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, NOVEMBER 7, 1902.

CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

*PRINCETON FOR THE NATION'S SERVICE.**

SIX years ago I had the honor of standing in this place to speak of the memories with which Princeton men heartened themselves as they looked back a century and a half to the founding of their college. To-day my task is more delicate, more difficult. Standing here in the light of those older days, we must now assess our present purposes and powers and sketch the creed by which we shall be willing to live in the days to come. We are but men of a single generation in the long life of an institution which shall still be young when we are dead, but while we live her life is in us. What we conceive she conceives. In planning for Princeton, moreover, we are planning for the country. The service of institutions of learning is not private, but public. It is plain what the nation needs as its affairs grow more and more complex and

* Address given by Dr. Woodrow Wilson on the occasion of his installation as president of Princeton University.

its interests begin to touch the ends of the earth. It needs efficient and enlightened men. The universities of the country must take part in supplying them.

American universities serve a free nation whose progress, whose power, whose prosperity, whose happiness, whose integrity depend upon individual initiative and the sound sense and equipment of the rank and file. Their history, moreover, has set them apart to a character and service of their own. They are not mere seminaries of scholars. They never can be. Most of them, the greatest of them and the most distinguished, were first of all great colleges before they became universities; and their task is twofold: the production of a great body of informed and thoughtful men and the production of a small body of trained scholars and investigators. It is one of their functions to take large bodies of young men up to the places of outlook whence the world of thought and affairs is to be viewed; it is another of their functions to take some men, a little more mature, a little more studious, men self-selected by aptitude and industry, into the quiet libraries and laboratories where the close contacts of study are learned which yield the world new insight into the processes of nature, of reason, and of the human spirit. These two functions are not to be performed separately, but side by side, and are to be informed with one spirit, the spirit of enlightenment, a spirit of learning which is neither superficial nor pedantic, which values life more than it values the mere acquisitions of the mind.

Universities, we have learned to think, include within their scope, when complete, schools of law, of medicine, of theology, and of those more recondite mechanic arts, such as the use of electricity, upon which the skilled industry of the modern world is built up; and, though in dwelling upon such an association of schools as of the gist of the matter in our definitions of a university, we are relying upon historical accidents rather than upon essential principles for our conceptions, they are accidents which show the happy order and system with which things often come to pass. Though the university may dispense with professional schools, professional schools may not dispense with the university. Professional schools have nowhere their right atmosphere and association except where they are parts of a university and share its spirit and method. They must love learning as well as professional success in order to have their perfect usefulness. This is not the verdict of the universities merely, but of the professional men themselves, spoken out of hard experience of the facts of business. It was but the other day that the Society for the Promotion of Engineering Education endorsed the opinion of their president, Mr. Eddy, that the crying need of the engineering profession was men whose technical knowledge and proficiency rest upon a broad basis of general culture which should make them free of the wider worlds of learning and experience, which should give them largeness of view, judgment, and easy knowledge of men. The modern world nowhere shows a closeted profession shut in to a narrow round of technical functions to which no knowledge of the outside world need ever penetrate. Whatever our calling, our thoughts must often be afield among men of many kinds, amidst interests as various as the phases of modern life. The managing minds of the world, even the efficient working minds of the world, must be equipped for a mastery whose chief characteristic is adaptability, play, an initiative which transcends the bounds of mere technical training. Technical schools whose training is not built up on the foundations of a broad and general discipline cannot impart this. The stuff they work upon must be prepared for

them by processes which produce fiber and elasticity, and their own methods must be shot through with the impulses of the university.

It is this that makes our age and our task so interesting: this complex interdependence and interrelationship of all the processes which prepare the mind for effectual service: this necessity that the merchant and the financier should have traveled minds, the engineer a knowledge of books and men, the lawyer a wide view of affairs, the physician a familiar acquaintance with the abstract data of science, and that the closeted scholar himself should throw his windows open to the four quarters of the world. Every considerable undertaking has come to be based on knowledge, on thoughtfulness, on the masterful handling of men and facts. The university must stand in the midst, where the roads of thought and knowledge interlace and cross, and, building upon some coign of vantage, command them all.

