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DELIVERED BEFORE THE

DELAWARE ACADEMY OF NATURAL SCIENCE,

PURSUANT TO APPOINTMENT.

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ADDRESS.

It is now five years since the Delaware Academy of Natural Science was instituted by a few individuals, who assembled at the conclusion of a scientific lecture, to combine their efforts for the advancement of knowledge. By the constitution of this association, it is provided that an address shall be delivered annually by a member. On the present occasion, that appointment is conferred on me. In complying with it, I have not selected any particular subject for elucidation, nor do I propose to restrict myself to any fixed path; but rather to present to your notice, in the order of their suggestion to my mind, such thoughts and observations as appear calculated to promote the objects of the institution.

Our Academy has contended, from its origin, with circumstances not propitious to its rapid growth. At the period of its organization, most of our citizens had grown indifferent to the pursuit of science, and mental enterprise languished, or slumbered. The reputation that Wilmington once attained, could be claimed by a few only of her inhabitants; and those few were not in the early walks of life. A few persons acting separately, as individuals, can accomplish but little, comparatively, towards reforming a community, in any respect. When, however, they act in concert, under settled principles of association, their efforts may be applied with greater energy, and with more success. By making a common stock of their knowledge,—by throwing their intellectual riches into a common treasury—a considerable fund is accumulated as a sort of mental capital, the influence of which may be extended far beyond the reach of individual exertions. In this manner, an Academy or scientific association becomes the means of diffusing the blessings of science in all the ramifications of society, watering the intellectual soil, sometimes by visible agency, as the cloud imparts its moisture in drops to the thirsty earth, but more frequently by an unseen process, as the refreshing dew descends on the grateful herb.

The growth of a scientific institution depends on the number, the attainments, and the enterprize of its members; and each of these is an indispensable condition of its prosperity. Although our Academy has enlisted under its constitution no inconsiderable number of the citizens of Wilmington, a small proportion only of these have been very efficient in promoting its welfare. One of the results of their exertions is visible in the collection of natural specimens, exhibited in the Hall of the Academy. A valuable cabinet of minerals forms the principal part of this collection. Besides directing its attention to this object, the institution has been engaged with more or less activity, since its commencement, in exciting a taste for the cultivation of science, by means of essays read at its meetings, and lectures given under its superintendence. This plan of operations will eventually lead to a greater extension of the cabinet; and it is the only plan by which we can reasonably hope to accomplish that desirable end. Until the seeds of knowledge have been scattered, in vain may we expect to gather a harvest of science.

The prospects and future condition of an association like ours, are intimately connected with that class of citizens who are about to commence the career of active life. In the natural course of things, the present generation of men must shortly give place to another. We are all either rising or descending on the revolving wheel of time. If those who are now on the ascent should not be at hand to take the places, and perform the duties of those who are rapidly passing away, the inevitable consequence is too plain to require expression. Already has our infant school of science suffered no trifling loss, from the removal of a considerable number of enterprizing youth, who have left the home of their early days, to seek their fortunes in a more extensive and a more enticing field. It is gratifying, however, to perceive, that in spite of untoward circumstances, the exertions of the Academy continue unremitted, its cabinet continues to enlarge, and a growing disposition favorable to the cultivation of science, is manifested, more especially by the younger portion of the citizens of Wilmington.

On the present occasion, and before the present audience, it would be superfluous to enter upon an elaborate argument, in order to show the practical utility of scientific knowledge. There is scarcely an occupation or profession in which men can engage, that does not acknowledge some material aid derived from this source. Accident and blind experiment, it is true, have developed many of the more important discoveries in the useful arts; but many others, the most brilliant and valuable, have resulted from

the direct application of the principles of science. Witness the admirable contrivance of Davy, with the help of which the miner is enabled to explore the subterranean recess, and walk unscathed amid the deadly fire-damp; or the conducting rod of the great American Philosopher, which disarms of its terrors the awful artillery of the thunder storm. Were it needful, I might extend illustrations of the same character, almost without limit. The annals of science are filled with similar records of the achievements of the human mind.

He who attempts to explore the field of nature, without any system, or set of principles as a guide, resembles the mariner who undertakes a voyage of discovery, without a chart, compass, or helm. After having for a long time drifted about on the wide ocean, again and again floating ignorantly over the same track, and passing repeatedly close to the object of his enterprize, fortune may at length direct him to the wanted haven, if haply the storms of years have not sunk his adventurous bark, or wrecked it on some barren shore. In this way has many a long life been wasted in fruitless labor, or spent in gaining what a few hours would have acquired, had science directed the hand of the adventurer. The vague experiments of the visionary Alchemists, now and then touched a secret spring and revealed one of the mysteries of nature; but, until the rational principles of the inductive system dispelled their gilded visions, Chemistry deserved not the name of a science. How much the world has lost by misguided enterprize, we cannot tell. It may, however, be regarded as a moral certainty, that, had the principles of true science directed the efforts of curious man, instead of the irrational theories and illusory phantoms of former times, no chasm in the history of mind, like that of the middle ages, would ever have existed; and that dark and dreary night, when the human intellect was wrapped in a slumber which seemed heavy as death, would have been gloriously effulgent with the light of science.

