



"In America, Literature and the Elegant Arts must grow up side by side with the Coarser plants daily of Necessity."—IRVING.

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Literary Department.

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THE CENTENARY OF WALTER SCOTT.

Brightly shined that summer evening,  
Over the hillside in the air;  
Purple peaks and daisies adorning  
Painting mountains, hills and air  
With a rainbow of gold, red, and blue,  
Never told in song or story.

Suddenly rose the lavender, withing  
Music down the hollow glen;  
Deeply wooed the world sea breaking  
Round her favored island shore;  
Chimes rolled the raptured strain,  
Fairly bloomed the flowers that ever.

Lands that remembered of the coast,  
Till the thrill of joy profound;  
Strange, quaking with emotion,  
Poured the glowing shock around;  
And all the time, the world was learning,  
For Nature's grand child was born.

The cheerless hills no longer then  
Repelled the stranger from their will;  
For Walter touched his magic pen,  
And Scotia, all enchanted, stilled,  
With stars of romance gleaming forth  
On every gorge and rugged height.

The flying deer, the outlaw band,  
The Alpine horn, with mystic strain,  
Once more reached in the land  
And called the chieftain up again,  
To show perchance the floating sea,  
Or fall in fight with deadly foe.

The Northern wizard's harp was heard  
Through balmy realms beyond the sea;  
And every soul was strangely stirred  
When burst the clouds of mystery,  
And pallid knights again were seen  
To tilt the lance for lady queen.

And now an hundred years have flown  
Since Caledonia gave us Scott;  
His genius lit the cycle gone—  
His deeds shall never be forgot;  
Let Seraphim rejoice in praise  
The light to guard that hallowed name.

Salutatory.

However much we might wish to avoid the beaten track of our predecessors in the editorial field, we feel it none the less becoming to offer our salutatory.

Fellow students, patrons and readers, wherever this first number of our paper may find you, we greet you. Not as the exponent of the New Education, but as from that place in the United States where it received its first stimulus, and where it promises an abundant harvest of well developed fruit. We enter the arena of journalism in support of the New Education in its broadest and most liberal sense, in the sense in which it is attracting the attention and enlisted the support of the ablest educators and thinking men of the day. It is styled the New Education, not because it is of recent discovery or invention, for some of its principles were advocated by Ascham and by Milton, but because the pres-

ent half century gave it reality and actual existence.

As it is acknowledged that the true principle of republican government is "the greatest good to the greatest number," so it is now conceived that the true principle of education is "the most practical knowledge needed in the pursuit chosen," and as the above principle of government is only considered as the great test when a measure is contested, so the principle of education given, is only pressed when circumstances demand that the student shall be confined to the narrowest limits. If all cannot be benefited, legislate for the good of the majority; always remembering that all cannot be equally benefited. If you cannot in connection with the necessary take the ornamental and pleasurable, then confine yourself to the test principle of utility, always remembering that happiness is not a thing to be neglected, and believing that contentment should take no second place in man's wants.

To-day the man who achieves the greatest success is a specialist. He rides his own hobby. Out of the successful specialists, he is the most successful, before becoming one, laid a broad, deep foundation of general learning and culture.

Believing this, we say to the student of one department of knowledge. Your mind will be dwarfed and contracted, and your judgment lack the comprehension essential to accuracy, unless, while you devote your strongest efforts in your selected course, you also investigate the relationship existing between other departments, and your own, and cultivate a liberality of thought.

In our endeavors to support this cause, we present to you different departments, all under one general head. They are to go forward side by side, related in discussion as in reality. If you hold the paper to the sunlight you will see Literature, Natural Science, Engineering, Social Science, and the other topics intermingled, line upon line, word upon word, period upon period the whole page over. So it is in reality. All these different divisions of learning are related, thought with thought, principle with principle, law with law, until, together, they form the complicated and varied structure of human knowledge. Ordinarily they appear very distinct, and foreign one to another, and especially to the ignorant or prejudiced, but they need only be held in the light of rational investigation to show clearly their alliance. As in the animal system it is impossible to tell where the artery ends and the vein begins, where the muscle ends and the tendon begins, so in the field of human knowledge and labor it is impossible to say where one knowledge or one labor is bounded and where the next begins.

If this first number of our paper is not so attractive in its dress as our patrons would wish, we reply that we are in hopes to improve in this particular. If our columns are not so in-

teresting, instructive or amusing as our readers had expected, we hope they will bear in mind that this is our first appearance, and that any inaccuracy, dullness, or other deficiency, which would be inexcusable in an old journal, should be looked upon with a charitable eye, and if criticised at all, it should be done in a spirit of honesty, with a due consideration of our lack of experience.

Edgar A. Poe.

Of all the strange spirits that have roamed in the weird realms of phantasy, not one so zealous as have been more completely divorced from the realities of the external world than that of Edgar Allen Poe, the marvellous bard who perished before the noon of life at a drunkard's altar. He was a mad worshipper of the beautiful, whether it reigned in a haunted palace, or quivered in a crystal goblet; and his whole being appeared to writhe in torture at every imperfection of nature and art which met his critical glance. He lived in a visionary world of enchantment, and was naturally prone to excrete the rough reality that were apparently dragging him down. Always feeling that every scene of his Utopian land was fanned with the sighs of mortals moaning and toiling at his feet. Prosperity to him was like a green isle in the sea, for which he frequently embarked, only to be tossed ashore by the breakers of adversity, and left, at last, upon the vague shores of human charity. His life was a dream within a dream, and his words were castles of gloom and infidelity, occasionally gilded with rays of tenderness and love.

The melody of his lyre ripples like a fairy rivulet in the sunlight of his genius, but his fantastical creations are doubtful forms groaning in the shadow of despair. The reader of his productions cannot help realizing a total "absence of moral sentiment" and responsibility; and an utter disregard to all the commendations or condemnations of mankind. He wrote as for one being only, and that the radiant One, who had gone to the distant Adenn. It is said of this Lenore, whose loss he deploras, that she was a being fair to the eye, a beautiful creature, but like Undine, without a soul. The angel of Poe's nature seems to have been held in subjection by a horde of demons, only now and then being permitted to mourn for an Ululume, or an Asahell Lee. The Raven of which he sang, was but the black prophet of the dread disasters that darkened his after life. He well knew the terrible destinies of the future, but rather than curb his wild Pegasus to the gait of ordinary noises, he braved the blades of retribution and finally fell a pitiful victim in his most unnatural career. Much has been and much will be said and written concerning the works of Edgar Allen Poe! Critics have tried to blight with their frosty opinions the flower of his fame, but it blooms brighter under

their heartless anathemas, and when afar off in the future, many of America's masterpieces shall flutter under the breezes of Oblivion, a beautiful monument will arise, upon whose blessed crest an ominous bird shall creak forever—"Nevermore."

Is the Study of Language Practical?

That is, is literature something worthy the attention of the industrial laboring classes? Or, is it like the gilding of a picture frame, or the silver mountings of a harness, used merely as ornaments, and easily dispensed with? The latter view is taken by many people, but they have either not thought on the subject, or are willfully narrow-minded.

What is the real fact of the matter? It is this. There is no study among all the range of sciences of greater usefulness, and consequently of more importance, than the study of language. Why? Because it is the foundation and medium of human intercourse. Upon its proper use, construction and rendering depend all the rights—civil, political and religious. Creeds differ through its construction, and religions are established upon its renderings. Statute laws are entirely recorded in it, and the common law is expounded through it. Civilization and enlightenment develop by its side, and in their progressive march keep pace with it. All the experiences of the past, pregnant as they are with great lessons and teachings, come to us through it. The revelation of the existence, power and love of the Omnipotent would have been pericite without it or some equal agency for transmission and preservation.

"Yes," says some one, "I grant that language is important and practical, but it is a useless waste of time to pursue the study of it beyond the common grammatical forms." There, my friend we differ.

A member of a certain State Legislature said that he and his former colleagues found a good deal of trouble in legislative matters. "What was the difficulty? Although well informed men, masters in practical money-making and money-saving, they knew so little of their own native language that (honest men that they were) they must have time to study out and have explained to them the proposed laws, bills and resolutions. Not their inability to direct a farm, or, if need be, a gigantic commercial trade, but their ignorance of the forensic and statutory use of language was what caused expensive delays, and created unbecoming scenes, until they had time to acquire the necessary knowledge."

Again, the laborer of to-day, in order to keep pace with the world, and thus realize the fullest benefit of his existence, must read comprehensively the science and art journals of the day; and in order to do this in the best manner and derive from them the greatest good, he must have no mediocre under-

standing of language. And when he witnesses a new phenomenon, or discovers a new law in nature, if he lacks the power to write it out clearly for the press, and thus give the world the benefit of his knowledge, he must either confine his treasure, or, remaining silent, permit some more studious person to give first publicity to the discovery, and thus wear the honor which an ignorance of language lost to him.

My Old Clock.

