

THE
BENEFICENCE OF SCIENCE.

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BY

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THE BENEFICENCE OF SCIENCE.

YOUR EXCELLENCY,
HONORABLE REGENTS,
GENTLEMEN OF THE FACULTY,
ALUMNI,
LADIES AND GENTLEMEN :

Some master mind is to give the world a simple, explicit, and comprehensive definition of civilization. Such definition is not to be found in your lexicons nor in your cyclopædias. Neither Guizot nor Buckle has compassed the task. What civilization is in its essence, in its attributes, in its standards of judgment, are questions yet to be settled. In many things the civilizations of the past have not been excelled. In the rhythm of their poetry, in the brilliancy of their rhetoric, in the subtleties of their logic, in the profundity of their philosophy, in the magnificence of their oratory, they stand unrivaled. We are the students of the illustrious past. Doubtless in some form or other all the sciences of the present time existed in former ages. But it seems to me that the distinction between the civilizations of the past and that of the present, is the practical application of science to relieve man from his distresses, and to anticipate an ultimate humanity, wherein concord shall take the place of discord; wherein modesty and justice shall take the place of insolence and wrong; wherein intelligence, virtue, and happiness shall take the place of ignorance, vice, and wretchedness. Such a beneficent application of scientific discovery was unknown to the past. Pythagoras at Crotona, Plato on the promontory of Sunium, Cicero in his Tusculan villa, thought it unworthy to seek the supply of man's vulgar wants. Astronomy is older than the pyramids, but the astronomers of the best civilizations of the past considered it a degradation to apply the science of the stars to the common

wants of man. They pursued the study of the heavenly bodies for the brilliancy of the thoughts suggested, and for the vastness of the universe it unfolded to the mind. Mathematics were esteemed useful for their mental discipline and for a certain spirituality they imparted. But they were not to be applied to those useful inventions which lift the burden of toil from the shoulders of humanity. Plato remonstrated with his friend Archytas, because he had framed machines for useful purposes on mathematical principles, and Archimedes was half-ashamed of those inventions which were the wonder and admiration of the foes of his country. The ancients regarded alphabetical writing as injurious to the mind, enfeebling the understanding and contracting the memory. The chief object of statesmanship was to make men virtuous; an impossibility; and the holy art of healing was restricted to cases of occasional diseases where the constitution was vigorous, while it was considered to be a prolonged death to employ medical skill in cases of chronic disorders, and for the benefit of those who were declared incurable. It was reserved for us to change all this conception of the mission of science, and to declare that its highest purpose is the welfare of man in his triune nature, lifting him up even to the mastery of Nature herself. There can be no doubt that certain forms of science should be cultivated for the intellectual pleasure they afford, and not mental discipline and elevation. Yet it is not too much to say that the most abstract and obtruse science has a remote bearing upon the well being of man. The chief mission of the scholar is to subordinate his knowledge to the elevation of our race, and where this is not accomplished, he is largely a failure, and his system useless.

The crowning feature of our civilization is the subserviency of all discoveries and inventions; to lift man from the servitude of a slave to the principedom of intelligence and virtue. The astronomers of to-day compel the stars to be our chronometer, telling the sons of toil when to labor and when to rest, the farmer when to sow and when to reap, guiding the mariner over pathless oceans, and the traveller through trackless deserts and mountain fastnesses. Mathematics are applied for the ben-

efit of man in the creation of those labor-saving machines which relieve him from the servitude of the past, and which open to him a better intellectual and moral future. With us alphabetical writing is as a storehouse of knowledge, the means of transmitting to posterity the discoveries and acquisitions in every department of science. While our statesmanship does not aim to make men virtuous, it seeks the protection of the innocent, the punishment of the vicious, and, by a wise political economy, the improvement of society. Our science of medicine, not only grapples with occasional diseases incident to a vigorous constitution, but with chronic disorders, and essays the treatment of incurable diseases. The gentlemen of the medical profession are to-day performing wonders which a millennium ago would have been regarded as miracles. They open the eyes of the blind, they give hearing to the deaf, speech to the dumb; they restore the paralytic, they have re-enthroned reason in the shattered mind of the lunatic; their surgical operations are simply marvellous; they have extended longevity, and have increased the totality of our race since 1862, by a better hygiene, at the rate of a million a year.