The liberal professions are especially interested in the cultivation of general science. Between the study of Medicine and the study of the Natural Sciences, there is a close affinity. The obligations conferred by Botany on the Healing Art, are universally acknowledged; and the study of this branch is often made a part of the education of a physician. From the mineral world, Medicine derives many of its most efficient remedies. Mineralogy is also allied to Medicine through the medium of Chemistry—a science uniformly taught as one of the requisites of a medical graduate. Indeed, there is scarcely a branch of Natural Science that has not some intimate relation to that profession. Human

Anatomy derives important aid from the anatomy of the inferior animals, embraced within the province of Zoology. Human Physiology, or that study which explains the phenomena of life, —the laws by which the inimitable mechanism of the human frame is maintained throughout its varied circle of movements— cannot be profitably cultivated apart from Comparative Anatomy. In tracing the history and character of the diseases incident to the human system, Meteorology, or the science of the Atmosphere, is essentially involved. Every epidemic disease, mild or malignant, from the familiar and insidious Catarrh, to the foul and deadly Plague, or that inscrutable Pestilence which was, but yesterday, the terror of the world, is subject to the influence of atmospheric causes, which it is the duty of the physician to investigate.

I will avail myself of the opportunity now presented, to throw out a few additional hints, on the relation between medical and general science. An idea is entertained by many persons, that a proper cultivation of the medical profession requires the exclusive application of the mind to those studies which appertain strictly to the practice of the healing art. Such a view is, perhaps, very comforting to the feelings of some of the faculty; but to me, it appears a very contracted and illiberal creed. That general science may be cultivated by the physician, to the prejudice of his proper profession, no one can doubt. Equally true is it, in my belief, that the science of Medicine does not demand of its votaries, the rigid application of their faculties, exclusively, to the essential objects of its regard. On the contrary, its natural tendency is to direct the thoughtful mind into the whole circle of useful sciences, physical, intellectual, and moral. Medicine has at all times led her favorite votaries into the temple of nature, inviting them to explore its recesses, and reveal its mysteries. The faithful page of history confirms the truth of this remark. Many of the brightest names that adorn the annals of the healing art, rank also with the greatest benefactors of mankind, in other useful pursuits. Hippocrates, the father of medicine, was the author of treatises on other subjects, which may be studied with advantage by the philosopher, the statesman, and the legislator of the nineteenth century. Aristotle, whose gigantic mind bore sovereign rule for ages over the human intellect, began his proud career in the school of Hippocrates. At a more recent period, passing by a long array of bright names, illustrative of the same proposition, we find Linneus, eminent as a medical writer, applying his capacious mind to the entire range of natural science, and reducing to system and order the subjects of Botany—of

Zoology—of Mineralogy. In the same extensive sphere of mental labor, the names of Hunter, Darwin, Good, and Lawrence, are also conspicuous.

But we need not travel beyond the limits of our own country, in search of examples showing the diffusive influence of medical studies, and the wide scope which a successful cultivation of that profession allows to the energies of the mind, in morals, in literature, in every intellectual pursuit to which the time and genius of man can be profitably devoted.

Without mentioning any of that living phalanx, which the nation is proud to possess, the names of Wistar, Barton, Rush, and Godman, are familiar to the world. To Wistar, the American Philosophical Society awarded the honor of occupying the Presidential chair of that institution, as the successor of Jefferson. American Botany is largely indebted to the zealous and laborious researches of Barton. Rush, a bold and ingenious reformer in his chosen profession, did not hesitate to range the paths of general science. His vigorous intellect embraced within its comprehensive grasp, whatever could aid the cause of humanity, and minister to the welfare of his fellow men. At one time we behold him standing forth in the councils of the nation, and announcing to the world the independence of his country. At another time, we find him engaged in alleviating the miseries of the gloomy prison, or risking his life in the abodes of poverty and want, to save from death the victim of the raging pestilence. In the records of philanthropy, the name of Rush is enrolled together with that of Howard. Godman, one of the brightest ornaments of his profession, is advantageously known by his valuable contributions to natural history. His memory is dear to every American, associated as it is with his untimely fate. Young in years, full of hope and promise, a lingering disease consigned him to the grave!

The great secret on which depends the success of those who have distinguished themselves beyond the limits of a single occupation, consists in an active habit of mind—a habit of continual observation and reflection, calling into constant exercise all the energies of the intellect. What others give, says Cicero, to the public shows and other entertainments, to festivity, to amusement, nay, even to bodily rest, I give to study and philosophy. For me, he continues, even my leisure hours have their occupations. The example of Cicero is well worthy of imitation. A striking instance analagous in character was exhibited in modern times by the celebrated John Hunter, who did more than any other man of his day to extend the limits of Comparative Ana-

tomy, and other sciences collateral with medicine. Besides attending to his private practice as a surgeon, he had the care of an extensive hospital, and occupied a station in connexion with the English army, delivered a long course of lectures every winter, and superintended a dissecting school in his own house. Yet, whilst performing all these arduous duties, he found time to make a museum of 20,000 Anatomical preparations of all kinds of animals—a collection which was purchased by the British Parliament for 15,000 pounds. Our own Franklin presents another instructive instance of the astonishing capacity of the human mind to grasp a wide range of diverse subjects, by means of an active habit of thought, and unremitted exercise of the mental faculties. We find him at one time engaged as a moralist in inculcating lessons of practical virtue to his countrymen—at another time a philosopher, prying with curious and penetrating vision into the mysterious phenomena of the electric fluid; now a statesman legislating for a republic—now a patriot negotiating for the interests of his nation in foreign countries. A mind of this cast is not to be trammelled by narrow considerations of selfish interest. It will range unconfined, throughout the vast sphere of intellectual pursuits, wherever it is called by the love of science, or by a prospect of becoming useful to mankind.