I sit in my dormitory where I have spent so many hours, but to night it seems as if I am not myself. New thoughts come and go, and objects around me which ought to be familiar seem strange. I take my arm chair, place it facing the table and seat myself in it in an uncertain way as if I expected to be called to "my feet" at any moment. I draw the lamp shade low down, and although my eyes are directed toward the books on the table, they see nothing there. Imagination, that feeble faculty of the mind, is using them. The couch in the corner, the table, the books, the clock on the wall, the lamp, all, except the shadowy pale light, disappear, and in their place come other surroundings. I, too, glide away and pass swiftly over land and sea. With light step I hasten through the streets of ancient Rome and pause before renowned St. Peters. Away up in mid air tower the lofty domes, and my eyes come back wearied with the flight. I loiter in the vast vestibule, and then stand in wondering admiration beneath the gigantic dome. I hurry away and on to where desolate ruins stand as melancholy monuments of bygone greatness. The scene changes—the fallen columns rise—the moss and vines, the rubbish and decay vanish—the finished palace is before me—gay nobles with fair ladies throng the halls—togas, rich with fur, dignify the princely forms of Rome's proudest lords—I join the peerless company—I, too, am a Roman—cling, cling, cling, cling, cling, cling, cling. Well, old clock, you certainly do not belong to the age of togas and gladiators! I know you must be well in years, for you were old when I bought you, years ago. And as you tick, tick, tick, from hour to hour, I hear your smothered chafings within, and it is these smothered sighs that tell the story of work done under steady, resistless weights of necessity.

And now I see, you teach me that if I would not be like you, creaking with age, yet toiling on, I must come to myself, and turn back into the paths from which I have so strangely strayed to-night, and diligently prepare for life's work.

Yes, old clock, for this lesson, when your hands fail to do their work, and when your hourly cling is hushed, and no longer calls the wanderer back to duty, still you shall stand against the wall, a far more worthy monument to civilization than a ruined Coliseum or a desolate Forum.

The Student.

NATURAL SCIENCE AND AGRICULTURE.

C. W. SILVER. N. S. BURMAN.

Relations of the Natural Sciences to Agriculture and Horticulture.

The grand banner of the universe is Progress, and he, who would view the banner aright, must view it reflected by the red and blue lights of the chemical crucible—must view it guided with the crystalline delight of minerals must view it peering from the mountain top, whose rocks have been left through the ages of time to receive it.

The true, a being may be as the instrument of some blind fatality, and mechanically "stir the clods of his ancestral acres," till the same hand, just placed him here, returns him again to mingle with and become a part of those earthy collections.

But let him as a true agriculturist, or as a true horticulturist, endeavor to multiply his products—let him try to increase the productiveness, or improve the quality of his fruits, vegetables, soils, and minerals—let him strive to produce new varieties of trees, plants or flowers; "or to re-vitalize exhausted soils; or to reclaim barren and worthless lands; or to discover the hidden manna upon which each plant delights to feed, with its peculiar and almost spiritual affinities for certain elements of atmosphere and soil. Let him try to add one new flash of beauty to the queenly rose, or a daintier aroma to its fragrance, or an additional tint to the brilliant verberna, or another grace to the heading beauty of the elm, or the leaf-majesty of the pine; let him attempt to do any one of these, or a thousand other similar things, and he finds himself at once confronted by the faster walls of science."

And unless he laboriously strives to enter her beautiful gates by the study of her principles, and the exact scientific facts on which the problems of animal and vegetable life and growth change and depend, he can never deal with the profound questions that assail him on every side, but must dismiss forever, his new-born inspirations, and be content merely to hold the plow and swing the scythe until he dies.

But man is not so constituted. He must have something to give him thought, and nothing is so grand, so sublime as that which is revealed in Nature. And no one is more thrown into her society than the pursuers of natural calling.

Then let him become acquainted with the sciences—let him know the beautiful adjustment and harmony of chemical and physical laws in vegetable life—tell him of the power of the microscopic cell and how it multiplies to form a living structure; teach him how the invigorating fluid buds its course to nourish the remotest part, and how it is irresistibly propelled to the leaf, that mediates upon which the very existence of man depends. Show him how this medium pumps up the stagnant water from around and beneath as and sends it in pure vapor to the heavens to be returned again in sparkling drops, reanimating and cheering us onward. Show him how it drinks in the poisonous air we breathe, and assimilating the carbon to build up its body, gives us again the pure oxygen we breathe. Show him how a silent work has gone on through the countless ages previous to man's existence, how the lower vegetation (as

mosses and lichens, that mostly obtain their food from the atmosphere, using but little of the rock on which they recline,) grew and perished, thus forming some soil for higher vegetation, until we have these gigantic trees that, perishing, have hidden their worth in the caverns of the past, giving to us the coal which comforts and cheers our homes when the night is cold and dark and dreary.

And from that germ of a soil, through the process of vegetable life and decay, and the disintegration of rocks we have formed for us the fertile earth upon which we tread.

But ring all this in the ears of the sturdy farmer, and instead of a vote of thanks, you will get a return of evasive jovialism. "Where is your money, in all that?" He does not seem to know that his success, as far as it may go as a farmer, is due to a few scientific facts that have been pulverized and gradually sifted into his moulding mind from infancy upward; facts that have been fused with his doings, and made a part of his every day life by the continued applied heat of the several periodicals of the day, where one fact is presented in many different forms; facts that have been carefully wrought by scientific men. He does not seem to realize that in his workings there are a few principles around which all the rest crystallize.

The successful raiser of stock has gleaned from all sources, assiduously retaining all he gets, he finds himself possessor of some of the finest points of Physiology, Anatomy, and Exterior, thereby he is enabled to show the world, animals which, truly, have a nobleness in their beauty.

It has been, and doubtless will be, contended by many, that no practical benefit is ever likely to arise to the farmer, the gardener, or the fruit grower, from the researches of Entomologists, and that any hand laborer is as capable of discovering the best practical mode of counter-working some particular noxious insect, as one who has cultivated his brain as well as his hand, as one who has become acquainted with the habits of many of the *thirty thousand* distinct species of insects that are found in the United States, while the farmer knows nothing whatever of Entomology. Suppose that bees change into butterflies, butterflies into bugs, bugs into beetles, and cannot at the hazard of parting with his life tell the difference between a snout beetle and a snout moth.

Can it be doubted that the agriculturist or horticulturist, by the study of the chemistry, mineralogy, and geology of his soil and the physiology of the plant that he wishes to grow, will adopt a better rotation of crops? that he will have larger harvests? that he will more beautifully adorn and make pleasant his rural home?

Yet, beyond all this, there is in the natural sciences, that which equally interests the Agriculturist, the Horticulturist, the Mechanic, the Artist, the Statesman, that which alike concerns all mankind. For every bud that bursts, every tiny grassblade that springs from the rested and winter-nourished earth, every puddle and every dewdrop and every germ of new life is a truth, and involves a multitude of other truths, its existence.

And the study of truth is perpetually joined with a love of virtue, for there is no virtue that derives not its origin from truth. Truth is the foundation of all knowledge, and the cement of all society. Its study therefore involves virtue and begets knowledge; it

is something worthy of toil to secure. We are to seek it for our own sake, seek it for the power it will give us to do good to others—seek it everywhere and constantly.

The Codling Moth.

There is probably no one who has not observed the little white worm which infests our apples. Yet very few I presume have ever seen the insect which produces it, or know anything of its habits. This worm, or more properly caterpillar, is the larva of the "Codling Moth" (*Carpocapsa pomonella*), the most beautiful of all the lesser moths. In size it is small, measuring only three-fourths of an inch from tip to tip of its extended wings. The fore wings are crossed by alternate bands of gray and brown and near the hinder margin of each is a large red dark brown spot, bordered with glistening copper-color, by which it can easily be recognized at sight. They are nocturnal in habit, which will probably account to some extent for their being so little known. These insects appear in the spring about the time apples have become fully set, which in this locality is about the middle of May. The female then flies about the trees depositing a single egg in the blossom end of each apple until her whole stock of about 250 to 200 eggs is exhausted, and soon after dies of old age and exhaustion. The eggs hatch in a few days, and the young larvae immediately burrows into the fruit, piercing to the core. Then making this its headquarters, it eats its way in various directions, pushing its chips out through a hole made for the purpose in the side of the apple. After about three weeks the apples usually fall to the ground and the larva, having attained their full growth emerge from their hiding places through the hole in the side, and immediately take up their course, either toward the trunk of the tree, there hiding in crevices of the bark, or to some bit of board or other rubbish which afford them shelter, and then spin silken cocoons of exceedingly fine texture. After remaining for a few days in this dormant or pupa state, they emerge again in the form of moths. This second crop of moths attack the fruit which has escaped the first, and produce the wormy apples which we harvest in the fall.

In the fall many of these worms are brought in with the fruit, and leaving the apples, spin their cocoons under the hoops of the barrels, or in crevices, about the bin. Here they remain safely ensconced throughout the winter while their congeners, who were left outside, are exposed to the attacks of birds, and will probably be nearly all destroyed. In the spring they wake from their dormant state that come forth as perfect insects.