It has happened that throughout two long generations—long because filled with the industrial and social transformation of the world—the thought of studious men has been bent upon devising methods by which special aptitudes could be developed, detailed investigations carried forward, inquiry at once broadened and deepened to meet the scientific needs of the age, knowledge extended and made various and yet exact by the minute and particular researches of men who devoted all the energies of their minds to a single task. And so we have gained much, though we have also lost much that must be recovered. We have gained immensely in knowledge, but we have lost system. We have acquired an admirable, sober passion for accuracy. Our pulses have been quickened, moreover, by discovery. The world of learning has been transformed. No study has stood still. Scholars have won their fame, not by erudition, but by exploration, the conquest of new territory, the addition of infinite detail to the map of knowledge. And so we have gained a splendid proficiency in investigation. We know the right methods of advanced study. We have made exhaustive record of the questions waiting to be answered, the doubts waiting to be resolved, in every domain of inquiry; thousands of problems once unsolved, apparently insoluble, we have reduced to their elements and settled, and their answers have been added to the commonplaces of knowledge. But, meanwhile, what of the preliminary training of specialists, what of the general foundations of knowledge, what of the general equipment of mind, which all men must have who are to serve this busy, this sophisticated generation?

Probably no one is to blame for the neglect of the general into which we have been led by our eager pursuit of the particular. Every age has lain under the reproach of doing but one thing at a time, of having some one signal object for the sake of which other things were slighted or ignored. But the plain fact is, that we have so spread and diversified the scheme of knowledge in our day that it has lost coherence. We have dropped the threads of system in our teaching. And system begins at the beginning. We must find the common term for college and university; and those who have great colleges at the heart of the universities they are trying to develop are under a special compulsion to find it. Learning is not divided. Its kingdom and government are centered, unitary, single. The processes of instruction which fit a large body of young men to serve their generation with powers released and fit for great tasks ought also to serve as the initial processes by which scholars and investigators are made. They ought to be but the first parts of the method by which the crude force of untrained men is reduced to the

expert uses of civilization. There may come a day when general study will be no part of the function of a university, when it shall have been handed over, as some now talk of handing it over, to the secondary schools, after the German fashion; but that day will not be ours, and I, for one, do not wish to see it come. The masters who guide the youngsters who pursue general studies are very useful neighbors for those who prosecute detailed inquiries and devote themselves to special tasks. No investigator can afford to keep his doors shut against the comradeships of the wide world of letters and of thought.

To have a great body of undergraduates crowding our class rooms and setting the pace of our lives must always be a very wholesome thing. These young fellows, who do not mean to make finished scholars of themselves, but who do mean to learn from their elders, now at the outset of their lives, what the thoughts of the world have been and its processes of progress, in order that they may start with light about them, and not doubt or darkness, learning in the brief span of four years what it would else take them half a lifetime to discover by mere contact with men, must teach us the real destiny with which knowledge came into the world. Its mission is enlightenment and edification, and these young gentlemen shall keep us in mind of this.

The age has hurried us, has shouldered us out of the old ways, has bidden us be moving and look to the cares of a practical generation; and we have suffered ourselves to be a little disconcerted. No doubt we were once pedants. It is a happy thing that the days have gone by when the texts we studied loomed bigger to our view than the human spirit that underlay them. But there are some principles of which we must not let go. We must not lose sight of that fine conception of a general training which led our fathers, in the days when men knew how to build great states, to build great colleges also to sustain them. No man who knows the world has ever supposed that a day would come when every young man would seek a college training. The college is not for the majority who carry forward the common labor of the world, nor even for those who work at the skilled handicrafts which multiply the conveniences and the luxuries of the complex modern life. It is for the minority who plan, who conceive, who superintend, who mediate between group and group and must see the wide stage as a whole. Democratic nations must be served in this wise no less than those whose leaders are chosen by birth and privilege! and the college is no less democratic because it is for those who play a special part. I know that there are men of genius who play these parts of captaincy and yet have never been in the classrooms of a college, whose only school has been the world itself. The world is an excellent school for those who have vision and self-discipline enough to use it. It works in this wise, in part, upon us all. Raw lads are made men of by the mere sweep of their lives through the various school of experience. It is this very sweep of life that we wish to bring to the consciousness of young men by the shorter processes of the college. We have seen the adaptation take place; we have seen crude boys made fit in four years to become men of the world.