How very different is the character of those who confine their mental efforts within the narrow limits of a single pursuit; in the language of Locke, "who will not venture out into the great ocean of knowledge, to survey the riches that nature hath stored in other parts; who canton out to themselves a little Goshen in the intellectual world, where light shines, and, as they conclude, day blesses them—giving the rest of that vast expansum to night and darkness;—who live thus mewed up within their own contracted territories, and will not look abroad beyond the boundaries that chance, conceit, laziness, or selfishness, has set to their enquiries!"

I have dwelt the longer on the relation which medicine bears to the sciences generally, because in this country, the guardianship of the latter is committed to the medical profession, more than to any other portion of the community. In the infant state of civil society in America, there are, comparatively, few individuals who are not compelled to pursue some occupation, as a means of gaining a livelihood. Of all professions and employments, that of the physician, as I have already shown, is most favorable to scientific pursuits,—many of these being collateral with it, and nearly all of them possessing more or less affinity with some or other of the subjects which necessarily fall within

the province of the physican. Unfortunately the profession of medicine is too often pursued exclusively with the sordid motive of pecuniary emolument. Here, no incentive is presented to the mind, to lead it out of the sphere prescribed by necessity, and the interests of general science, which are emphatically the interests of mankind, are sacrificed, not to the material advancement of any branch of knowledge, but to the attainment of wealth. The disciple of the Healing Art, properly imbued with the spirit of his profession, must open his eyes to the works of God, and read the pages of the book of Nature; which he will find replete with lessons of practical relation to his favorite calling.

The study of the legal profession does not claim so close an affinity to general science—although some writers have asserted that scientific acquirements are eminently useful in the practice of that vocation. More frequently it appears to invite into the arena of political gladiatorship; and happy would it be for the national peace and prosperity, if that profession were as fruitful in able statesmen and legislators, as it is in aspiring demagogues who cannot breathe out of an atmosphere of popular commotion. Whatever benefits society may derive from this class of citizens, in other respects, it is certain that the annals of useful science exhibit in their long catalogue of great names, but few who have been known as legal characters. The paths of Literature, however, are frequently trod by the votaries of the law, with distinction to themselves, and usefulness to the world.

He who devotes his life to the instruction of his fellow men, on topics relating to their future welfare, finds within the precincts of the natural sciences, abundant testimony, tending to illustrate and confirm the important truths of religion. Both the heathen and the Christian philosopher have united in acknowledging the outward creation to be replete with proofs of the existence of a God. On every leaf of the great volume, they have confessed the name of a Creator to be inscribed. The evidences of a contriving and designing power are every where conspicuous, alike in the construction of the diminutive animal that eludes the unaided vision, and in the immense system of revolving worlds 'which stud the blue concave.' Wherever we turn our enquiring eyes, they are met by a wonderful display of might—of wisdom —of skill. Extreme simplicity and beauty of design, and the most harmonious order, characterize the universe. To the intelligent mind, a volume of delightful instruction is contained in every bud, every blossom, which the soft breath of spring swells into life. The seed of the thistle, as it sails before us, supported

on the summer breeze by its downy appendage, suggests reflections, useful and sublime. The trunk of an elephant—the feather of a bird—the sting of a bee, are subjects on which we may meditate with wonder and delight. All nature calls loudly upon us, to acknowledge the revelations of the goodness and attributes of Deity, inscribed in her vast volume; she directs our wondering vision, at every step of our progress, to the Divine Architect, who commanded into existence the boundless universe.

By some individuals, the pursuit of science is thought unfavorable to the promotion of that true humility, which is one of the most adorning traits belonging to the character of a Christian. Reason, however, would lead us to an opposite view, and experience has ever confirmed the verdict of reason. True, there have been professed admirers of the works of nature, men whose names have become familiar to the world, who have bounded their intellectual vision by the confines of the material universe, content to remain ignorant, or rather determined to evade the conviction, of the agency of an intelligent cause. Such narrow notions are incompatible with the genius of science: and if we examine the pretensions of this kind of men, we shall find their attainments very superficial, and the deficiency of real knowledge made up by an exhaustless fund of vanity and self-conceit. Men sometimes study to excite opposition, that the world shall know of their existence. To make a figure in the world requires but little effort, when an individual is careful to differ from the majority of his fellow men, and strike out some new path, full of novelty and singularity. Thus have the most absurd and ridiculous vagaries had their advocates, who have, in this manner, accomplished the great end of their ambition, by gaining all the fame that notoriety can bestow.

But history furnishes the best criterion by which we may determine the influence of science on the human mind, and ascertain whether it is useful or injurious to the best interests of our race. In all ages of the world, those who best deserve the title of practical philosophers—who have penetrated most deeply into the mysteries of nature—are they who have been most strongly impressed with the belief in the existence of an intelligent Creator:—who have added humility to knowledge, and gathered lessons of true piety in the school of science. Such was the immortal Newton, whose towering genius accomplished more than any other man of his age. Conscious of the limited capacity of the human intellect, and of the much that yet remained to be done, he declared, at the close of his brilliant and unexampled career, that he "felt as a child who had been gathering pebbles on the sea shore."