Many methods have been advanced for destroying this insect, but the only feasible one is that suggested by its habits. The most important thing is to keep the ground cleared of wind-falls and other rubbish, either by hog or man power. Next, place around the trunk of each tree at least two rings of hay rope to be removed, burned and replaced by new as often as once in ten days during the season. The larva, ascending or descending the trunk, will be attracted by this rope, and there, thinking themselves secured, will spin their cocoons, hence the burning of these ropes will destroy them all. And last, but not least, burn or scald in early spring all barrels or bins which

have been used as depositories for fruit during the winter. In this way thousands of moths will be destroyed, and the owner will be amply repaid for the amount of time and labor expended by the increased quantity of sound fruit, he will obtain the succeeding harvest.

Color Blindness.

Of all the senses with which man has been endowed by nature, he instinctively accords the highest place to that of sight. What more pitiable picture can one present to himself than that of the blind man groping in perpetual darkness. To him day and night are the same. He never beholds the glories of the rising sun, or looks upon the gorgeous decoration of the clouds as it sinks behind the western horizon. He never looks forth upon the fields and forests clad in their cloak of delicate green, and dotted here and there with flowers of various hues, but all nature is to him one continuous cloud of darkness. But it is not with the totally blind that we have to deal, but with those who suffer from a malady which is not necessarily a visible defect in the structure of the eye, for the sufferers themselves are often unconscious of its existence. I refer to "Color Blindness." It is a well known fact that if a ray of light be passed through a prism, it will be decomposed into a number of distinct rays corresponding to the color of the rainbow. Of these, the red, yellow and blue may be called primary rays, while the others are called secondary, being a combination in various proportions of some two of these primaries. It is also known that the color of an object depends upon its power of absorbing or reflecting certain of these rays. Thus, any object which appears to us red, has the power of absorbing all but the red ray, which alone is reflected. The same principle applies to all the other colors. The disease called "Color Blindness" arises from the inability, the cause of which is as yet unknown, of the retina to distinguish some one of these principal rays. This must necessarily affect not only the color itself in its various shades, but also all those which are formed by the combination of this with either of the other principals. Thus an example is given of a person who could distinguish no difference in color between specimens of claret, crimson and mud which were set before him. Another compared red sealing-wax to the upper side of a laurel leaf, and a red wafer to the under side.

Others have been found unable to distinguish the fruit on a cherry, or flowers on an apple-tree, except by their form, from the leaves.

Nor is this defect so uncommon as some may suppose. From an examination of over one thousand persons, ten per cent were found unable to distinguish between either red, brown or blue from green. Other authorities, basing their statements on similar investigations, have placed it as high as twelve per cent. Another proof of the frequency of this malady may perhaps be found in every day life. There are many people who derive no particular pleasure from flowers or other beautiful objects; who merely admire them, because it seems to be the fashion, but beyond this care nothing for them. Others seem to be positively annoyed by their presence. This probably arises from their inability to distinguish the beautiful combination of colors with which nature has painted these, her pictures.

Another argument which bears strongly upon this point is found in the well known fact that most ladies are ardent admirers of the beautiful in nature. While many men are indifferent or totally averse to any thing which tends to heighten the beauty without otherwise adding to the utility of the object. If now we refer to statistics compiled from careful examinations, we find that nine-tenths of all the persons afflicted were men. The few who were ladies, leave latitude for the fact that some even of them seem to care nothing for adornment.

Thus, scientific investigation while establishing a physiological fact, has also furnished a key which may perhaps lead to the solution of one of the most abstruse metaphysical problems of the day.

Animal Teaching.

We have all witnessed, in our time, says *Land and Water*, the astonishing performance of certain animals, birds and fishes, which were trained for the purpose of exhibition; but the majority of these, though they serve to prove the possibility of a higher training, and a more useful one, yet in themselves they exhibited a lamentable amount of waste labor and waste power.

Long years before the American Rarey's name was heard as a "horse-tamer," a secret existed, as a family heirloom, among a sect of the O'Sullivan family in the South of Ireland. This family was known as "The Whisperers," and they possessed the power of rendering as quiet as a lamb the most stubborn and unmanageable horse that ever existed.

Whether they did anything more to a horse than breathe into his nostrils we know not, but by doing this and by kind soothing, and other ways known to themselves, they effected their purpose and retained their fame.

Putting the question of drugs, or stimulants, or other fascinating means aside, and coming to the point of pure and unadulterated domestications and teaching, perhaps there was no one person in modern times achieved so much success in animal teaching as S. Bissett. This man was an humble shoemaker. He was born in Scotland, in 1721, but he afterwards moved to London, where he married a woman who brought him some property.—Then, turning a broker, he accumulated money until the year 1759, when his attention was turned to the training and teaching of animals, birds and fishes. He was led to this new study on reading an account of a remarkable horse shown at a fair at St. Germain.

Bissett bought a horse and a dog, and succeeded beyond his expectation in teaching them to perform various feats. He next purchased two monkeys, which he taught to dance and tumble on a rope, and would hold a candle in one paw, and turn the barrel organ with the other, while his companion danced. He next taught three cats to do many wonderful things; to sit before music books and squall notes pitched to different keys. He advertised a "Cat's Opera" in the Haymarket, and successfully carried out his programme; the cats accurately fulfilling all their parts. He pocketed some thousands by these performances. He next taught a leveret and several species of birds to spell the name of any person in the company, and to distinguish the hour of the day or night. Six turkey cocks were next rendered amenable to a country dance, and, after six months' teaching, he trained a turtle to fetch and carry like a dog, and, having chalked the floor and blackened its claws, he made it trace out the name of any person in the company.

## The Student.

HISTORY AND SOCIAL SCIENCE.

A. S. REYNOLDS.

A. S. REYNOLDS.

## The Problem.

Where ever we go we hear the question asked: When will the never-ceasing strife between labor and capital end in reconciliation? The storm clouds blacken, while these antagonistic elements are mustering all their forces for a general and deadly struggle, which may prove more disastrous than a shock from the combined armies of the Old and New World. Arbitration seems powerless. Argument and reason are of no avail. In England strikes are becoming alarmingly frequent. Such men as the Tyne engineers, the most intelligent of workmen, take the same old means of compelling a more equal division of profits between labor and capital. Labor organizations, from their unity of purpose, hold the world in awe. Education is pointed to us on every hand as the panacea of political and social evils, but in the Swiss republic, where if anywhere the people ought to understand the conditions on which society is maintained. Communistic principles have forced them to call a congress to readjust all the affairs of state and society in favor of oppressed laborers. Even in the United States, where there is such an abundance of room for strong and willing hands to work schemes for freeing labor from its dreadful serfdom by state legislation and social readjustments, are making their appearance. The wretched world is only known by the powerful combinations which centralize and heap up wealth in such enormous quantities as to crush to the earth almost every industrial enterprise, not carried on for their exclusive benefit. Already the muttering of the storm reaches us from the burning of Paris, the scenes of the German factory strikes and the attempts among the miners to dictate terms to a dependent world. These are but the surface expressions of the mighty agitations which convulse the very soul of society, threatening to break every social and civil bond. The world trembles as powerless; she stands and gazes at the terrible possibilities which rise up before her. Again the question comes back to us, is there nothing to prevent the encounter, or to break the shock?

## The Fires of Rome and London.

Perhaps among the thousands of characters which have influenced society for weal or woe, no one has shown more disregard for the welfare of humanity than Nero. Rome, in securing her emperors, seems to have been peculiarly fortunate and unfortunate by turns, and the words of Southwell may aptly be applied to her vicissitudes:

"Thus go by turns, and chances change by course,  
From foul to fair, from better hap to worse."

One day, all refulgent by the glory of her Emperors; the next, shadowed by their debauchery and oppressed by their tyranny. But while the world endures, the iniquities of Nero will stand out in overtowering pre-eminence. His unjust oppressions and cruel extortions might be overlooked, the murder of his mother forgiven him, but the charred spectre of martyred Rome will stand an ever-enduring Nemesis to his name. In the midst of the crime which steeped both prince

and people in the same fearful guilt, behold the monster as he prepares the terrible doom for Rome, which in a sheet of retributive fire was to overwhelm her like the cities of the plains. The people were crowded in wooden houses, the streets were narrow, and the utmost care was required by the vigil to prevent accident, which, with their limited means for controlling the flames, might easily become a calamity. But of what avail could the fire engines or the people be, when the missions of such a tyrant as Nero were to be gratified. Having heard of the burning of Troy, and wishing to renew the dismal scene, he offers Rome a sacrifice to his pleasure. It was the 19th of July that the east end of the circus was given to the flames. A heavy wind from the east soon brought them to the corner of the Palatine, where, being separated, they follow the draught of the valleys. In neither course did the fiery elements encounter the massive masonry of halls and temples until brick and stone crumbled like paper in the immense heat. The flames ran with such rapidity along the galleries of the circus as to mock all efforts to check them. Frantically they leapt the adjacent heights, and the palaces of the Palatine and Aventine lay in smoldering ruins. Down they plunge, into the lowest level of the city, blotting out at a single stroke the nursery of the Roman people, and stop not in their wild sport until checked by the walls of the city and the banks of the Tiber.