If this be the chief mission of the scholar, who shall prophecy as to the possibilities of science? Science has taught the needle to sew, the sun to be an artist, electricity to do the work of an artisan; it has transformed the world into a neighborhood, so that Peking is nearer to us than was Rome to Jerusalem in the days of Cæsar Augustus. Science has transformed ocean and earth into a whispering gallery; science delves in our mines, plows our fields, sows our grain, reaps our harvests; it multiplies human wants to multiply human comforts; it has improved our dwellings, our apparel, and food; and it is not possible for the most brilliant imagination to anticipate what may be its attainments in the future. If science has accomplished all this within two hundred and fifty years, what may we not expect as the more beneficent results in the years to come? We laugh at those who lived fifty years ago; those who live fifty years hence will laugh at us: and so the laugh will go down through all the ages. The university of to-day will be recalled by the future as a first-class

academy, and those who are now esteemed as original thinkers, will be estimated as first-class juniors. It is a great fact, ladies and gentlemen, that the imperial minds in the republic of letters have anticipated an ultimate humanity — intelligent, virtuous, noble — as the result of the beneficence of science. It was Francis Bacon, in his *Advancement of Learning*, who created in his brilliant imagination an *Atlantis*, which is being realized to-day. Bacon's understanding was like the tent in story: "Fold it, and it was a toy in the hand of a lady; spread it, and the mighty armies of the Sultan could repose beneath its ample shade." He suggested the possibility that man could be delivered from his present weaknesses and become the master of all natural forces, and that these forces were to subserve his highest good. Macaulay thus sums up the results of Bacon's philosophy:

"The philosophy of Bacon has lengthened life; it has mitigated pain; it has extinguished diseases; it has increased the fertility of the soil; it has given new securities to the mariner; it has furnished new arms to the warrior; it has spanned great rivers and estuaries with bridges of form unknown to our fathers; it has guided the thunderbolt innocently from heaven to earth; it has lighted up the night into the splendor of the day; it has extended the range of the human vision; it has multiplied the power of human muscle; it has accelerated motion; it has annihilated distance; it has facilitated intercourse, correspondence, all friendly offices, all dispatch of business; it has enabled man to descend to the depths of the sea, to soar into the air, to penetrate the noxious recesses of the earth, to traverse the land in cars, which whirl along without horses, and the ocean in ships which sail against the wind. These are but a part of its fruits and of its first fruits; for it is a philosophy which never rests, which is never contented, which is never perfect. Its law is progress. A point which yesterday was invisible, is its goal to-day, and will be its starting point to-morrow."

If all this, gentlemen, has been realized within two hundred and fifty years, to speak accurately, two hundred and fifty-five years, what may we not anticipate for centuries to come? Leibnitz, perhaps the greatest of human intelligencies,—Leibnitz, the jurist, the naturalist, the theologian, the metaphysician, the mathematician, he who seemed to compass all knowledge,—it was Leibnitz who, after careful analysis and comparison, suggested the thought that man seems able to arrive at perfection. He