Every man who plays a leading or conceiving part in any affair must somehow get this schooling of his spirit, this quickening and adaptation of his perceptions. He must either spread the process through his lifetime and get it by an extraordinary gift of insight and upon his own initiative, or else he must get it by the alchemy of mind practiced in college halls. We ought distinctly to set forth in our philosophy of this matter the difference between a man's

preparation for the specific and definite tasks he is to perform in the world and that general enlargement of spirit and release of powers which he shall need if his task is not to crush and belittle him. When we insist that a certain general education shall precede all special training which is not merely mechanic in its scope and purpose, we mean simply that every mind needs for its highest serviceability a certain preliminary orientation, that it may get its bearings and release its perceptions for a wide and catholic view. We must deal in college with the spirits of men, not with their fortunes. Here, in history and philosophy and literature and science, are the experiences of the world summed up. These are but so many names which we give to the records of what men have done and thought and comprehended. If we be not pedants, if we be able to get at the spirit of the matter, we shall extract from them the edification and enlightenment as of those who have gone the long journey of experience with the race.

There are two ways of preparing a young man for his life work. One is to give him the skill and special knowledge which shall make a good tool, an excellent bread-winning tool, of him; and for thousands of young men that way must be followed. It is a good way. It is honorable, it is indispensable. But it is not for the college, and it never can be. The college should seek to make the men whom it receives something more than excellent servants of a trade or skilled practitioners of a profession. It should give them elasticity of faculty and breadth of vision, so that they shall have a surplus of mind to expend, not upon their profession only, for its liberalization and enlargement, but also upon the broader interests which lie about them, in the spheres in which they are to be, not bread-winners merely, but citizens as well, and in their own hearts, where they are to grow to the stature of real nobility. It is this free capital of mind the world most stands in need of—this free capital that awaits investment in undertakings, spiritual as well as material, which advance the race and help all men to a better life.

And are we to do this great thing by the old discipline of Greek, Latin, mathematics and English? The day has gone by when that is possible. The circle of liberal studies is too much enlarged, the area of general learning is too much extended, to make it any longer possible to make these few things stand for all. Science has opened a new world of learning, as great as the old. The influence of science has broadened and transformed old themes of study and created new, and all the boundaries of knowledge are altered. In the days of our grandfathers all learning was literary, was of the book; the phenomena of nature were brought together under the general terms of an encyclopedic natural philosophy. Now the quiet rooms where once a few students sat agaze before a long table at which, with a little apparatus before him, a lecturer discoursed of the laws of matter and of force are replaced by great laboratories, physical, chemical, biological, in which the pupil's own direct observation and experiment take the place of the conning of mere theory and generalization, and men handle the immediate stuff of which nature is made. Museums of natural history, of geology, of paleontology, stretch themselves amidst our lecture rooms, for demonstration of what we say of the life and structure of the globe. The telescope, the spectroscope, not the text-book merely, are our means of teaching the laws and movements of the sky. An age of science has transmuted speculation into knowledge and doubled the dominion of the mind. Heavens and earth swing together in a new universe of knowledge. And so it is impossible that the old discipline should stand

alone, to serve us as an education. With it alone we should get no introduction into the modern world either of thought or of affairs. The mind of the modern student must be carried through a wide range of studies in which science shall have a place not less distinguished than that accorded literature, philosophy or politics.