At the same time another current bears toward the Velia and the Esquiline, and the buildings in its course are razed to the ground. It ceases not till checked in its raging by the rocky cliffs beneath the garden of Maecenas. After raging six days, the wind ceases and the flames subside. The wretched outcasts begin to return to their desolated homes, when the fire-fiend, as if uncontented with his own handiwork, excites new destruction in another part of the city. The wind had now changed, thus opening new fields to conquer. It began where the Aemelian gardens of the already unpopular Tigellinus touched the city, spreading from the northwest toward the Quirinal and Viminal hills. For three days the fire raged with unabated fury, destroying less of property and fewer lives than the first visitation, yet the temples, the edifices, shrines of the gods, halls and porticos devoted to the public amusement destroyed by it were of greater interest.

Altogether, the disaster, whether the result of accident or design, involved nearly the entire city. Out of fourteen districts into which the city was divided, four remained untouched, seven were more or less injured, and three were entirely destroyed. It is said that the hills of the city alone saved it from entire destruction. Among the ruins were the Temple of Diana, the shrines and altars of Hercules, the Roman temple of Jupiter Stator, the Regina of Numa, the Sanctuary of Vesta with the Paladium Penates, and the ever-glowing hearts of the Roman people. The loss of these time-worn structures could be replaced, but never the unblemished masterpieces of Grecian chisel, pencil, or graver, the prize of victory, the works of genius which made Rome's ashes the repository of their glory; never the hundreds who gave their bodies to the catacomb of flames, as Nero, from his palace towers, as a last solemn requiem, chants "The Sack of Troy" to his harp.

The next great conflagration of interest, if not as destructive in its character, yet quite as remarkable, occurred in the city of London in the year 1666. The fall had been remarkably dry. The wooden buildings, narrow streets and heavy winds seem to have conspired against the metropolis of Western civilization. No haughty tyrant now commands the flames, but the gods of vengeance send forth the furies with the wings of Boreas to bring condemnation on the works of man. This chapter of destruction opens with the demolishing of a baker shop at the end of Thames street, next to the Tower. It was early on Monday morning, the 2d of September, that the stillness of the long and narrow streets of London was broken by the loud cries of "Fire! Fire!" and the pleasant dreamer springs from his couch, and half awake becomes suddenly conscious that the peaceful city is in flames. So rapidly did the fire spread that the utmost speed was required by the flying populace to escape suffocation and death. Calamity came with calamity, for no sooner had the city water pipes been turned on than it was discovered that, by accident or design, the water had been cut off from the city, so that it was impossible to offer any resistance to check in any degree the storm of fire which enveloped them. At the close of three days London, the metropolis of England, was no more the habitation of thousands, but a city of ruins. One of the inscriptions on the London monument thus details the extent of the destruction:

"It consumed 80 churches, the city gates, Guildhall, many public structures, 32,000 private houses, 400 streets. Of the 25 wards it totally destroyed 15, half burnt, others. The ruins occupy 450 acres."

Thus involving two-thirds of the city, that, too, in the richest part, with all of her warehouses and most of her public buildings.

With reference to the origin of the fire, there is some doubt whether it was from accident or design. At the time of the excitement it was generally attributed to either a conspiracy of the Dutch and French for the purpose of impoverishing the country, or an unwise attempt of the Catholics to gain an ascendancy. In either case the effect was lost by the unthought-of effect upon all. The King and the Duke of York did all that was in their power to subdue the flames, and their efforts to relieve the suffering were so successful that within four days all were provided with shelter and food.

The rebuilding of London was not as rapid as that of Rome, probably because the government did not aid as effectually in the construction as in planning for the reconstruction. It is conceded that, notwithstanding the enormous destruction of property, the city, as a city, was materially benefited by the disaster, for now a regular plan could be made, by which the streets could be widened, and arrangements could be made for constructing buildings of greater magnitude and with more substantial material. Nor were these the only advantages derived, for immediately after the fire there was organized in London a company who first put into operation the principles of insurance against loss by fire.

Dramatic—Bar-room.

Bird of Paradise—A gambler.

Bald mouths are said to be at a discount among the students.

## Railroads and Railroaders.

Our forefathers chose the eagle as the symbol of our country, but at the present we think a railroad train going at full speed would better typify American life. We pass no very small portion of our time aboard the cars. People have been married and born at the rate of forty miles an hour, while, to judge from the experience of the past year, we stand a much better chance of being crushed or burned under the fragments of a palace sleeping car than we do of being hanged or struck by lightning.

The discovery of the powers of steam and their application to locomotive purposes, has rendered the rapid development of the United States possible. Possessed of a territory larger than all Europe, exclusive of Russia, the distance of places and the difficulties of transportation would have bound our progress to the slow wheels of the mule team, if the genius of the Anglo-Saxon minds had not discovered the most powerful of motors, dragged it from its hiding place and pressed it into the service of mankind.

Furthermore, railroads were necessary to our material progress in the past, they will not be less so to the preservation of our institutions in the future. With a country stretching from ocean to ocean, and from Tropic to Arctic Circle, with a population consisting of all the races and nationalities on the globe, the obvious tendency is toward disintegration. Considering these facts and our past experience, it is not altogether visionary to say that the next century would see half a dozen distinct governments in North America, if it were not for steam and the railway system. The network of railroads will be the iron ban which, resisting all tendencies toward separation, will bind the different sections of the country fast together, and combine the conflicting elements into a homogeneous mass.

If railroads are a peculiar product of the nineteenth century, railroaders are not less so. These "fast" sons of the Iron Horse will engage our attention for a few moments. Their mode of life develops certain generic peculiarities of character, which give a rather low opinion of "railroading" as a moral discipline. The railroad, like the army, attracts those unsteady spirits which disdain the monotony of ordinary labor, and sigh for something more exciting in character. Passing rapidly from one section of country to another, they have not the same necessity of guarding their conduct as when settled permanently in a community, under the eyes of old ladies who diligently circulate all reports of depraved conduct. Railroad virtues are courage and generosity, railroad vices are general recklessness, immorality, intemperance and irreligion. A long experience on the road is likely to render a man reckless of human life, hence the fearful accidents of the past year through the carelessness of railway officials and employees.

The hardships of the road lead to intemperance with a fearful facility, when the bottle supplies oftentimes the place of food, fire and drink. The rattle of the wheels and the screech of the whistle are little conducive to religious meditation, and it has been observed that men habitually exposed to a certain degree of danger to their perishing bodies, do not display much anxiety on account of their immortal souls. A brakeman with a bible would be as purely a picture of fancy as a hypocrite without one.

The characteristic of the railroader which appears most striking to the unfortunate traveler, is the utter absence of human sympathy in his composition. He knows what time the train starts, but to tell it upon inquiry is an exhibition of sauvity quite beyond his conception. The conductor is sternly unaccommodating, the engineer morose, the brakeman gruff, the train-boy brazen-faced, while the baggage master is the most crabbed of mortals. It is time for reform to begin.

## American Politics.

Political life is a curious study. In England the most dazzling prizes are political. In the English novels political success is represented as the greatest triumph. However illustrious in rank a man may be, however rich, the real crown of his life is political distinction. It is very much so in fact. Men of the highest culture, of the utmost refinement and delicacy of nature, enter the lists. Parliament, to the young and accomplished English gentleman of to-day, is what the tournament and the field were to his ancestor. The church, the army and political life are the three careers open to a "gentleman." And of these, the highest in general estimation is unquestionably the last. It is hardly less so in France. The hero in the vaudeville, which is a picture of cotemporary life, triumphs at last in receiving his appointment as Ambassador. Upon the actual stage of life scholars, historians, savans are politicians and statesmen also. Lamarque, Guizot, Thiers, Arago, did not disdain an active part in politics, and were doubtless as proud of their political position as of their literary fame.

To cross the Atlantic to America is to reverse the fact altogether. The American "gentleman" upon his travels, who remembers with more real pride than any other incident of his tour the fact that he was invited to dinner by the Prime Minister in England, or by the Foreign Minister in France, in his own country wonders that any gentleman can dabble in the dirty pool of politics. His charitable excuse for his neighbor who interests himself in political affairs is, that he is rather needy, and would like a respectable living as Minister to Monaco, and so pays the necessary price, by shutting his eyes and rolling a little in the dirt. If you ask him whether Mr. Gladstone and John Bright, Canning, Burke and Lord Chatham also rolled in the dirt, he smiles, and says that they manage these things differently in England. If you ask him whether, upon the whole, these men could have employed their talents more usefully, and would have done more wisely for themselves, for their country, and for civilization, if they had left politics to inferior men, he is astonished that a man of your sense should not be able to make distinctions. If you ask him again whether he is opinion that a government like ours would be more honestly and economically administered if it were left wholly to blackguards, he shakes his head. If you then press him to know whether such a government will take care of itself if decent and honorable men decline to take any interest in its management, he bows politely, and wishes you good morning.—*Harp's Magazine*.

A terrible collision has occurred between George Francis Train and a train of thought, which is an accident that has no precedent.



## The Student.

## YOUNG LADIES' DEPARTMENT.

MISS E. M. BAKER. MISS ALICE CHEEVER.

## Perfection Through Trials.

[Verse suggested by the Chicago Fly.]

On the quiet, with sun beaming,  
On the careless, happy lit,  
Came, with sudden sound, the wail  
Of despair.  
All the fair  
Silence eddied with the moan  
Of fear, and desolation shrouded  
Everywhere.