In examining the mutual relations of the different departments to which human industry and genius are applied, the Fine Arts claim our attention. To Architecture, Sculpture, and Painting, this term is commonly restricted by modern usage; while other branches which were formerly ranked with the Fine Arts, such as Music, Poetry and Rhetoric, now come within the scope of Polite Literature. As regards Architecture and Sculpture, they have, comparatively, but little bearing on the great cause of mental cultivation. They may flourish without a proportionate advancement in general science. The skill of the statuary may be usefully employed; though it has been too often exercised to commemorate acts of heroic cruelty, which were better buried in oblivion, or to promote an effeminate and vitiated taste, injurious to morality. The art of painting has a more intimate relation to science. This also may be very usefully cultivated, and becomes of immense value as an adjunct to the sciences. Too frequently, however, are the skill and genius of the painter spent on objects, at best of no permanent utility. When the cultivation of the art becomes a passion, it appears in some instances to destroy the taste for useful knowledge. The lives of a great number of the most eminent painters, exhibit any thing but a genial influence of this passion on the mind. It is said of the celebrated West, whose labors have reflected so much honor on this, his native country, that, although considered worthy of occupying for nearly thirty years the presidential chair of the Royal Academy of London, yet he had some difficulty, when required to use his pen, in spelling correctly the words of his native tongue. Hogarth, who was also a very eminent painter, affected to despise all mental cultivation. Claude Loraine, another master in the art, could hardly spell his name.

Of the several branches of polite literature, Music, and Poetry are, in some respects, nearly allied. Their combined influence is most powerfully exerted in national ballads and songs. While the measured line conveys the sentiment to the heart, the sound of the melody awakens all the passions of our being, and secures their aid in promoting the object of the song. Every nation, savage or civilized, has enlisted the combined influence of music and poetry, to arouse the feelings of the patriot, to excite the military enthusiasm of the soldier, and to fire the frenzy of the warrior in the heat of battle; to commemorate the deeds of the hero, and inspire the living with emulation of the mighty dead. The war song of the American savage incites to acts of cruel valor—a "Marseilles Hymn," or a "Hail Columbia," may give

a strong impulse to a National Revolution; and the resistless influence of the "Ranz des Vaches" is acknowledged by the patriotic peasant of Switzerland.

If poetry and music are capable of exerting so strong an influence over the character of man, they may become a source of serious injury. "Give me," says some one, "the making of a people's ballads, and I care not who has the making of their laws." By far the larger portion of mankind, are governed principally by their passions. The passions are incessantly striving to stifle in our bosoms every intellectual principle of action, and the united efforts of reason and religion are required to restrain their licentious tendency. By means of the control which they exercise over the human character, causes, apparently trifling in themselves, may produce effects, forcible and lasting. Thus may the genius of a Burns or a Moore be greatly instrumental in forming or revolutionizing the tase and manners of a nation. As to those metrical compositions which form the fashionable songs of the present time, generally speaking, they cannot but be enervating to the intellect, and detrimental to the interests of useful science.

Poetry, considered apart from music, might be made the means of conveying useful knowledge, or inculcating a pure morality. But, unfortunately, it is seldom directed in this channel. The great mass of metrical composition produced in the present age, within the range of the English language, has no little effect in exciting the imagination at the expense of the other faculties—in depraving the taste for substantial knowledge, and corrupting the morals of the people. So sensible were the ancients of the effeminating influence of poetry, that it was banished from some of their States. A Young or a Cowper may exercise the art for the real good of his fellow men; but there is another class of composition, in which Byron and Moore, among others, excelled, which is pernicious in its effects, just in proportion as it is replete with the charms of genuine poesy. Even the writings of Milton, which are mostly considered the finest in our tongue, are doubtless capable of acting injuriously on many minds, already prone to give too loose a rein to the imagination.

In the circle of polite literature, the Dramatic art is conspicuous. Like those branches already considered, this also may exert a strong influence on the taste and morals of a community. The performance of Tragedy was interdicted by some of the Grecian Lawgivers, because it occasioned a misapplication and waste of sensibility, and rendered the spectator callous to the ordinary calamities of his race. As a moral agent, or rather, I

would say, an immoral agent, comic representation is less influential. Whatever may be the advantages resulting, theoretically, from the cultivation of the Histrionic art, certain it is, that Theatrical exhibitions, with the whole train of evils, which, even if not their necessary consequences, do nevertheless uniformly attend them, are greatly demoralizing to society. This opinion is not the offspring of prejudice, or ignorance. More than one of the companions of my studies have I known fascinated by the attractions of the drama, and drawn into temptations which led eventually to their ruin. Often have I witnessed and watched with anxious eye, the youthful and gifted student, in whose bosom the seeds of virtue were once sown, gradually sliding into the paths of sensuality and vice, which might never have tempted his footsteps, had not the portals of a theatre presented an enticing avenue. And I do not doubt, but that many a parent in this land now mourns the fate of a once promising child, on whom were fixed the fond hopes of relatives and friends, who has been led in this manner from one indulgence to another, and at length plunged into the depths of degradation and misery, compared with which death were a blessing.