But we must observe proportion and remember what it is that we seek. We seek in our general education, not universal knowledge, but the opening up of the mind to a catholic appreciation of the best achievements of men and the best processes of thought since days of thought set in. We seek to apprise young men of what has been settled and made sure of, of the thinking that has been carried through and made an end of. We seek to set them securely forward at the point at which the mind of the race has definitively arrived, and save them the trouble of attempting the journey over again, so that they may know from the outset what relation their own thought and effort bear to what the world has already done. We speak of the 'disciplinary' studies through which a boy is put in his school days and during the period of his introduction into the full privileges of college work, having in our thought the mathematics of arithmetic, elementary algebra, and geometry, the Greek and Latin texts and grammars, the elements of English and of French or German; but a better, truer name for them were to be desired. They are indeed disciplinary. The mind takes fiber, facility, strength, adaptability, certainty of touch, from handling them, when the teacher knows his art and their power. But they are disciplinary only because of their definitiveness and their established method: and they take their determinateness from their age and perfection. It is their age and completeness that render them so serviceable and so suitable for the first processes of education. By their means the boy is informed of the bodies of knowledge which are not experimental, but settled, definitive, fundamental. This is the stock upon which time out of mind all the thoughtful world has traded. These have been food of the mind for long generations.

It is in this view of the matter that we get an explanation of the fact that the classical languages of antiquity afford better discipline and are a more indispensable means of culture than any language of our own day except the language, the intimate language, of our own thought, which is for us universal coin of exchange in the intellectual world, and must have its values determined to a nicety before we pay it out. No modern language is definite, classically made up. Modern tongues, moreover, carry the modern babel of voices. The thoughts they utter fluctuate and change; the phrases they speak alter and are dissolved with every change of current in modern thought or impulse. They have, first or last, had the same saturations of thought that our own language has had; they carry the same atmosphere; in traversing their pleasant territory, we see only different phases of our own familiar world, the world of our own experience; and, valuable as it is to have this various view of the world we live in and send our minds upon their travels up and down the modern age, it is not fundamental, it is not an indispensable first process of training. It can be postponed. The classical literatures give us, in tones and with an authentic accent we can nowhere else hear, the thoughts of an age we cannot visit. They contain airs of a time not our own, unlike our own, and yet its foster parent. To these things was the modern thinking world first bred. In them speaks a time naïve, pagan, an early morning day when men looked upon the earth while it was fresh, untrodden by

crowding thought, an age when the mind moved as it were without prepossessions and with an unsophisticated, child-like curiosity, a season apart during which those seats upon the Mediterranean seem the first seats of thoughtful men. We shall not anywhere else get a substitute for it. The modern mind has been built upon that culture and there is no authentic equivalent.

Drill in the mathematics stands in the same category with familiar knowledge of the thought and speech of classical antiquity, because in them also we get the life-long accepted discipline of the race, the processes of pure reasoning which lie at once at the basis of science and at the basis of philosophy, grounded upon observation and physical fact, and yet abstract, and of the very stuff of the essential processes of the mind, a bridge between reason and nature. Here, too, as in the classics, is a definitive body of knowledge and of reason, a discipline which has been made test of through long generations, a method of thought which has in all ages steadied, perfected, enlarged, strengthened and given precision to the powers of the mind. Mathematical drill is an introduction of the boy's mind to the most definitely settled rational experiences of the world.

I shall attempt no proof that English also is of the fundamental group of studies. You will not require me to argue that no man has been made free of the world of thought who does not know the literature, the idiomatic flavor and the masterful use of his own tongue.