Then I shuddered, waited, prayed;  
[Woman pray while heroes fight—]  
But my happiness or joy  
Came to make sad hearts more light.  
While the sight  
Of the fearful, fond glare  
Of the hero's mocking stare,  
Filled the night.

As I waited anxiously,  
Doubts and questioning came,  
Why amid this thing, but I said,  
And my answer came at last.  
From the blast,  
Of the fiery furnace, came,  
Small and still, a voice of those  
Yearning past.

Still and small, but windproof ear,  
Spoke the calm I heard that day,  
God's reward must have its dues,  
Fairest develop through duty.  
Patience  
Herein's notion, and at length  
Trials leave perfected strength  
In their way.

While the voice was speaking, came  
Nights and sounds most glad and sweet,  
Sights of those tall of love,  
Sounds of eager, hurrying feet,  
Filled each street,  
Lane and highway—every where  
Hearts and hands with boundless care  
Were caught.

Jockey and halberd folk,  
Strife no longer belied and strove  
All your brethren, helpers, friends,  
Lifted sympathy to prove.  
From above  
Came the still voice softer soft,  
Here this season, send it off  
And agitate,  
Common was its common love.

We expect to fill this department with poems, sketches, etc., with discussions and essays upon the fine arts, and reviews of different works of art. Hoping and believing that the time is not far distant when this University shall count among its children, artists, poets, musicians and sculptors, we do not hesitate to choose such subjects, but send the material forth with a hope that it may foster and strengthen all that love of the beautiful which makes life so delightful, and a trained eye, hand or brain such a rich possession. —Ets.

Charity, the angel pure and holy,  
ever follows each one of us seeking to restrain, help and guide us. Often, often do we repulse her, and very often ignore her altogether. We are wrapped in fretful complaining, and a somber cloud hides all the rainbow's colors. But when we place our hands in hers, we see no more the sin stained of erring mortals which offend our eyes; our own garments become fair and clean; the world is a good old world, and it is sweet to live.

"The path of duty is the way to glory;"  
Through mountain passes, over rugged sod,  
From fresh, fair youth to wrinkled age so hoary  
The path of duty is the way to God.

Few appreciate the nobility of silence. Who can tell what strength it takes to wait perfect while others work? Who knows what courage it requires to be silent for another's sake, or to endure quietly unjust words? Ah! the noblest hearts are not always the well-known ones, for silence often hides a hero.

## Woman's Work and Place.

There lay upon the ground, one sunny, summer day, a nut just fallen from the tree. A little child came by, saw it, but shook her head, and said "I will wait." So she sat down on the moss-covered root of a tree, where the pleasant sunbeams flitted about her, and waited. Presently two happy children wandered there. They saw the great round nut, and eagerly snatched the prize. One pounded impatiently to break through the stubborn, green rind, the other broke off with his hands the bruised covering; but their sunny faces clouded. "Throw it down," said one, "it stains our hands." "I guess it's not good for much, after all," said the other.

The little child sitting under the tree smiled, looked at her own unsoiled hands, but said nothing, and waited. Soon another passed that way, whistling cheerily. He cracked the shell of the troublesome nut, "but oh! tace's too little nut," sang he, and went his way. "I can't break off the shell alone," said the quiet child, and waited there until a group of children came dancing by. "See," cried one, "what I've found." "All cracked and ready for us," said a second. "Too much meat there for one," said a third little tongue; "let us all have a taste." So each hastily picked out a bit and danced quietly on.

Then the tiny, wise child came up, gathered the cast-away shells, and laughed all to herself. "They did not look in the little spaces," she said, "and the sweetest bits are there."

On the ground of human inquiry there lies still the nut of woman's work and place. The rind stains and discolors; the shell is hard to crack; the meat, too much for one, is divided among the many; but there are the little out-of-the-way bits, still left free for the feeble and unskilled hands of us girls. These bits are seldom chosen or tasted by the discussing public, for there seems so much more of the other, but they are none the worse for that, perhaps.

There is nothing on earth so grand as humanity. Whether it is more perfectly shown in man or woman, no one can tell, for God placed them side by side. We cannot say that woman has all she needs, or has attained to all she ought to have, but that, at present, until she is better prepared, she has all she can control. It is a truth most bitterly felt by a few, that even now, woman and girls, while speaking the truth earnestly, or prating of it with idle tongues, concerning rights and power and influence, do not use properly, and to their full extent, the rights which every woman holds. They allow greater influence, and vaster power than even they ask, to lie dormant. Yet we cannot wonder that the power which woman holds does not satisfy her, and often remains unrecognized by its possessor. Humanity is impatient, and that which requires long and patient waiting, is often left to wither and perish. Her influence is woman's greatest power; but it must be exercised with patient, and long, and silent waiting, for its results are only seen after years of watching. This it is which makes woman's work seem small to some. We must first recognize its greatness, believe its potency, and hold the angel patience fast, that we may make ourselves fit for its doing.

Women but follow the great mass of humanity, which, gazing on the "green hills afar off," passes unheeded beauties and blessings all around.

She beholds with longing eyes the grand forests covering the mountain tops, and crushes with careless foot the fragile, dainty blossom springing from the plain where she stands. But she is waking, rousing herself, developing neglected talent. She is striving to build her palace so strong and well, that whirlwinds of impulse and passion cannot overwhelm it; to frame it of marble so pure, alabaster so white, that evil and wrong shall not dare to sully or stain.

The fair, green hills will be gained in time—only, oh sisters! enjoy the equal fairness of the landscape around you. The mountain forests are rich and shady, their elevation grand beyond measure, and you shall reach them by and by, by steady, toilsome climbing, but gather garlands as you go, to enrich and beautify that which you shall gain. The stone you hold is rough and unsightly, it may be, but break it, and you shall find the dainty, glittering crystals of a Gem. Polish with care and toil through the long, dreary day, the dull pebble you possess, and at evening time, there shall flash before your wondering eyes, the glory and radiance of a priceless diamond.

## A Bullockite Meeting.

"Away down in Maine" there exists a religious sect called the Bullocks, or Bullockites. Why this queer name, or whence the origin of the sect, no one knows. It is represented by scattering families, or sometimes small villages in a certain portion of the Pine Tree State, but I have never heard of it elsewhere. The Bullock creed is exceedingly indefinite. They don't believe in education, or anything "new," and he is counted the best man who talks and prays the loudest and longest. What people such a belief would beget, I leave my readers to imagine.

In the little village of P—, where I was visiting, lived two or three of these queer Bullockite families. One dwelt the next door to my grandfather's, and every morning, while at breakfast, we could hear the good man praying and exhorting with the great strength of strong lungs. He was heard everywhere in the village. One bright Sabbath morning we received an invitation to attend a Bullock meeting, which was to be held at a village eight miles away. Accordingly, John harnessed old Kate into the light spring wagon, and we started. The route was beautiful in the extreme. Up hills so high and steep, and hard to travel, that it almost seemed like climbing a perpendicular wall; then down, down we went, to the valley again, rising and falling over the rolling ground as over huge and solid billows. Bowling merrily along the few level spaces, through the little village of P—, and two miles beyond, till the square white "metin' house" came in view. Strolling groups of men and women dotted the green in front of the church. Bustling matrons and uneasy children filled the doorways. Shy, homely girls and awkward youths stood timidly around the corners, and hosts of whispering, giggling boys filled up the windows. We, being strangers, immediately became the objects of curious eyes and gossiping tongues, and were conducted to the very middle pew of the old fashioned church, a thing which I particularly wished to avoid. I had often heard of these old churches, but never understood their arrangement, until then. The building was nearly square, and lighted by numerous small, queer windows. The

pews were about six feet square, with seats or benches around two sides of them. Little pews they were, with gates opening in unexpected places. The pulpit, full ten feet high, was in the form of a semi-circle, and reached by winding stairs. A wide gallery extends around three sides of the building, and completes this strange, old-fashioned edifice. While I was occupied with a mental survey of the place, the congregation were entering by twos, threes, singly and in groups; the strangest medley of people possible to imagine. Old, wrinkled men and women, bent and tottering, clad in antiquated garments, most fearfully and wonderfully made; maids and matrons, whose unskilled attempts at ornamentation were ludicrous and pitiable; gruff farmers, and blundering green boys, together with children of all sizes, ages and descriptions, made up the motley congregation. Sudden, without warning or intimation of his intentions, "old Elder Stone," hitherto hidden, advanced to the front of the pulpit, fell upon his knees, with a thump that echoed over the church, and said, "Let us pray." These words are always sacred to me, quieting all unhalloved thoughts, and saying to all, "let us pray;" but then they came so suddenly, the action accompanying them was so abrupt and ludicrous, that I smiled visibly. For the next half hour I really suffered. I dared not laugh, yet could not help it. The elder was old and wrinkled. His hair was grey and his small eyes dim. His wide, thin lips covered a few decayed teeth, but beyond these there were no definite features, except his mouth, which was so widely opened, that it banished attention to anything else, and there were two tight lines where eyes should have been. With one hand he held the pulpit railing, with the other his left ear, and that poor organ was twisted around and around, churned up and down, and pulled here and there, until it attained the hue of a coal of fire. He shouted and screamed. He wheezed, and groaned and rattled. He coughed and gasped and choked, till he was purple in the face; then, words failing to express his emotions, he leaned his head back, and simply yelled—a loud, shrill yell—with that he caught his breath and started again. All this was done in the peculiar sing-song which constitutes a part of their worship, and with violent rocking to and fro, and energetic working of his ear. The brethren and sisters in the congregation were thoroughly aroused, and the house echoed with their responses, while a parcel of bad boys in the gallery put in "amen's," "oh lords" and "hallelujah's," interspersed with suppressed snickerings, in the most ridiculous times and places. When the prayer was through, a hymn was started by an unseen singer. The singer's voice was very peculiar, resembling a powerful blast coming through a small knothole. Directly in front of us, alone in the great pew, sat a little old woman dressed all in black. She had the hardest, most wrinkled face I ever saw, and was a most fervent responder to all said. She sang with the rest, in a thin, quivering, nasal tone, utterly inimitable. The chorus was full of sobs and quavers, and the words hoarse had five notes to cover. The old lady sang with such zeal, that, being old she lost her breath every time in the middle of that word "home," and caught it again when the line was nearly completed. Something like this: "An' when I go to my home (gasp) on-m'gh!" I laughed, I could not help it.