Most of the branches of the Fine Arts, and Polite Literature, to which I have directed your attention, may be regarded as the luxuries of science, that have a tendency to create a vitiated and effeminate taste. Accordingly, it has been noticed by the Historian and the Philosopher, that they have flourished most in the declining ages of a nation; whereas, while a state has been on the rise, advancing in power and greatness, the Useful Arts, and true science are pre-eminent. Habits of fortitude, of energy, of vigor, are more congenial to mental culture than habits of an opposite character, such as are fostered by those luxurious and effeminating Arts. The hints that I have thrown out, in commenting on them, will be regarded by some persons, as fastidious and puritanical. But to me, they present themselves as the inevitable conclusions of an unbiassed judgment, properly impressed with the importance of elevating the intellectual and moral condition of our race. In estimating their value, be cautious not to sacrifice general and comprehensive views to a partial survey of the subject. Remember, that what is harmless, and even beneficial to a few, may be, to the multitude, pernicious in the extreme.

Opinions which have a general bearing on human actions, become deeply interesting when viewed in connexion with the education of youth. The infancy of the present age will shortly be the manhood of another, whose taste and habits are at this

moment forming, under the influence of such views as now predominate. The extent to which the subject of education has recently engrossed the attention of many of our greatest men, is auspicious of an approaching day, when the faculties of the human intellect will be more generally employed in rational, elevating, and useful pursuits—when a constant care will be exercised to instil into the minds of children, the principles on which depends an exalted intellectual and moral character—when the spell which fashion has imposed on the education of youth, shall be broken, and the authority of that capricious ruler delegated to objects more worthy of the possessor of reason.

I have remarked that the character of a people is sometimes deeply impressed by the literary labors of a single individual. If this be true, it becomes every man who aspires at authorship, carefully to consider what effect his productions may have on the minds of his readers. Every author should be held responsible for the injurious consequences that result from his writings. He should be regarded in the intellectual world as we are accustomed to regard him who is in power in the political world—watching with a jealous eye, lest he should abuse the power he has acquired, or fail to use it for the benefit of those over whom his authority extends. When the pen and the press fall into the hands of the poet, the novelist, and the dramatist, the national character and taste will never fail to become softened and depraved. English literature is largely adulterated, at the present day, with that sort of poetry which addresses itself solely to the passions, and with romances and works of fiction, the production of some of the greatest minds of the age. The ancient Greeks pictured their Minerva, the guardian of wisdom, as a goddess of strong masculine proportions, erect in attitude, and clad in armor. The Minerva of the present day, to make her a popular Deity, should be the antipodes of the former;—she might be represented as a sickly and affected girl, reclining luxuriously on a bed of roses, attired in fantastic and parti-colored habiliments, and attended by the most effeminate of the Muses, singing, dancing and reveling around her. We have seen the genius of a Byron practically exerted in fostering the grossest sensuality, and the most debasing vices; while his works are rendered the more dangerous, because the poison is so intimately blended with the sweet. We have seen the talents of a Moore, indulging almost in one monotonous strain of love-sick ditties. We have seen the lofty mind of a Scott, stooping to fabricate romances, and tales, and soft ballads. Had Byron, Moore, Scott, and a host of others, who have pursued the same track, directed

their intellectual endowments in another channel, had they devoted the energies of their powerful minds to the advancement of real and useful knowledge, a grateful posterity would have enrolled their names with those of the greatest benefactors of mankind. Their fame would then have been built on a solid foundation—a foundation that would have stood unmoved in all coming time.

The extent to which works of fiction are read in this country, especially by young persons, is almost incalculable. Scarcely a day passes without the announcement of a new novel. The editors of Periodicals must pamper the vitiated appetites of their readers, by serving up, monthly, weekly, daily, a quantity of fictitious narrative. That a publisher, or a bookseller, should consult his own interest, and thus gratify a depraved taste in others, is reasonable enough. But it is a humiliating reflection that the powers of genius are under the sordid influence of venal rewards; and that writers of ability should consent to devote their talents to the acquisition of an ephemeral renown or notoriety, nor be ambitious to benefit their fellow men in proportion as they elevate their own reputation. Such a disgusting medley of trash as the press is incessantly employed in pouring forth, cannot fail to operate forcibly on the public mind and the public morals. The effect is manifest in the corrupt taste and careless habits of mind, too prevalent in the younger ranks of society. In the morning of life, the imagination is already sufficiently active, and the passions are continually liable to acquire an ascendency over reason. The mind is fired with all the vigor and impetuosity of youth, and those habits begin to be formed, which are in a great measure to establish or to destroy the happiness of after life. It is now that the stimulating food of romance is eagerly sought, and greedily devoured. The pliancy and susceptibility of the inexperienced mind are easily acted on,—every faculty becomes absorbed in the favorite pursuit, and in a short time the fanatical admirer of falsehood and fable, is an artificial sort of creature, hardly conscious that reason is one of the gifts of human nature. Haunted castles, and knights in armor, and deeds of chivalric daring, float day and night in the vivid fancy, until life is literally a dream. The pursuits of real life have grown insipid and the task of acquiring useful knowledge is irksome and odious. The latest novel becomes a leading object of thought; and not to have read it would be a confession almost as mortifying to the vanity and ambition of the youthful aspirant to fashionable rank, as to be unable to repeat the letters of the alphabet!