But, if we cannot doubt that these great studies are fundamental, neither can we doubt that the circle of fundamental studies has widened in our day and that education, even general education, has been extended to new boundaries. And that chiefly because science has had its credentials accepted as of the true patriciate of learning. It is as necessary that the lad should be inducted into the thinking of the modern time as it is that he should be carefully grounded in the old, accepted thought which has stood test from age to age; and the thought of the modern time is based upon science. It is only a question of choice in a vast field. Special developments of science, the parts which lie in controversy, the parts which are as yet but half built up by experiment and hypothesis, do not constitute the proper subject matter of general education. For that you need, in the field of science as in every other field, the bodies of knowledge which are most definitively determined and which are most fundamental. Undoubtedly the fundamental sciences are physics, chemistry and biology. Physics and chemistry afford a systematic body of knowledge as abundant for instruction, as definitive almost, as mathematics itself; and biology, young as it is, has already supplied us with a scheme of physical life which lifts its study to the place of a distinctive discipline. These great bodies of knowledge claim their place at the foundation of liberal training, not merely for our information, but because they afford us direct introduction into the most essential analytical and rational processes of scientific study, impart penetration, precision, candor, openness of mind, and afford the close contacts of concrete thinking. And there stand alongside of these geology and astronomy, whose part in general culture, aside from their connection with physics, mechanics and chemistry, is to apply to the mind the stimulation which comes from being brought into the presence and in some sort into the comprehension of stupendous, systematized physical fact—from seeing nature in the mass and system of her might and structure. These, too, are essential parts of the wide scheme which the college must plot out. And when we have added to these the manifold discipline

of philosophy, the indispensable instructions of history, and the enlightenments of economic and political study, and to these the modern languages which are the tools of scholarship, we stand confused. How are we to marshal this host of studies within a common plan which shall not put the pupil out of breath?

No doubt we must make choice among them, and suffer the pupil himself to make choice. But the choice that we make must be the chief choice, the choice the pupil makes the subordinate choice. Since he cannot in the time at his disposal go the grand tour of accepted modern knowledge, we, who have studied the geography of learning and who have observed several generations of men attempt the journey, must instruct him how in a brief space he may see most of the world, and he must choose only which one of several tours that we may map out he will take. Else there is no difference between young men and old, between the novice and the man of experience, in fundamental matters of choice. We must supply the synthesis and must see to it that, whatever group of studies the student selects, it shall at least represent the round whole, contain all the elements of modern knowledge, and be itself a complete circle of general subjects. Princeton can never have any uncertainty of view on that point.

And that not only because we conceive it to be our business to give a general, liberalizing, enlightening training to men who do not mean to go on to any special work by which they make men of science or scholars of themselves or skilled practitioners of a learned profession, but also because we would create a right atmosphere for special study. Critics of education have recently given themselves great concern about over-specialization. The only specialists about whom, I think, the thoughtful critic of education need give himself any serious concern are the specialists who have never had any general education in which to give their special studies wide rootage and nourishment. The true American university seems to me to get its best characteristic, its surest guarantee of sane and catholic learning, from the presence at its very heart of a college of liberal arts. Its vital union with the college gives it, it seems to me, the true university atmosphere, a pervading sense of the unity and unbroken circle of learning—not so much because of the presence of a great body of undergraduates in search of general training (because until these youngsters get what they seek they create ideals more by their lack than by their achievement), as because of the presence of a great body of teachers whose life-work it is to find the general outlooks of knowledge and give vision of them every day from quiet rooms which, while they talk, shall seem to command all the prospects of the wide world.

I should dread to see those who guide special study and research altogether excused from undergraduate instruction, should dread to see them withdraw themselves altogether from the broad and general survey of the subjects of which they have sought to make themselves masters. I should equally despair of seeing any student made a truly serviceable specialist who had not turned to his specialty in the spirit of a broad and catholic learning—unless, indeed, he were one of those rare spirits who once and again appear amongst us, whose peculiar, individual privilege it is to have safe vision of but a little segment of truth and yet keep their poise and reason. It is not the education that concentrates that is to be dreaded, but the education that narrows—that is narrow from the first. I should wish to see every student made, not a man of his task, but a man of the world, whatever his world may be. If it be the world of learning, then he should be a

conscious and a broad-minded citizen of it. If it be the world of letters, his thought should run free upon the whole field of it. If it be the world of affairs, he should move amidst affairs like a man of thought. What we seek in education is a full liberation of the faculties, and the man who has not some surplus of thought and energy to expend outside the narrow circle of his own task and interest is a dwarfed, uneducated man. We judge the range and excellence of every man's abilities by their play outside the task by which he earns his livelihood. Does he merely work, or does he also look abroad and plan? Does he, at the least, enlarge the thing he handles? No task, rightly done, is truly private. It is part of the world's work. The subtle and yet universal connections of things are what the truly educated man, be he man of science, man of letters, or statesman, must keep always in his thought, if he would fit his work to the work of the world. His adjustment is as important as his energy.