Well, the meeting was like this all through, but in the afternoon, when we again attended, the excitement was still greater. The little old woman of our morning's acquaintance was the first to speak. I thought that, being old and feeble, necessity would compel her to be moderately calm. But no! she exceeded the elder in vehemence, she screamed and shouted, she foamed at the mouth, she shook her fists, and waved and tossed her arms, she stamped her feet, danced up and down, flew round and round the pew as though wild; then suddenly dropped upon her seat and resumed the look of stolid indifference she usually wore. After one or two other exhortations, another woman rose. Tall, thin and stiff, she was the singer. She clenched her hands, held her arms at her sides as though they were immovable iron bars; shut her eyes, opened her mouth, and held forth. Up and down, with the regularity of a machine, she rose and fell, balancing upon her toes, until, in the midst of a prolonged "Oh Lor!" when on her tip-toes, and at the height of her high voice, she sat down as suddenly and violently as all the others had done. I was so astonished by these two speakers that I lost what followed, but was aroused by the closing song. It was a wild, weird thing, and as one voice after another caught up the song, each in a different key, each keeping his own time, the effect can be better imagined than described. After this the meeting closed. Scarcely a word was exchanged between us until we had passed the village, and entered the dark, fragrant pine grove beyond, and then we laughed, loud and long, till we were tired.

The pine wood, and the old church, and the quaint, queer Bullockites are many miles away, but they will always keep a fresh, green place in memory's garden.

## The Music of the Voice.

The art of talking is one little cultivated, and seldom exemplified. The intonations and modulations of the voice are seldom considered as matters of much moment; but a soft, clear voice is as musical and beautiful as any symphony of Beethoven or Mozart, and heard much less often. We listen to a clear rich voice with undisguised pleasure, scarcely knowing why we are pleased, or what pleased us, but conscious that something rare and unusual lends a charm to the speaker. The world is so occupied with the high arts and sciences and branches of education, that it too often forgets the minor arts which enrich the possessor so much. A grand sonata or a sweet symphony from some great master will delight all music lovers, but a fine and cultivated voice wins all hearts, charms all hearers, turns pain to pleasure, and makes exquisite melody of commonest words.

A beautiful picture, a fine thought made pure in marble, a rich, sweet strain of music—these will hold men back from evil when a sermon would be lost.

There is no such thing as passive, suspended existence. If a man is not rising, he is surely falling. If he never rises, he is soon below the beam. If he never falls he will soon be pure enough to consort with angels.

It would seem as if *integrity* and *reputation* were becoming synonymous, judging by the facility with which characters of the former reap the rewards of the latter.

## The Student.

### ENGINEERING AND ARCHITECTURE.

N. F. HATCH.

N. C. PICKENS.

#### American Architecture.

During the past history of the world, Architecture as a necessity has ever claimed the attention of mankind; as an art, it has sometimes risen to an equality with the sister arts of painting and sculpture; nay, it has surpassed them, making use of them as accessories, and its effect on the human soul has been more lasting and more generally diffused.

Yet, with this long experience of man, in every clime, with all kinds of materials, and with the different tastes for beauty, belonging to each different race of man, but comparatively few noble successes in building have been attained.

Most are but failures. Nor has a knowledge of the true spirit of beauty been diffused except for short periods and over limited spaces.

There is but one means of success. This is, that a people should aim to embody its needs, its spirit, and its tastes in its buildings, not servilely copying the vestiges of an effete civilization or semi-barbarism, which express foreign tastes and feelings, but taking such ideas of beauty as it may change to its needs, infusing in them its own spirit, building to express an object.

If we look briefly at the past history of the art, it may elucidate this point.

The earliest complete architectural remains now existing are those of the Egyptians. Among that nation, a belief was prevalent, that three thousand years after death, could the body by any means be so long preserved, it would be rejoined by the spirit, and enter upon a new and happier existence. Therefore, to preserve the dead body became of more importance than to take care of the living one. The tomb overpowered the temple and the dwelling. The spirit expressed by one of those massive pyramids is eternal rest or Eternity.

Well did the old builder, living in his hut of mud and reeds, on the banks of the Nile, succeed in working out his idea. Three thousand years since, his hand ceased its labors and overhauled to dust, yet to-day his carvings and paintings are as sharply cut and brightly colored as if finished yesterday. Egypt has passed away, her people, manners, civilization, all are forgotten, yet her spirit lies open in those large records of stone, to him who can feel and interpret.

To the Greek, a different object presented itself. His ideas of a future state were so dim and visionary as to occasion him little thought or trouble. To him, the Gods were but the shades of long-ago heroes, not repressing vice or encouraging virtue; and by a natural transition he deified his heroes and thus identified his religion with the past history and triumphs of his race. Thus, born with an inherent love and appreciation of the beautiful, greater than ever possessed by any other people and filled with the desire of celebrating the deeds of his race, he began the erection of those magnificent temples, whose language is not religion, but a mixture of hero and art-worship. He did not originate his primary forms, but borrowing partly from Egypt and partly from Assyria, changed and modified them till he made them his own.

In hero-worship, the statue is of more importance than the shrine, and we find here, the statue to be the soul of the temple, everything else, sculpture, painting and construction, subordinate to it. Several of those statues were sixty feet high.

His love of the beautiful also led him to ornament his temples by painting them in beautiful colors, ornamenting his mouldings with graceful designs, all harmonizing with his main object. We can but dimly realize the effect of one of those temples, for, with its statues broken to dust, its ornaments defaced, its paintings vanished, it remains but the skeleton of its former rich existence. The spirit has departed.

Yet even these relics have been extolled and imitated as the highest success in building.

They offer but one phase of success, not its acme.

The Roman commenced where the Greek ended, but lacking his innate perception of beauty, built in a corrupted form, cutting his ornaments instead of painting them on as a simple decoration, making them a principal feature, and introducing the arch, also, made a monstrosity from two beautiful systems of building, each perfect by itself.

Had he dropped the Greek orders, already carried to their highest point of beauty, and confined himself to his own arched construction, which he was forced to use from the nature of his materials, he would have eliminated a new style, as successful as any other has been, whose spirit would have been usefulness.

He could not cut a statue equal to those of the Greek, and so, to make up the deficiency, overloaded his buildings with ornament. Amphitheatres, baths, aqueducts and walls were the object of his labors rather than temples.

His styles have been the source of much of the bad architecture of the world, yet to him we owe the original of the Gothic Cathedral, the Basilica.

When the Christian obtained control of the State, their first care was to occupy these basilicas with the services of their faith; and as the new faith swept over the then known world, it carried with it a disposition to use this particular style of church, and though, modified and enlarged it may be traced through the wide range of Gothic Architecture.

But they soon found a lack of expression apparent, their churches did not express their earnest devotion, fiery zeal, nor that beautiful quaintness so common in the so-called Dark Ages.

The low nave was raised, vaulted, massive piers, with their numerous shafts, took the places of the single pillar, the walls were broken up into buttresses, and the windows, from plain arched or rectangular inconspicuous openings, were enlarged, changed, filled with beautiful tracery and embellished with stories from the sacred page, till at last, the crowning triumph of Gothic architecture stood forth in its perfect beauty, as nearly possessing a living soul as it is possible to a work of man.

No matter how illiterate or rude the peasant or burgher who entered its holy walls, his soul was awed, and he could understand and join in its unending expression of devotion.

The great power then possessed by the Roman Catholic Church was kindled and held, more by the effect of its religious edifices on the minds of the people, than by any other one agency, and we venture the assertion, that, had their churches been built in an en-

tirely different style, expressing no object, or a different one, the sway of that church would never have become as powerful or extended as it did. At the height of its power, Gothic architecture was at its nearest perfection, both declined together.

Cologne Cathedral, still unfinished, was mostly built after this period, and though pure in design, its workmanship of the best, it fails to impress the beholder, because it is lifeless, a poem in a forgotten tongue.

