be intolerable if a professor could be dismissed simply because the president thinks that he might obtain a more acceptable man in his place for the same or a smaller salary. The professor is appointed at the average age of nearly forty years and is likely to remain what he then is; if an unwise appointment has been made, the institution should accept the responsibility.

Permanent tenure of office doubtless implies a continuation of salary or a pension in case the professor can no longer serve to advantage; and this leaves the difficulty resulting from paying a professor less than he is worth in middle life in order that he may receive more than he is worth in old age. Obviously we must face this situation; but it is emphasized and made worse by the establishment of a uniform and centralized system of pensions. It can be most conveniently met if we are sufficiently optimistic to assume that on the average the services of professors over sixty-five years of age are worth to their institutions and to the community the salaries that had previously been paid. A professor at this age may become a less efficient teacher in professional and required courses, though this is not always the case. It is, however, by no means certain that he is, on the average, a less desirable teacher in advanced and elective courses; or that his scholarship, experience, judgment and poise are not of the utmost advantage to the university. A man of this age may not have new ideas; but his research work and productive scholarship are likely to continue and to be of greater value to the world than the salary he is paid.

The teachers who have had the greatest influence on the writer are Professor March, of Lafayette College, and Professor Wundt, of Leipzig. Professor March ceased to teach recently at the age of over eighty years and Professor Wundt continues to lecture regularly at the age of seventy-five years. It would have been a serious loss if these great men had ceased to teach at the age of sixty or sixty-five. If I were now beginning the study of psychology, I should wish to spend a year under Professor Wundt at Leipzig and a year under Professor James at Harvard. I should be able to work under Professor Wundt, but should find that Professor James had been retired on a Carnegie pension in the fullness of intellectual vigor. If Mr. Angell can to advantage serve as president of Michigan to the age of eighty and Mr. Eliot can serve as president of Harvard to the age of seventy-five and still retain the chairmanship of the trustees of the Carnegie Foundation, we have evidence that a dead line can not be drawn at sixty-five.

The institutions accepting the terms of the Carnegie Foundation for pensions on the basis of age must make retirement on a pension at sixty-five mandatory, or else they must make it a matter of arrangement between the administration and the professor. Either alternative is unfortunate. If the retirement is mandatory, the institution will lose men whom it can not afford to lose, and professors will be retired who are competent and anxious to continue their work. It will be a poor reward in the academic career to cut men off from the service of their lives and pay them part salary, when in other professions at that age they would probably have continued to be leaders and to have had an income at least twice as large as twenty years before. If the retirement is only permissory an institution might gain temporarily by retiring its less efficient men; but this would be only a mitigated form of the policy of dismissing professors whenever their places can be filled at less cost. Every institution could improve for a time its faculties by dismissing twenty per cent. of its professors; but such an undertaking would in the end be disastrous to the institution and to higher education. If only incompetent professors and those not in favor with the administration are retired at sixty-five, the pension will be far from an honor and by no means a worthy close to an academic career. It will frighten able men from it at the outset, and tempt them to desert it when they can.

It may give a sense of security to be assured of a pension in old age; but when the time comes the reduced salary will cause difficulty to those not having independent means. There will be a tendency for the professor to engage in some form of money-making and to begin early in his career. An eminent man of science has written to me that since he had been retired on a Carnegie pension he could no longer contribute to a scientific journal, as he had to earn a living for his family by writing fiction. The community and the world are largely dependent on the university professor for the advancement of science and scholarship and for the maintenance of the best ideals, and those great services are not paid for directly. They can only be assured by attracting the best men to university chairs and then setting them free to do their work with no interference and no fear of dismissal even on half salary.

In my opinion the Carnegie Foundation would have been most wisely administered if it had agreed to give to every institution that had adopted or would adopt a half-salary pension after the age of sixty or sixty-five an endowment sufficient to defray the remaining half of the salary, so that the professor would be paid his regular salary for life. He could then retire from the teaching for which he was not fit, but could continue to give his services to his institution and to his science. Or if the allowance had been paid by the foundation directly to the professor without regard to whether or not he continued his teaching, then he could give to his institution so much service as he might render to advantage and in turn receive so much salary as he might earn.