beheld humanity in distant perspective, reaching heights of happiness which challenge our faith. He asserted the marvellous truth that all things approach God. He dreamed of a universal language for this our babbling world, and a universal peace, when the rights of mankind would be recognized by the nations of the earth. Like a vision of ineffable beauty, a similar thought dawned upon the tender and eloquent spirit of Pascal. It was Pascal who took a step in advance of Bacon and Leibnitz, and asserted the great truth, that mankind is as one man living always and learning continually. He did not ignore the fact that humanity advances to a better future through great historical epochs and mighty revolutions ; like some impeded river, which calls upon all its tributaries until the barrier is swept away and it flows on unvexed to the sea. So our race is compelled to struggle. But the advancement is like the in-coming tide ; the undertow may leave bare the shore and carry with it all within its power, yet each succeeding wave mounts a little higher and leaves its mark upon the strand. Empires rise and fall, generations succeed generations, progressions and retrocessions make up the complement of the life of a nation ; yet in these changes nothing is lost, the coin of the past is reminted and comes forth bearing the image and superscription of a better future ; the acorn that falls from the forest oak contains the possibilities of the larger forest ; and dissatisfaction, like an invisible power, seizes an advancing people, and the social fabric, like a potter's vessel, is broken into a thousand fragments ; but out of the old comes the new. Ideas are imperishable. All the acquisitions of philosophy of religion, of statesmanship reappear in some form or other. It was Cuvier's magnificent assertion in his "Process of History," that "the physical good which one does to his fellow-men, however great it may be, is always transitory ; but the truths which one leaves behind are *eternal*. A century earlier Vico, of Naples, deservedly called the creator of the philosophy of history, gave to the world his mighty work, entitled the "Principles of a New Science Concerning the Common Nature of Nations," wherein he sought to prove that great historical events are determined not by chance, nor by the capriciousness of man, but by the immutable laws of

God, which lead on to progress through vast periods of time. I submit to you, gentlemen, if the expression "Common Nature of Nations" should not be classed among the original discoveries of science. History sustains Vico's marvellous assertion.

The mental scepter was once swayed by the descendants of Ham in Tyre and Sidon and in Egypt. It was once swayed by the descendants of Shem when Bagdad was the "Abode of Peace;" the city of a "thousand and one nights" was the center of science and art at a time when Europe was groping in darkness. The scepter to-day is held by the descendants of Japheth, who give direction to the thought of the world. What is most important for us to remember is, that each great division of humanity has given evidence of capability. It was Turgot who said that "The primitive faculties of man act equally with the barbarians and with the civilized nations; they are truly the same in all places and at all times." So that in this dream of ultimate humanity, from the beneficence of science we should lift ourselves above the selfishness of our own branch of the human race, and in our philanthropy embrace the world. But our highest intellectual development would be imperfect were it not for Turgot's other assertion, that "The laws of progress are applicable to man's moral nature." This French diplomatist and beloved minister of Louis XVI, this humble Christian, rises to the lofty conception that not only is man's moral nature part and parcel of the order and constitution of nature, but that it must be developed in order to secure permanence for the beneficence of science.

As the climax of all these lofty prophecies from men whose opinions are worth trusting, it was Thomas Jefferson—just fifty years after the death of Leibnitz, who died in 1716, and just two hundred and fifty-five years after the death of Bacon, who died in 1626—who formulated the "Declaration of Human Rights," whereby he prepared the way for the formation of a constitution under which all these anticipations might be realized. I detract nothing from the civilizations of Europe nor from the governments of the old world when I say, that at the time of Jefferson there was no form of government in Europe that was adapted to the full development of the threefold nature of man. I do not

misrepresent the civilization of Europe when I say, that at the present time our form of government is best adapted to this noble purpose. And it seems to me to be the culmination of all the anticipations of former days that here should be prepared such a form of government as to render the beneficence of science a possibility, and that in the largest degree. Our national home is within the belt of power; within that magical zone extending from the thirtieth to the sixtieth parallels of north latitude, wherein have dwelt, and wherein do dwell all those mighty nations which have given direction to human thought; we have declared the ultimate truth of human rights; we have exhausted the right of revolution, and the war of independence should have been the last war for the liberties of mankind.