We mean, so soon as our generous friends have arranged their private finances in such a way as to enable them to release for our use enough money for the purpose, to build a notable graduate college. I say 'build' because it will be not only a body of teachers and students, but also a college of residence, where men shall live together in the close and wholesome comradeships of learning. We shall build it, not apart, but as nearly as may be at the very heart, the geographical heart, of the university; and its comradeships shall be for young men and old, for the novice as well as for the graduate. It will constitute but a single term in the scheme of coordination which is our ideal. The windows of the graduate college must open straight upon the walks and quadrangles and lecture halls of the *studium generale*.

In our attempt to escape the pedantry and narrowness of the old fixed curriculum we have, no doubt, gone so far as to be in danger of losing the old ideals. Our utilitarianism has carried us so far afield that we are in a fair way to forget the real utilities of the mind. No doubt the old, purely literary training made too much of the development of mere taste, mere delicacy of perception, but our modern training makes too little. We pity the young child who, ere its physical life has come to maturity, is put to some task which will dwarf and narrow it into a mere mechanic tool. We know that it needs first its free years in the sunlight and fresh air, its irresponsible youth. And yet we do not hesitate to deny to the young mind its irresponsible years of mere development in the free air of general studies. We have too ignorantly served the spirit of the age —have made no bold and sanguine attempt to instruct and lead it. Its call is for efficiency, but not for narrow, purblind efficiency. Surely no other age ever had tasks which made so shrewdly for the testing of the general powers of the mind. No sort of knowledge, no sort of training of the perceptions and the facility of the mind could come amiss to the modern man of affairs or the modern student. A general awakening of the faculties, and then a close and careful adaptation to some special task, is the program of mere prudence for every man who would succeed.

And there are other things besides mere material success with which we must supply our generation. It must be supplied with men who care more for principles than for money, for the right adjustments of life than for the gross accumulations of profit. The problems that call for sober thoughtfulness and mere devotion are as pressing as those which call for practical efficiency. We are here not merely to release the faculties of men for their own use, but also to quicken their social understanding, instruct

their consciences, and give them the catholic vision of those who know their just relations to their fellow men. Here in America, for every man touched with nobility, for every man touched with the spirit of our institutions, social service is the high law of duty, and every American university must square its standards by that law or lack its national title. It is serving the nation to give men the enlightenments of a general training; it is serving the nation to equip fit men for thorough scientific investigation and for the tasks of exact scholarship, for science and scholarship carry the truth forward from generation to generation and give the certain touch of knowledge to the processes of life. But the whole service demanded is not rendered until something is added to the mere training of the undergraduate and the mere equipment of the investigator, something ideal and of the very spirit of all action. The final synthesis of learning is in philosophy. You shall most clearly judge the spirit of a university if you judge it by the philosophy it teaches; and the philosophy of conduct is what every wise man should wish to derive from his knowledge of the thoughts and the affairs of the generations that have gone before him. We are not put into this world to sit still and know; we are put into it to act.