But the trustees of the Carnegie Foundation are presidents, not professors, and the money is to be divided in the main so as to relieve the financial straits of the institutions, not to improve the status of the professors. The professors in those institutions which already had a pension system do not gain financially as far as the old-age scheme is concerned and lose in certain ways; whereas the institution gains the amount it had contracted to pay in pensions. The professor as well as the president is pleased that the university has added resources; but they do not differ from any other unrestricted endowment.

The conditions are different in the case of institutions which did not have a pension system. Here too it is chiefly the institution which gains, for it was bound in honor to provide for its disabled professors, and it will hereafter pay smaller or less increased salaries in view of the pensions.[1] But the presidents and professors have an assurance that they did not have and will have annuities that they did not earn or only partly earned. The advisability of having made the pensions retroactive in this way is questionable. Gifts may be at the same time acceptable and demoralizing. When Tulane University raises nominally its entrance requirements beyond what can be met by the high schools of Louisiana in order that it may be accepted by the foun-

[1] It is not admitted by the officers of the foundation that pensions will tend to prevent increase of salaries; but this appears to be an inevitable result of economic law. In seeking recruits for the army and navy the government states that the small wages are compensated for by the pensions, and one of the state universities has urged that if the legislature does not accept the pensions from the foundation, it will be necessary to pay higher salaries in order to retain its professors. A pension system may or may not improve educational efficiency, and it may or may not improve the general conditions of the academic career; it will not improve permanently the financial status of the professor.

dation, we are not surprised to find that it draws annually $14,365, and when the Central University of Kentucky cuts itself off nominally from its denominational control in order that it may be accepted, we are not surprised to find that three of its eleven professors are immediately placed on the foundation.

It would, I believe, have been far better if the foundation had undertaken to hand over to each institution that had adopted or would adopt a pension system an endowment from the income of which the professors' salaries could have been maintained for life. Even if it were decided to give a pension smaller than the salary, the endowment might with equal advantage be made once for all. The foundation could in this case take up one institution after another and from its income award a fund sufficient to endow a pension scheme in each. Under these circumstances, the income would never be completely tied up, but could always be used in the way most likely to promote the advancement of teaching. The same plan might with great advantage be pursued by the Carnegie Institution of Washington. If instead of attempting to administer from Washington scientific institutions in all parts of the country, it would found and partly endow such institutions, and then leave them to local control and support, the money would go much farther and the dangers of a bureaucracy would be avoided.

The drawbacks of a centralized pension system may be illustrated by an example. A professor has reached the age limit with a salary of $4,000. He prefers to continue his regular teaching and research and can do so competently. If the institution had to continue his salary, it would have no inclination to relieve him of his duties, nor would it care to do so if it had to pay a pension of $2,400, for in this case the $1,600 released would not suffice for the salary of a new professor. But if the payment of the professor's pension can be put off on the Carnegie Foundation, then the president will reflect that he can obtain a new man about equally competent for $3,000. He will thus save $1,000, and the institution will still have credit for the work of the retired professor; the students he attracts; the indirect teaching that a man engaged in research at the university can not fail to do; his valuable judgment and counsel. The institution saves $1,000 and gets $2,400 more that it could not get in any other way. At first sight it may seem that no one suffers except the dismissed professor; but in the end it will be found that the institution and higher education also suffer.

The risks of the system for the professor are increased by the scheme of retirement after twenty-five years of service. Sixteen of the most efficient professors in Harvard University and fifteen in Columbia University are now liable to compulsory retirement apart from age; and owing to the great growth of these universities within the past twenty years, the number of men in this class will increase rapidly. These institutions could take from the Carnegie Foundation about $75,000 a year now by retiring these men and probably two or three times as much a few years hence. If the emeritus professors maintained their interest in the institution and continued their research work, the university would apparently lose but little in return for the great financial gain. But the professors would suffer, and ultimately the whole academic life would be demoralized.