The United States therefore should be the liberal patron not only of primary education, but of original discovery, and some States have realized their duty in this regard; as Illinois, Wisconsin, Indiana, New York, Michigan; nor is it too much to say that Ann Arbor is the pride of your noble State, and that this University is more to you than splendid mausoleums or stately columns. I trust the day will come when the general government will establish in the city of Washington a national university for original thinkers and original discoverers, who shall be relieved from all anxiety as to what they shall eat, and what they shall drink, and wherewithal they shall be clothed; from whose door the wolf shall be kept forever; who shall be sons of the Republic, consecrating themselves to ascertain what are the hidden capacities of nature, and how all phenomena may be commanded to subserve the well being of man. Fortunately, to-day we have a college man in the presidential chair, and gentlemen of the Faculty, there is some hope for you, and Ann Arbor may yet be represented there. The coming man to be crowned with glory is not the warrior nor the statesman, but the scholar, who will receive a triumph grander than that accorded to Aurelian when returning from the East with Zenobia in the train of his captives; grander than that accorded to Napoleon when returning victorious from Austerlitz; grander than that accorded to Wellington when returning victorious from

Waterloo ; and the day must come and by the very force of the action of these gentlemen of science, when your Alexanders and your Cæsars will be looked upon as the great monsters of a past geological era, and when only the man who has drawn his sword in defense of human rights shall be honored by his country. Of the scholar's fame poets will sing, his glory historians will record ; his form will be cast in bronze, sculptured in marble, painted on canvas,—the work of the master artist !

How grand is the mission of the scholar : he is to study nature ; to command it. Gentlemen, it is said that Nature is unfriendly ; that it is malignant. It is the old Magian idea that matter is eternal, that in matter there inheres evil, and that matter cannot be subjected by any known power in the universe. John Stuart Mill has written the most fearful indictment against nature in our own language or any other in the world. He reminds us that nature sweeps on apparently regardless of moral character ; he points us to a "Storm that destroys the hopes of a season ; to the army of caterpillars which make desolate a vast section ; to the fire-damp which in its results is more terrible than a park of artillery ; to the destructive effects of an inundation ; to a slight chemical change in an edible root by which millions are starved ; to the deathly march of epidemics ; to the wild waves which like *banditti* destroy the wealth of the rich and the little all of the poor ; to a reign of terror more terrible than that which reddened the streets of Paris with human blood." And he assumes that all this is proof that the Creator is not infinitely good, or that He is not omnipotent. But Mr. Mill has overlooked the fact that the perfection of nature is that of capacity and not of development. Nature is not malignant nor even unfriendly. Her capacity for good is inexhaustible. No one has risen to eminence in any department of life,—in art, in science, in statesmanship, who has not done so under the operation of this law of development. And it may yet appear that while the Almighty is omnipotent, yet in His infinite wisdom He saw fit to construct a system of nature thus ; and it may be that the highest work of each scholar is to ascertain not only how he can develop, but also how he can counterwork nature, how he can overcome one force by the appli-

cation of a superior force. In the primal chart it is recorded : “God blessed Noah and his sons, and said unto them, Be fruitful and multiply and replenish the earth, and subdue it and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.”

If I understand the miracles of Christ, they were not the suspension nor the reversal of natural law, but the exercise of a superior wisdom,—a power whereby He counterworked nature. He thereby declared that all natural phenomena were subject to a superior power. He touched nature on every side, and nature responded ; He spoke to the winds, and they obeyed ; He commanded the waves, and they were still ; He touched the diseased, and they were healed ; He spake, and the sheeted dead came forth.

“The modest water awed by power divine,
Confessed its God and blushing—turned to wine.”