But the human mind is not constructed so as to bear forever with impunity this sort of mental dissipation. The progress of time, in our advance to maturity, blunts those sensibilities, and destroys those appetites, on which alone depend the pleasures we have pursued. It is now that the deleterious consequences of the abuse of the rational faculties in early life, are most deeply felt. The disordered intellect is no longer able to relish the highly seasoned food of romance, and long usage has disqualified it for the enjoyment of more substantial nutriment. The wretched victim of this prevailing appetite, must now endure all the horrors of a mental dyspepsia:—a diseased fancy, a sickly taste, affected desires and unnatural and unreal wants, to gratify which, this vulgar world has no power.

Some of you may be disposed to regard the picture that I have sketched, as a mere caricature; and happy would I be to concur in that sentiment. Although few individuals may be injured by the passion for novel reading to the extent I have represented, yet there is no doubt that a large number of young persons, are perceptibly affected by that cause. The female sex, being endowed by nature with sensibilities more acute, are more liable to suffer. Be it said, however, in justice to female writers, that they have not contributed so largely, in proportion to their number, to swell the fund of fictitious narrative, as those of my own sex. In this country, several useful elementary treatises on scientific subjects, have lately emanated from the pens of ladies; presenting an example worthy of imitation to the motley crowd who aspire at fame by writing senseless rhymes and childish tales for the periodical press.

To correct a taste thus vitiated, and to substitute a relish for real and profitable knowledge, is a task that would do credit to the greatest men of this or any other age. Happily, the attention of mankind is becoming more and more impressed with the infinite importance of a proper culture of the faculties in early youth. If the dictates of reason were regarded—if reason were taught to direct and restrain the passions of early years, it would infallibly lead to a correct estimate of the comparative value of the pleasures of sense and the pleasures of intellect;—of those enjoyments which spring from the indulgence of the passions, and those which flow from the cultivation of the rational faculties. A full comparison between these two classes of enjoyments cannot but disgust us with the former, and inspire us with a deep conviction of the excellence of the latter class. But, with the firmest conviction of the superiority of the pleasures derived from the pursuit of knowledge, we are continually liable to be drawn aside, into the paths of sensual indulgence.

If we look around and institute an inquiry into the motives of action which operate with greatest force on the mass of mankind in more advanced life, we shall be apt to conclude that the attainment of wealth is the chief end of man. The pursuit of wealth is not at variance with that disposition already commented on, which is so often fostered in younger years. In the absence of more exalted inclinations, all other considerations become absorbed by the love of gain, and the remaining portion of life is dedicated mainly to the gratification of this low desire. Wealth is sought, not as a means of attaining happiness, but as the essence of happiness itself.

The biography of great men furnishes many very impressive and very instructive lessons, exhibiting the predominance of the love of knowledge over every other feeling. History abounds with instances of this appetite or disposition,—essential to the exaltation and dignity of the human character, prevailing over every enticement which affluence and power can hold out to the passions of our nature. Among the ancient philosophers, Crates, Thales, Democritus and Anaxagoras, are mentioned as having sacrificed their wealth, or declined public honors, for the sake of acquiring knowledge. Adrian VI., who rose from abject poverty to a most exalted eminence, was at length called from his intellectual pursuits, to occupy the papal chair. But the comparative happiness which the two situations afforded him, may be inferred from the inscription that he ordered on his tomb: "Here lies Adrian VI, who esteemed no misfortune which happened to him in life, so great as his being called to govern." The distinguished scholar Erasmus, when a student in Paris, poor and almost in rags, wrote to a friend, saying, that he intended, as soon as he could get some money, to buy first some Greek books, and then clothing. Kepler, the great astronomer, lived a life of poverty; yet amid all his difficulties, he declared he would rather be the author of the works he had written, than possess the Duchy of Saxony. Boyle belonged to one of the most powerful families of Britain, and saw the highest honors of the state within his grasp; yet no temptations could seduce him from his philosophical pursuits. In estimating the character of these men, who is there that brings into view the amount of wealth in their possession? Who now enquires which of them were rich, and which of them were poor? Does affluence add to their reputation? Or, can poverty detract from their renown? Far from it! Theirs are "names that know not death"—names that will live, and that will be held in grateful remembrance, when the rich and the

mighty of the earth shall have been forgotten, and the blood-stained bays shall have withered from the brow of the hero.

Even the glittering insignia of royalty do not possess sufficient power to banish from the mind the ardent thirst after intellectual pursuits. Among the Roman Emperors, Julian and Marcus Aurelius, are known as the authors of several works. The latter attended a course of philosophical lectures when nearly sixty years of age. Many of the English sovereigns have been distinguished by their love and cultivation of letters. The character of Frederick the Great is familiar to every one. So is that of the German emperor, who, sated with the pleasures of royalty, exchanged his throne for a monastery, that he might spend the last days of his life in the enjoyment of those pleasures which are enduring. One of the kings of Castile and Leon, Alphonso, surnamed the Wise, prepared the first astronomical tables that were reckoned after the Almagest of Ptolemy, which had been in use for many centuries. The greatest and most useful reformations that have ever been effected in the character of a people, were produced by monarchs properly imbued with a sense of the value of scientific knowledge. France had her Charlemagne, Russia her Peter, and England her Alfred, each venerated by after ages, as the father of his country. Charlemagne gave a powerful impulse to the intellectual revolution which dispelled the gloom of the dark ages. The Russian Czar spared no exertions to improve the condition of his subjects, himself traveling throughout Europe and laboring as a common workman in the various branches of the arts. So strongly impressed was he with the value of a good early education, that he declared he would willingly have lost one of his fingers to have had a good education early in youth. Alfred, the Washington of England, mingled with his arduous duties as a king, the acquirement of knowledge, pursuing his studies with no other mode of measuring time than by the combustion of his candle; and when his country became peaceful and prosperous, he deserted the sceptre, and retired to enjoy undisturbed his intellectual occupations.