This style is the most flexible of all, if its spirit be understood, alike adapted to the palace, the castle or the dwelling, but receiving its fullest expression in the church.

Through it all runs a vein of quaintness and quiet beauty.

With the Reformation came a return to the original church of the early Christians, as well as to the purity of their faith; and, as internal dissensions divided the reformers in many sects, their architecture partook of these diversities, and became at last imitations of the worst examples of the Roman school.

From that time to the present, Architecture has been but a copying and modification of some previous style, no one style being prevalent. Many improvements have been made, as the Mansard roof, the introduction of iron and glass, as in several exhibition buildings, yet no new style has been developed or invented.

Americans ought to have a national style. Not all the possibilities of Architecture have been exhausted. We have all the materials of the ancients, many new ones, more real wealth and strength, beside many other advantages, such as machinery for working and transmitting materials.

In engineering and mechanism, the Americans are equal to any other people, yet in Architecture they have generally failed.

The tomb possesses no special interest to us, since we know that our dust, no matter how widely scattered, shall be gathered again.

The church, as an edifice, has lost its sanctity, and is now but a place for the holding of religious services, impressing the mind with no religious awe, as God is no nearer us there than in the humble cottage, the shop or the store.

Neither are we addicted to that species of hero-worship which consists of erecting temples and statues in them, but rather to that kind which forgets dead heroes and offers to the living, abuse, empty evasions, political power and greenbacks.

But we do have a strong love and reverence for home, and making that feeling the exponent of our national Architecture, may work out a national style as beautiful as anything in the past.

We may build our public buildings in a modified Greek or Roman style, if we take care to express solidity, strength and patriotism; our churches, in a Gothic style, to express our continuance in the devotion, zeal, and traditions of our fathers; our business blocks, as suits the necessities of use and construction, because neither of these is the principal object of the American's thoughts and labors.

There is no reason, however, that we should build a copy of the Parthenon, an old Saxon castle, an Egyptian tomb, or an Italian villa, to live in, because these are beautiful things or because some one else has done so, when they neither suit our needs, our tastes, or express our feelings.

It may be, also, that we are to build in wood, and then a simple Gothic or Greek villa is a falsehood in construction.

Brick or stucco should not be made to represent stone, or wood, either, for every material has its own expression and adaptation in building.

As before remarked, the home should be made the highest type of American Architecture. Convenience should be the first requisite in construction; elegance in mass and ornament the next, simple or elaborate, according to the means and tastes of the owner, but all ornaments to be good, none of the unmeaning kind so often seen, and painted in harmonious colors.

The surroundings, too, are quite important. A bit of nice lawn, a noble tree, a clinging vine, with its green foliage, beautiful blossoms, or simple grapes, often gives more elegance and expression than the most elaborate cornice. It is of God's carving, and, were it rarer or costlier, we should see its beauties more easily and prize them higher. To build well, expressing a noble purpose, costs less than to put up an abortion to disfigure God's fair earth.

To accomplish this elevation or arousing of the native good taste of the American people, several things are needed.

1st. A Central School of Architects, worthy the name, to educate architects thoroughly in the mechanical construction and the artistical designing of buildings. Very few institutions in the United States profess to teach Architecture, and those only as a branch of Engineering.

2d. A Builder's Journal, to occupy a place in Architecture similar to the one held in Engineering by Van Nostrand's Magazine, giving a popular series of articles on that part of the history of the art, most essential to be known by mechanics generally; papers on the different modes of construction in different materials, and the best methods of operations; a full and complete explanation of all the best methods used in the work-shop or on the building, for laying out and drafting work; in fact, to furnish a popular form of the instruction given more fully and theoretically at the School of Architects.

3d. A series of books of convenient form, for each trade, containing full directions and the necessary instructions and explanations for executing all kinds of building in the best manner, giving the methods actually used now in the various parts of the country. For example, one for carpenters' use, should contain a sketch of such styles and their details, as are commonly used. A full and plain account of all building materials, their proper use and management. The mechanics of construction. The strength of materials. Making all necessary drafts and plans. Stair railing. The principles of good taste in Architecture, containing the methods of proportioning the sizes of all parts to each other, etc., thus forming a complete body of information for practical men, similar to the different good machine and tool books. No such work at present exists. Most of our American Architectural works are too general and theoretical, or are simply architects' advertisements, and few give any principles of building.

\* These would do much toward elevating Architecture to its rightful place as the highest of all arts, and would do as much for it as similar means has done to reform and advance our Engineering.

#### The Architect, Engineer, and Inventor's Calling.

In every age some peculiar feature has been dominant. We have had the age of arts, of poetry, of theology. From each of these periods great names shine out on the page of history. Each was great in his day and generation, and attracted the esteem of his age, and still continues to be remembered, because he practiced that which, at the time, was the greatest means of helping men onward and upward.

By forgetting that only by doing good can we hope to gain the esteem of our fellow men, and that by practicing that which most tends to man's advancement and civilization can we merit distinction, we are liable to rely too much upon the history of the past for examples by which to guide our actions.

The best interests of mankind, to-day, are not to be advanced by the same means that were employed during the first, fourth or twelfth centuries. We live in an age of advancement; in an age of intellect and of science, with all its varied and ramified connections with mind and matter; in an age which is fast seeing the subjugation of the stupendous forces of nature to the will of man. Civilization has had her warriors, her poets, her orators, her statesmen, her divines. But the civilization of to-day, in its present stage of advancement, demands men of science to grapple with the great physical as well as mental and moral world. She demands that science, the great leveler of all obstructions, shall go forward, breaking down every barrier to improvement, and clearing the impediments from the course of societary movement, until every man shall feel that in his neighbor he necessarily has a friend, and all nations shall realize the common brotherhood.

The inventor, the engineer, the architect, have done much to ameliorate man's condition, and yet much remains to be done. There was a time when the destinies of Rome were swayed by the eloquence of the forum; when by the eloquence of the orator kings were made, and by the same power were dethroned. The inventor, by the invention of the printing press, banished the tribune and the forum, with their noisy and dangerous assemblies; and the editor in his sanctum writes down his thoughts, and in a few hours they are read and calmly considered by thousands of his fellow men. Thus we see put into operation one of the great machines for working out the civilization of the world, which, with the exception of Christianity, has done and will continue to do more than any other agent.

The magnetic needle has been used as the unerring finger to guide man from an old to a new world, in which liberty might have a new birth of civil and religious freedom. By the telegraph, intelligence flashes from city to city and from nation to nation, faster than travels the day. The inventor has harnessed the power of steam, and caused it to do his work and bear his burdens. The press, the needle, the telegraph, the steam engine, all have contributed to cause intercourse among nations, and intercourse has begotten common interests, fraternity and peace.

By the invention of the spinning jenny and cotton gin vast tracts of land have been opened up to civilization, and enlivened by the busy hum of industry. The power loom and sew-

ing machine have clothed millions from the inclemencies of the weather, and made them comfortable who, without aid, must have suffered from winter's blasts or fainted under summer's sun. By improved machinery for cultivation, production has been vastly multiplied, and thus man supplied with a better and more plentiful subsistence and by almost perfect harvesting machinery, in this made more certain and easily obtained.

All the labor-saving machinery of the age helps to accumulate capital for carrying out social, educational, moral and charitable projects, which otherwise must languish. But machinery gives its greatest impulse to man's advancement by liberating him from the otherwise necessarily interrupted struggle with nature for existence, and allowing time for intellectual and moral culture and development. Thus is achieved for the civilization of the present day more than can be achieved in any other way.

The last century has revolutionized the world, and the grand achievements that have been made by her warriors sink into mediocrity when compared with the grander achievements of the engineers of the present day. The world has often been struck with amazement and awe at the boldness, energy and success of Napoleon and his army crossing the Alps, but what shall we say of those engineers and artisans who, like the Turks of old, scaling no other way,

"climb one in the rock," and go not over the Alps, but through them—not to cross swords, but to bind the nations together with bonds of iron, the rail, to give them common interests, and to compel them to keep the peace.

To what military campaign, sacrificing its thousands of lives and dissolving homes, shall we compare, either for boldness of design or effect upon humankind, the digging of the Suez Canal, affecting, as it does, the comfort and happiness of millions? Or the great works completed or being completed in our own country, which are destined to consolidate the commercial and industrial interests of the country, open up and people the vast empire beyond the limits of the present frequented paths of civilization, and bind together the Atlantic and Pacific States, with their intermediate links, in a bond of union which internal conspiracies or foreign cupidity and avarice shall never be able to break, but which the lapse of ages shall weld stronger and stronger while time lasts.

The architect's calling is to build, not only houses, but homes for the people, with such fitness, propriety and beauty that he would be frowned down as meretricious villain who would lay upon them the despoiler's hand; to build the temples with such grandeur, symmetry and purity of style as to inspire a reverence of the sanctity and thoughts of Him who ruleth all things; to build the courts of justice with such firmness, truth and system as to instill in the minds of men ideas of justice, law and order; to work in unison with nature to elevate and ennoble the race.

The engineer's calling is, by means of his machinery, to supply men's wants while he takes time to think; to lay over all lands a network of iron rails, to invite intercourse among nations, and by creating common interests, promote a brotherly feeling; to make the earth yield up her treasures; to cover the waters with the busy fleets of commerce; to carry the mis-

ters of the Gospel to the heathen lands and everywhere, where ignorance and darkness are, to spread intelligence and light.