It may be, gentlemen, the time will come when you will esteem the Prophet of Nazareth the Prince of philosophers, and that all future advancements will be but an ascension to that pinnacle of glory and power whereon He stood two thousand years ago. What He did it is possible for man to do. “He that believeth in me the things which I do shall he do also, and greater works than these shall he do, because I go unto my Father.” He anticipated the mastery of nature by man. And what the scientist and the inventors of to-day are doing, excite our admiration because they counterwork nature, and thereby achieve lofty triumphs. It is not that nature is unfriendly, but she awaits our coming to employ her hidden forces for human elevation. You should command the wind and the waves ; you should cure all forms of disease ; you should suspend the summons of death itself—all things are possible to him that believeth. By you ignorance should be dissipated and poverty exiled ; toil and suffering banished forever from our earth. Gentlemen, you are to be the Mentors of the statesman in his political economy, to create foreign markets to advance home industries, to develop a nation’s resources ; you are to be the Mentors of the farmer, as to when he shall sow and when he shall reap ; you are to be the Mentors of the merchant, guiding him to

new marts of commerce, preparing for him the means of rapid transportation, and opening to him all islands and continents. It is true that in all this you may be the millionaires in intellect and the others the millionaires in finance; but then you shall have the satisfaction, that he who is the millionaire in intellect is better than the millionaire in finance. Nor do I hesitate to say, that you are to be the Mentors of the minister, to aid him to unfold the glories of the Lord, to show him how the heavens declare the glory of God, and the firmament sheweth His handiwork; how day unto day uttereth speech, and night unto night sheweth knowledge;” you are to furnish the Butlers, and the Paleys, and the Macaulays, with arguments to answer the objections from pseudo science against divine Christianity; you are to prepare the means for the universal promulgation of that religion which we hold divine. It is not humiliating to recognize the indebtedness of the church to the scholar for all these advantages; the recognition is cheerful, calm, intelligent.

But, gentlemen of the University, there is one thing that you cannot do—you cannot suppress vice and develop virtue. The heart is the mightiest factor in the universe. Human nature is bad in principle and base in practice. The power to correct that moral evil is not in man nor of man, but outside of man, higher than man—high as God. Morals do not keep pace with intelligence, there may be a princely intellect and a beggarly heart associated with the same man. It was Bacon who said, “In knowledge without love, there is somewhat of malignity;” it was Coleridge who said, “All the mere products of the understanding tend to death;” it was St. Paul who said, “Knowledge puffeth up.” The history of the world is in proof that there is no purifying element in high intellectual culture, nor in the highest forms of art. In his “Two Paths,” Ruskin calls to our attention three sad and astounding facts: *First*, Nations renowned for their excellencies in the fine arts have been subdued by barbarians; as the Lydians by the Medes, the Athenians by the Spartans, the Greeks by the Romans, and the Romans by the Goths. *Secondly*, That the period of perfect arts is the period of decline. At the moment a perfect picture appeared in Athens, a perfect

statue in Florence, a perfect fresco in Rome—from that hour forward, probity, industry and courage were exiled from their walls. *Thirdly.* That art has displayed its most energetic manifestations in the service of superstition, of falsehood and vice, as illustrated in the history of Egypt, Babylonia, Greece, Rome, and Italy. And art has not only been most active in the service of luxury and idolatry, but in the exaltation of cruelty. A peaceful, pastoral people, living in sobriety and innocence, never decorate the shepherd's staff and plow-handle; but races who live by depredation and slaughter, exquisitely ornament the quiver, the spear and the helmet, and have the grandest temples wherein are the trophies of war; and out of the cottage come faith, courage, self-sacrifice, purity and piety, but out of the palace come treachery, cruelty, cowardice, idolatry and bestiality.

Did high art or superior culture secure virtue to the Athenians in their golden age? Draw me a full length portraiture of some barbarous Hottentot, depict in his countenance all the lasciviousness and brutality of his nature, and I will show you his moral counterpart among the foremost men of Athens in the days of Pericles, of Rome in the time of Cicero, of France in the reign of Louis XVI., of England in the reign of the Georges, of America in the days of Webster. How eloquent the description of Lord Macaulay as to the high culture of the Athenians in the palmy days of Attica, when the marble breathed under the chisel of Phidias, when the birds came and pecked at the grapes which Zeuxis painted, when immorality prevailed.