It is true that in order to learn men must for a little while withdraw from action, must seek some quiet place of remove from the bustle of affairs, where their thoughts may run clear and tranquil, and the heats of business be for the time put off; but that cloistered refuge is no place to dream in. It is a place for the first conspectus of the mind, for a thoughtful poring upon the map of life; and the boundaries which should emerge to the mind's eye are not more the intellectual than the moral boundaries of thought and action. I do not see how any university can afford such an outlook if its teachings be not informed with the spirit of religion, and that the religion of Christ, and with the energy of a positive faith. The argument for efficiency in education can have no permanent validity if the efficiency sought be not moral as well as intellectual. The ages of strong and definite moral impulse have been the ages of achievement; and the moral impulses which have lifted highest have come from Christian peoples—the moving history of our own nation were proof enough of that. Moral efficiency is, in the last analysis, the fundamental argument for liberal culture. A merely literary education, got out of books and old literature, is a poor thing enough if the teacher stick at grammatical and syntactical drill; but if it be indeed an introduction into the thoughtful labors of men of all generations it may be made the prologue to the mind's emancipation: its emancipation from narrowness—from narrowness of sympathy, of perception, of motive, of purpose and of hope. And the deep fountains of Christian teaching are its most refreshing springs.

I have said already, let me say again, that in such a place as this we have charge, not of men's fortunes, but of their spirits. This is not the place in which to teach men their specific tasks—except their tasks be those of scholarship and investigation; it is the place in which to teach them the relations which all tasks bear to the work of the world. Some men there are who are condemned to learn only the technical skill by which they are to live; but these are not the men whose privilege it is to come to a university. University men ought to hold themselves bound to walk the upper roads of usefulness which run along the ridges and command views of the general fields of life. This is why I believe general training, with no particular occupation in view, to be the very heart and essence of university training, and the indispensable founda-

tion of every special development of knowledge or of aptitude that is to lift a man to his profession or a scholar to his function of investigation.

I have studied the history of America; I have seen her grow great in the paths of liberty and of progress by following after great ideals. Every concrete thing that she has done has seemed to rise out of some abstract principle, some vision of the mind. Her greatest victories have been the victories of peace and of humanity. And in days quiet and troubled alike Princeton has stood for the nation's service, to produce men and patriots. Her national tradition began with John Witherspoon, the master, and James Madison, the pupil, and has not been broken until this day. I do not know what the friends of this sound and tested foundation may have in store to build upon it; but whatever they add shall be added in that spirit, and with that conception of duty. There is no better way to build up learning and increase power. A new age is before us, in which, it would seem, we must lead the world. No doubt we shall set it an example unprecedented not only in the magnitude and telling perfection of our industries and arts, but also in the splendid scale and studied detail of our university establishments: the spirit of the age will lift us to every great enterprise. But the ancient spirit of sound learning will also rule us; we shall demonstrate in our lecture rooms again and again, with increasing volume of proof, the old principles that have made us free and great; reading men shall read here the chastened thoughts that have kept us young and shall make us pure; the school of learning shall be the school of memory and of ideal hope; and the men who spring from our loins shall take their lineage from the founders of the republic.

WOODROW WILSON.

THE CARNEGIE INSTITUTION.

THE trustees of the Carnegie Institution obviously have an exceedingly difficult task on their hands. The difficulty is not so much due to the magnitude of the endowment as to the uniqueness of what they have to do. They are launched in very imperfectly charted waters where there are many hidden dangers, and they will have to drive their ship forward much of the time under a slow bell and probably will have to reverse her engines occasionally. But this method of navigating will meet the approval of a great majority of the scientific men of the country, just because they will recognize the conditions under which it is being done and will see it to be the best method.

The trustees would be justified in putting a plank into their policy to the effect that *nothing shall be undertaken, for some years at least, that cannot be easily changed or even given up should the course of events make it best to do so.* In fact I imagine that about this policy is tacitly expected by most scientific men. For example, I suspect my own surprise at the announcement that the institution had acquired the Woods Holl Laboratory and had pledged itself to erect an expensive building and spend $20,000 a year in running it was rather widely shared by those like myself who are keenly interested onlookers.

This remark is not at all intended as a criticism, for although it is difficult to see from the distance of California how the move could have been the wisest that might have been made, yet I do not doubt that, seen from within, there were good and sufficient reasons for making it. My only point is that the announcement surprised me because I had not supposed it would be the policy of the institution, at the outset of its career at any rate, to do that sort of thing.