But if the highest honors of the earth, the possession of unbounded affluence and power, cannot smother that spark of intellectual ambition which is implanted in the human bosom, neither can adversity quench its kindling flame. The power of mind, as exhibited in the pursuit of knowledge, has overcome poverty and want—has risen superior to disease and infirmity—and has spoken forth from the gloomy walls of the dungeon. A

stick burnt at the end, or a coal, has often been the first pencil of the artist or mathematician. It was in this way that Pascal, when a boy, mastered without assistance several geometrical problems, with no other slate than the floor, and no other pencil than a bit of charcoal. Rittenhouse, the greatest of our own astronomers, was in early life apprentice to a farmer; and used to draw mathematical diagrams on his plough, and study them while turning the furrow. When Tycho Brahe began to study the stars, he had no better instrument to measure their distances than a pair of compasses, the hinge of which he placed to his eye. Ferguson, another eminent astronomer, when a boy, after working all day in the service of a farmer, used to go at night into the fields with a blanket, in which he rolled himself up, and lay on his back measuring the distances of the stars by means of beads strung on a thread!

These are a few of the numerous examples that might be cited, exhibiting the ascendency which a thirst for knowledge may acquire over every other appetite, and its power to overcome the most adverse circumstances. Instances are not wanting, where disease and positive evils have failed to suppress the strugglings of the same disposition. Sir William Jones taught himself the science of botany while confined by illness to his couch; and until within a week of his death, he was occupied in studying the grammars of several eastern dialects, his body all the while sinking under the effects of mental labor. Murray, the celebrated orientalist, continued in the same manner, incessantly occupied in the discharge of the fatiguing duties connected with his station, though life was rapidly ebbing; and unconscious of his situation, retired to bed less than twenty-four hours previous to his dissolution. The loss of sight is a calamity that has befallen several of the greatest of men, who have subsequently continued to benefit the world with contributions from their fertile minds. Of these I will only mention Huber, Euler, and Milton. Superstition and tyranny have also vainly opposed their might against the genius of science. It was thus that the prisons of the inquisition were opened to receive the illustrious Galileo. One of the earliest reformers of English literature and science, Roger Bacon, was imprisoned when his head had grown hoary with age, charged with holding communion with the devil! Sir Walter Raleigh composed a large portion of his history of the world, at the advanced age of sixty, immured in the tower of London, under sentence of death, on charge of high treason.

Those who devote their time and faculties to the groveling pursuits of sensual inclination, can form no idea of the enthusiasm

with which the man of science follows his favorite employment, and the delight that he draws from his observations and discoveries. It is related of Pythagoras, that when he succeeded in solving a certain problem in mathematics, so great was his ecstacy that he offered up a hecatomb of a hundred oxen to the gods, in testimony of his gratitude and exultation. The story of Archimedes, who discovered one of the most valuable principles of science, by observing the water that his body displaced in the bath, is well known. When the immortal Newton, at a more recent period, sought to establish the truth of his speculation on the cause of the movements of the heavenly bodies, and when after several years of doubt and anxiety, he saw at last that he was successful—that the mighty discovery of the secret mechanism of the heavens, was all his own,—who can imagine the triumph and rapture of that moment! It is said that such was his agitation as he approached the close of his difficult calculation, and perceived every figure bringing him nearer the haven of his fond hopes, that the pen fell from his hand, and he was obliged to request a friend to conclude the operation. When Rittenhouse, the Newton of America, directing his telescope to the heavens to observe a transit of Venus, saw at the precise moment he had calculated, the planet enter the disk of the Sun, he sunk helpless to the earth, overcome with joy! When Franklin approached his knuckle to the key that he had tied to the string of his kite, to ascertain if possible the identity of Lightning and the electric fluid, and drew from it the well known electric spark, it is said his emotion was so great at this completion of a discovery which was to make his name immortal, that he heaved a deep sigh, and felt that he could, at that moment, have willingly died!

Enough has already been said to exhibit the unalloyed pleasure derived from scientific pursuits—the incomparable enjoyment they afford, when contrasted with those objects which are eagerly pursued by the mass of mankind, for the sake of happiness. The facilities for the acquisition of scientific knowledge are within the reach of every individual; and he who does not profit by them, and avail himself of the opportunities afforded for the culture of his mind, is guilty of abusing those noble faculties which God has committed to his stewardship. But it would really appear from inspection of the history of eminent men, that adverse circumstances are most favorable to the attainment or pursuit of knowledge. Many of the greatest names on the page of the historian, have risen to greatness in spite of want, misery, and misfortune; and few have enjoyed those advantages which are in

the possession of nearly every individual at the present time. Perhaps the very cheapness of knowledge has a tendency to make it unfashionable. Be that as it may, ignorance is the more censurable in proportion as the means of acquiring instruction are ample.