“In general intelligence, the Athenian populace far surpass the lower orders in any community that has ever existed. It must be considered that to be a citizen was to be a legislator—a soldier—a judge, one upon whose voice might depend the fate of the wealthiest tributary state, or the most eminent public men. The lowest offices, both of agriculture and trade, were, in common performed by slaves. The commonwealth supplied its meanest members with the support of life, the opportunity of leisure, and the means of amusement. Books were indeed few, but they were excellent, and they were accurately known. It is not by turning open libraries, but by repeatedly perusing and intently contemplating a few great models that the mind is best disciplined. Books, however, were the least part of the education of an Athenian citizen. Let us for a moment transport ourselves in thought to that glorious city. Let us imagine that

we are entering its gates in the time of its greatest power and glory. A crowd is assembled around a portico. All are gazing with delight at the entablature, for Phidias is putting up the frieze. We turn into another street. A rhapsodist is reciting there; many women and children are thronging around him; the tears are running down their cheeks, their eyes are fixed, their very breath is still, for he is telling how Priam fell at the feet of Achilles and kissed those hands—the terrible, the murderous—which had slain so many of his sons. We enter the public place. There is a ring of youths, all leaning forward with sparkling eyes and gestures of expectation. Socrates is pitted against the famous atheist from Ionia, and has just brought him to a contradiction in terms. But we are interrupted. The herald is crying ‘Room for the Prytanes.’ The general assembly is to meet. The people are swarming in on every side. The proclamation is made. ‘Who wishes to speak?’ Pericles is mounting the stand. Then for a play of Sophocles, and away to sup with Aspasia. I know of no modern university that has so excellent a system of education.” But where is ancient Greece to-day?

And yet, gentlemen, intellectual culture with all its benefits did not give immortality to Greece. Vice conquered, and ruin followed in her train. There is in Washington a picture before which the great men of the nation stand in solemn awe. It is the portrait of a son of genius born to greatness, one whose ancestors were honorable through two generations. He was famous in his university. He was not only at the head of his class, but when his classmates were plodding through their Xenophon, he was reading the Greek Tragedies *con amore*. On the day of his graduation he demanded and received two degrees. He was as familiar with his Euclid, Laplace, and Newton as some to-day with the multiplication table. His person was faultless; it was the realization of Apollo Belvedere. His locks were like the raven’s wing. His eye was like the eagle’s. On the night of the day of his graduation he led to the altar one of New England’s fairest daughters. Their happiness lay like an ocean of pearls and diamonds in the embrace of the future. Hope sat like a bird of auspicious omen high in the green leaves of fancy, and poured into their hearts the sweet harmonies of a terrestrial elysium. He was to be Attorney-General. He appeared in the Supreme Court of the United States. Chief Justice Marshall listened with awe and admiration to the majesty and might of his

forensic eloquence. But did high intellectual culture save this splendid advocate, this second Alcibiades, from a vicious life and an inglorious death? Hé was conquered by a depraved heart. Let us therefore to-day reverently bow at the shrine of the genius of religion. Let us look to Him whose chief mission in the world was to reform society by first reforming the heart. And I do not hesitate to say in a presence so learned as this, that that scholar commits a crime against science, a crime against my conscience, a crime against my religious destiny, who disturbs my intelligent faith in a *personal God*—in Him who is “God over all and blessed forevermore.”

But I must relieve your patience. I have given you but an outline of this thought that looms up like the vision of a prophet, and renders rosier the skies of the coming future. One thing, it seems to me is apparent to all, that science and religion should advance together, one lifting up man to the mastery of nature, imparting to him the highest culture; and the other sitting enthroned in the heart, controlling the passions, the appetites, the conscience, adoring the Creator and accepting the Savior. Let this be done, and science and religion shall lead us to the morn of that immortal day, when man shall be restored to the power, purity, and glory of his original creation.