The inventor's calling is to improve the machinery of commerce and production in all their branches: to increase the sources of information, and by his processes and appliances give man dominion over nature.

We see these "practical men," "men of science," rising above the so-called statesmen. Statesmen turn beseechingly to men of science, and say, "Tell us how to raise more grain on less soil, else our people starve." The man of science tells him how to raise more grain on less soil—the people need not starve. The engineer and architect tell him how to do the greatest good with the least means. The inventor comes to the rescue with the grand products of human ingenuity.

No longer must the wise man be the "king's fool," or the artist be the "nobleman's plaything." They now rule. Their common mission is to civilize the world.

### Navigable Waters of Illinois.

The steamboat routes in and around the State of Illinois are estimated to be one-fourth as long as the railroad lines in the State.

There are in and on the boundaries of Illinois the following routes of navigable streams on which steamboats run:

Mississippi river, Cairo to Dunloth	678
Ohio river, Cairo to mouth of Wabash	113
Illinois river, north to LaSalle	334
Total	1125

Besides, the Wabash is navigable for 180 miles of its crooked course, and there is about seventy miles of the coast of Lake Michigan on our northeast border. There are, or have been, steamboats on Rock and Fox rivers, though they can hardly be called navigable streams, and these streams have been on the upper courses, above many dams, which cut them off from their mouths.

The Michigan canal bears canal boats from Bridgeport to LaSalle, 96 miles. The plan for the improvement of the Kankakee and Illinois rivers, if carried out, will add about 300 miles to the sum given above.

These long lines of navigable waters have had much to do with the prospects and rapid growth of the State, especially its early development.

**ILLINOIS CENTRAL RAILROAD.**—From the Locomotive Report for March we see that the company owned 188 locomotives; and that the average cost per mile of running passenger engines, in cents, was \$17.85; average cost per mile of freight engines, in cents, \$25.15; average cost per mile of construction engines, in cents, \$14.42; average cost per mile of switching engines, in cents, \$18.74.

The strong movement for industrial education is one of the marked features of the nineteenth century, and one that will leave its impress on future generations.

Prejudice is seldom annihilated by a single effort of the will—it has to be lived down.

Of course, all in the East were delighted to welcome the author of Roaring Camp, yet we must think that Beech's strange talents are better adapted to the miner, trapper and ranger of the sunset land.

### To Our Readers.

It is our intention to make our department more and more practical, and to do what we can to make it *practically useful*. To this end we invite questions upon practical subjects relating to our department. These questions will enable us to determine in what you are most interested, and suggest subjects of sterling interest, which may lead to articles which come home to the practical concerns of life.

We wish to be clearly understood. By giving this invitation we do not put forth our claims to a full acquaintance with all the theories and science of engineering and architecture, or yet to all the details of their operation. But would state that in connection with our limited experience and operations, we have access to one of the best and most carefully selected libraries of engineering and architectural works on this continent, and are otherwise most advantageously circumstanced for giving practical information upon these subjects. We are willing to labor and search for truth, and accept it when we find it. We know that the carrying out of what we have spoken will be mutually beneficial. Friends, give us your encouragement by showing your interest.

### Velocity of Light.

Nothing is more wonderful than the ingenuity which has been exercised by scientific men, and the extent and variety of the resources which they have called into action, for the purpose of eliciting from nature secrets which she would seem to have most effectually to have concealed. The method devised by a French philosopher for measuring precisely the time required for the passage of a ray of light across a limited space upon the earth's surface, furnishes a striking example of this. Sometime since an observation was made in California, on the velocity with which the electric force is transmitted along a conducting medium, by causing an electric impulse to pass over the wires from San Francisco to Cambridge, Massachusetts, and back, without interruption, and noting precisely at the place of observation, by means of a chronoscope, the length of the period which intervened between the instant of its departure and that of its return. It was found that the time required for the six thousand miles run was *eight-tenths of a second*. Now the velocity of light is such that if a luminous impulse had left the place of observation at the same time with the electric wave, and could have pursued the same track, it would have gone round the circuit *five times* while its competitor was making one journey. When we contemplate this almost inconceivable rate of motion, the idea of devising any mode of actually measuring with precision the time required for the passage of light across any such narrow space as can be made to intervene between any two stationed observers on the earth's surface—as, for example, the length of any line across a plain, or the distance from one eminence to another—would seem to be utterly hopeless. Still the means have been contrived for realizing it.

The principle on which the apparatus was constructed is this:

If we suppose that an elastic ball—of ivory, for example, or steel—could be projected perpendicularly against a solid wall through a small opening at a known distance from it, and that the action of gravitation upon the ball could be suspended so that it might re-

turn to the same orifice through which it had been projected; and if we could, moreover, find any way to close the opening *at the instant* that the ball reaches it on its return, so as just to intercept it in its passage, and then immediately open the way again for the passage of a second ball—it is evident that if the arrangement of the apparatus for opening and closing the orifice was such as to measure precisely the time that intervened between the changes, we should obtain from it the time required by the ball for its passage to and from the wall, and so could easily determine the velocity of its motion.

The process would, for obvious reasons, be practically impossible in the case of a material missile rebounding from a wall. We can only imagine it, as an aid to our conceptions, in understanding the analogous operation in the reflection of light. For light can be so reflected as to return in precisely the same path by which it came; and the precise interval necessary between making an opening, to allow it to pass, and then closing the opening to intercept its return, may be measured and marked with as much accuracy as can be obtained by any mechanical whatever.—JACOB AIRY, in *Harper's Magazine*.

To those who are incessantly grumbling and deploring the misfortunes, miseries and chaotic state of nature and society, we would recommend the following from the *Essay on Man*: "All nature is but art, unknown to thee. All chance, discretion, which thou dost not see; All discord, harmony not understood; All partial evil, universal good."

A student of constitutional history being asked of what the German Diet is composed, did not fail to gain the buttons, when he replied, "Salt-kraut, schnapps, lager-beer and mix course."

A picture is something between a thought and a thing.

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With hope, we remain,

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- Each student is required by law to be at least *fifteen years* of age, to enter with the highest profit upon the studies of the University, and it is recommended, as a general rule, that students be at least *eighteen years* old before entering.
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When morning's beams first tint the sky, Who is it that goes prancing by With athlete step and beaming eye? The Student.

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Who is in love with pale lamp light, Who, till the "war sun's" hours of night Works o'er his books with all his might? The Student.

Who never down stairs tumbles pulls, Unbiases gates, or bears off rails, Nor ties tin cans to canine tails? The Student.

Who delves down into learning deep? Who never lets his spirit sleep, Who smil at last rich harvest reap? The Student.

Broken Crystals.

Old maids—Fried sunbeams. Wanted—A broad-axe to huc destinies with.

What caused Billy Jackson to fall in the gutter?—A hot perch.

Novel speculation—Buying up dry wells to cut into post holes.

We once heard of an eccentric editor who vowed to break his spectacles rather than want for broken crystals.

What is the difference between a slipper and a gad-fly?—One steers the girl, the other stings the steed.

The following touching epitaph occurs in a Western cemetery:

"Here lies a victim of the lust, Old Sticker Jim, within the dust; He took his whisky straight, they say, And whisky took him straight away."

An editor who doesn't know much about farming, suggests that, for garden making, a cast-iron back, with Hooke's universal joint in it, would be an improvement upon the spinal column now in use.

That editor ought to have a patent. In answer to the query, "Who was the author of Mary's lamb," a Missouri shepherd promptly responded: "One Raman, from Northern New York."

Why is a barber the noblest type of humanity? Because he is always ready to dye for his friends.

—A serio-comedy has been found on I. I. U. domain. It is entitled: DISCRETION, THE LOST EXCELLENCE. Scene.

29 young ladies seated in Room— Enter a 40th young lady with a dainty pink envelope in one hand, and the other pressing a note gracefully to her lips.

All.—Well, what now? No. 40.—Oh, something sweet. No. 2.—Well, let's hear it. No. 40.—(Reads)—"Mr. K— presents his compliments to Miss X— and earnestly solicits the honor of her company to attend the concert on Friday evening next. An acceptance will afford him unequalled pleasure."

No. 16.—"What are you going to do about it?" No. 16.—"Accept it, of course!" No. 21.—"Don't you do it. Mr. Z— looked as if he thought of inviting you to go."

No. 40.—"That's so! I noticed him this morning. I think I'll keep this offer open till to-morrow morning, and then, if nothing better comes in, I'll accept it."

All.—That's sensible! No. 1.—You are learning our ways quite well.

MEXICO—That was once the land of beauty, glory and gold, is now only the sad spectre of its olden grandeur. It is true that a more civilized race possess it, but where now are the palaces of the Montezumas, and the splendors of fifteen hundred? They have all crumbled and passed away under the shuffling hands of corrupt power.

It is not the soil we tread upon that is our country. But the language we speak, the God we worship, the laws we obey and the government we love; identity in these makes men countrymen.

Some one says that it is not true that all things find their level, but rather, that all things are finding their level.

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