But, methinks I hear some of you whisper within yourselves, I have not time—my occupations will not permit me to give any attention to scientific subjects. Let me advise you to beware of a sentiment so hasty and inconsiderate. It is at once an apology for idleness and for ignorance, specious but fallacious. There is scarcely an individual in the community that does not spend daily a small portion of his time in idleness. And does it require more time to observe, to read, and to think, than to do nothing? A few minutes of every day, dedicated to some branch of useful study, will finally enable any one to become proficient in that branch. How many of you are so economical of your time, as not to throw away this little portion? "My Idle Hours," was the title of twelve large volumes written by a distinguished French Marshal, while occupied with the engagements of a camp. The Commentaries of Cæsar, a standard work in every school, were the production of the idle hours of the great Roman General, while engaged in the conquest of Gaul; and they have immortalized him more than his victories.

The real source of the indifference so generally manifested to the pursuits and pleasures of science, is a habit of mental inertia and slothfulness. To many persons, it gives pain to think—the process of reasoning is onerous. We can not be too careful to shun this habit. It will lead us through the world with our eyes shut; or if haply our bodily vision be employed, it is the more to our discredit that we see without perceiving and reflecting. Unless the mind considers what the eye beholds, then is mind a useless endowment. Unless reason contemplates the objects of vision, reason is bestowed in vain, and man sinks to the level of the brute. Had the fall of the apple produced no impression but on the *eyes* of Newton, the glorious discovery of gravitation had not been his. How many eyes had gazed vacantly on the pendulum of the church of Pisa, before Galileo drew from its regular oscillations, one of the most valuable truths of philosophy—establishing a standard for the measurement of time! How often had the sight of the passenger been arrested by the kite of the school boy, until the sagacious mind of Franklin conceived the sublime idea of employing it as a means of bringing down the lightning from heaven! A habit of constant thought, of

continual exercise of the powers of reflection, is the great secret of intellectual exaltation.

And are any of you willing to acknowledge without a blush of shame, that *to think* is painful to you?—that to exercise those faculties which distinguish man from the brute, is an onerous task? If there be such a one among my hearers, for the credit of human nature let him resolve this moment to break loose from the shackles of a habit so debasing! Let him no longer drone away his life indulging the ignoble propensities of the mental sluggard! Let him arouse the slumbering energies of his intellect, and taste of that refined enjoyment, which alone is worthy of our being! Let him consider, that, by consigning to wanton neglect, the talent with which his Creator has endowed him, he degrades himself in the scale of existence beneath the untutored barbarian! Even in the savage bosom, the spirit of intellectual ambition has often soared above the station of its possessor. The miserable native of New Zealand periled his life to see the arts of the civilized world; and when he witnessed the advantages and blessings which they bestowed, his eyes suffused with tears, "at thought of the forlorn and abject state" of his beloved country. A more intelligent and praise-worthy curiosity was manifested by this rude New Zealander, than by many of the "polished" and "refined" among his civilized and christianized fellow men.

To reflect and reason on the objects and operations of the natural world, affords the most exalted pleasure, which, as rational beings, we are capable of enjoying. The student of nature sees with other eyes than those of the careless and indifferent observer. To him, the outward world presents itself in a variety of beautiful forms, countless as the views of a kaleidescope. His solitude is never lonely—ennui never haunts his retirement. The smallest object that he beholds contributes to his happiness. The sand or the pebble beneath his feet tells him of the great deluge. The fragment of shell which the rains have washed from its bed of clay, transfers his mind to that primeval age, when the universal ocean brooded over the spot. The barren rock that peeps above the soil, records a history of the long dormant volcano. In the humble flowret that hides itself in the way-side grass, he welcomes an old acquaintance that calls to remembrance some striking incident in history, a scene in classic Greece, or a superstition of former times. The insect that creeps in his path, or the fly that hums its course through the air, reveals to him some of the mysteries of animated existence, and is at once an object of admiration and delight. At every step of

his career, his mind higher and higher wings its way beyond the toils of earth, with joy beholding in all created things the "Seal and impress of a God!"

But I have already transcended my contemplated limits. If my remarks have been censorious or needlessly severe, the error has resulted from an ardent conviction of the momentous importance of the subject—the great cause of mental improvement. Knowledge is admitted by every one to be *power*. We have seen that it is also happiness—that the most refined and exalted enjoyments of which our being is capable, arise from this source. Knowledge also conduces to virtue,—to morality,—to piety. It is the basis of individual and national character. Without it, there can be no stability or permanency in our free institutions.

Let every person then contribute what he can to the promotion of this glorious cause. The present is not a time for any one of us to be standing idle. A spirit of improvement—of reformation, is abroad in the land, and the slumbering energies of men are awaking to zealous exertion. Lyceums and Academies are springing up around us, and diffusing the light of science in every quarter. In this extensive field of labor, we have our part to perform. The efforts of this Academy must not be remitted. An institution of such a nature may have a powerful effect in diffusing knowledge, and thereby making a peaceful, happy, and enterprising people. Slow and unseen as may be its direct influence, the final effect will not be less certain. The greatest changes,—the greatest revolutions both in the physical and moral world, are gradual, and often imperceptible in their progress. A few warm days of spring may clothe the whole face of nature with exuberant vegetation;—yet who can detect the germinating of the seed, the swelling of the buds and the expansion of the foliage? In the progress of its growth from an acorn to a giant tree, who can perceive the majestic oak adding to its stature a single bud or a single leaf? Let us then press onward with industry, and fear not for the result of our exertions. What this result will be, time alone can determine. That the end of our hopes may be accomplished—that knowledge may be increased, and with it power, virtue and happiness, must be the ardent prayer of every individual who desires the welfare of his fellow-men.