The reasons leading to the adoption of retirement after twenty-five years of service are obscure to me, unless it is intended to relieve institutions of men whom they do not want to keep. Some few professors having independent means or outside employment may like to retire on half salary;

but these are exactly those who do not need pensions. Any who may be disabled after twenty-five years of service and before reaching the age-limit gain; they are, however, but few and should be otherwise provided for. It appears to be a mistake to hold up retirement from the life-work of a professor as a prize or reward. The usual professor can not afford to retire unless he engages in money-making, and the plan will thus lead to commercialism and the discouragement of research. He is permitted by the rules to do anything except teach—that for which he should be most competent and that which he should most enjoy. Research work and advanced teaching can be carried on far better in conjunction than divorced. In order to reward a professor after long years of service, he should be relieved, not of half of his salary and the privilege of teaching, but of so much routine instruction and administration as interfere with his research. This is now done in our better universities; professors of distinction who wish to devote themselves mainly to advanced students and research work are encouraged to do so.

There is a minor difficulty in the way of retirement—whether it is to be a reward or a punishment—after twenty-five years of service as professor in that it is impossible to date fairly the beginning of such service. In every university some professors between the ages of fifty and sixty-five will be liable to retirement on the basis of age and others not, but there will be no significant difference in the work that has been accomplished for education and scholarship by the two classes. According to the circumstances of the case, it will be an advantage or a risk to have been given the title of professor at an early age in a small institution. It may on the whole be regarded as fortunate that the Carnegie Foundation has not the means to continue these annuities for length of service. They will, I fear, tend to demoralize both the "humble and ill-compensated" professor and the "conspicuous" and much-tempted president.

A very useful service that the Carnegie Foundation could perform for the professor and for academic life would be some form of pension for disability, as this can not be purchased. Another useful service would be the pensioning of widows and minor children. Personally, I should prefer to let the professor purchase voluntarily at cost the disability annuity and the life insurance; but I am instinctively an extreme individualist. Certainly the pensioning of the widows of professors entitled to pensions by statute instead of by favor is a notable advance made by the foundation last year. The enforced pensioning of widows is even more socialistic than the enforced purchase of annuities; for ultimately the unmarried professors will be compelled to pay part of the premiums on behalf of their more fortunate colleagues. But it may be that people who bring up children deserve more from the world; certainly those who have only the annual income which they earn for those dependent on them should insure their lives, and perhaps they should be compelled to do so. The weakness of the system of the Carnegie Foundation is that it applies only where it is least needed. It is the instructor or junior professor with young children, having had no chance to save, who finds it hard to pay an insurance premium and sometimes neglects it.

It is not clear to the writer how it was estimated that a fund of five million dollars would provide pensions for the state universities and colleges. The demands on the foundation will depend on whether retirement is mandatory or whether it ordinarily follows only on disablement. At Harvard University there are at present seven professors on the retired list, two widows receive pensions, and the cost to the foundation is $16,305. There are twenty-eight other professors now eligible to receive allowances. Should they be compelled to retire or wish to do so, the total charge of Harvard University on the foundation would be about $75,000.

Even with a stationary number of professors and stationary salaries, there are two circumstances which will add greatly to the cost of the system. One of these is the "age distribution of the population," a factor which the trustees of the foundation may not have considered, as it appears to have been completely overlooked by both advocates and opponents of the old-age pensions in Great Britain. The population of that country, through a high birth rate from 1850 to 1900, has increased greatly since the middle of the last century, and the people form a youthful population. There are probably two to three times as many people over seventy years of age per thousand of the population in France, with its stationary population, as in Great Britain. The British chancellor of the exchequer will be awakened to the apparently unexpected circumstance that the number of those entitled to pensions from the government will be doubled or tripled apart from any increase in population. Similar conditions obtain in our universities which have more than doubled the number of their professors in the course of the past twenty or thirty years. Nearly all those appointed to professorships were young and are now growing old together. In twenty-five years the relative number of professors over sixty-five will probably be doubled or tripled.[2]

The other circumstance that will increase the demands on the funds of the foundation is the pensioning of widows. Professors are nearly or quite as likely as not to leave widows, and the expectation of life of their widows will be nearly or quite as great as their own when eligible for annuities. Thus the cost of the widows' pensions will ultimately be nearly or quite one fourth the cost of the annuities. It is further to be noted that all widows will receive pensions, even though a considerable proportion of those entitled to annuities do not draw them.

It consequently appears that with the same number of professors and the same salaries as at present, Harvard University would after a few years be able to take from the foundation at least $150,000 a year in annuities and at least $35,000 in widows' pensions. How much would actually be taken for annuities would, of course, depend on whether or not retirement were mandatory or generally adopted.

The number of professors will not remain stationary, nor will salaries remain stationary. Harvard has about doubled in size in the past twenty years and quadrupled in size in the past forty years. Even should this rate of growth not continue at Harvard, it will, I believe, be maintained on the average and will be exceeded in the state universities. Harvard and Columbia may in forty years have four

[2] In the faculty of pure science of Columbia University there are fifty-two professors, the ages of forty-seven of whom are given in "American Men of Science." The distribution is:

Age	Number
30–35	4
35–40	8
40–45	12
45–50	9
50–55	9
55–60	1
60–65	3
65–70	0
70–75	1

The median expectation of life of these men is at least twenty-five years, and we may expect that more than one half of the thirty-four now between forty and sixty-five will still be living twenty-five years hence. In the place of one man over sixty-five years of age and eligible to be pensioned for age (there is now none retired on a pension), there will be seventeen.

times as many professors as they now have; Michigan, Illinois, Wisconsin and the other state universities will almost surely have four times as many. It is a modest hope that salaries will increase fifty per cent. The cost in a great university of a pension system such as that of the Carnegie Foundation, if all retire who are eligible, may forty years hence be expected to be in the neighborhood of one million dollars a year. If at that time trust funds bring 3 per cent. interest, it will require $30,000,000 to endow a pension system for a single university; and there will probably be not fewer than twenty such with a hundred others tending to become such.

Forty years hence some two billion dollars may be required to endow completely a centralized pension scheme for North America such as that of the Carnegie Foundation. Nor is this too long to look ahead. Young men of twenty-five, now entering the academic career and accepting smaller salaries in view of a pension at sixty-five, will not be honorably treated should it be withdrawn. Indeed they can possibly recover the pension at law.

The figures given here may seem somewhat appalling; but they are really not so. If pensions are only paid for disability at any period in the lives of university teachers and to their widows and minor orphans—I believe that no other kinds of pensions are desirable—the cost would be much less. It would represent a capital far beyond the possibility of private endowment, but would be a sum not considerable in comparison with the wealth of the country. Twenty times the amount could to advantage be saved each year by a reasonable reduction in the expenditure for alcoholic drinks. The economic gain to the nation and to the world from the research work of university professors far exceeds their salaries and their pensions, even though no account be taken of the value of their teaching or of their contribution to ideal ends. The more scientific men the world supports, the richer will it become, as well as the better. But the nation, the states and the cities must maintain their universities.

J. McKEEN CATTELL

RECENT STEPS IN THE CONSERVATION MOVEMENT

SOON after the assembling of the Sixty-first Congress in extraordinary session, the Senate created a committee on the conservation of our natural resources, comprising Senators Dixon (chairman), Clark, of Wyoming, Beveridge, Dolliver, Dillingham, Heyburn, Dick and Briggs, of the majority, with Senators Guggenheim, Jones, Newlands, Overman, Davis, Bankhead and Smith, of South Carolina, of the minority. Of this committee, Senators Dixon, Newlands, Dolliver, Bankhead, Beveridge and Overman are members of the National Conservation Commission.

While the Rivers and Harbors Act passed by the Sixtieth Congress made but limited appropriations chiefly for continuation of current work, the provisions for surveys affecting new projects was exceptionally, indeed unprecedentedly, liberal; and specific provision was made for a legislative waterways commission, empowered to carry forward the framing of plans for waterway improvement, and for requisite investigations in this and other countries. This commission has now been organized by the Sixty-first Congress; it comprises Senators Burton (chairman), Gallinger (vice-chairman), Piles, Smith, of Michigan, Simmons and Clarke, of Arkansas, with Representatives Alexander, Lorimer, Stevens, Wanger, Sparkman and Moon, of Tennessee. Senator Burton was for a number of years chairman of the Rivers and Harbors Committee, and is chairman of the Section of Waters of the National Conservation Commission, corresponding to the Inland Waterways Commission.

On March 24 the four national engineering societies (American Society of Civil Engineers, American Institute of Mining Engi-