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DIFFICULTIES EXPERIENCED IN THE WORKING OF A PUBLIC SCHOOL SYSTEM.

From the Nineteenth Annual Report of the Rev. Dr. Sears, Secretary of the Board of Education for the State of Massachusetts.

It is no longer a question among us whether a universal system of free education shall be maintained, nor whether Christianity shall be recognized in the Schools. The advocates of private schools, as the means of popular education, or of secular schools in which religious influence shall have no place, or of sectarian schools in which the distinctive doctrines of particular creeds shall be taught, have mostly disappeared, having been driven from the field by a force of argument which it was not easy to resist.

The great principle of the necessity of a public system of education, which shall be free to all, may be regarded as theoretically established. The value of this principle is now to be tested by experiment on a very broad scale, no civilized state being willing to leave its subjects in ignorance while others are, by means of that experiment, advancing steadily in power and prosperity. Inasmuch as it is no longer necessary to advocate the theory, it is the more important to guard against mistakes in conducting the experiment.

Unreasonable hopes.—Public Examinations.

One of the most common and fatal mistakes made by ardent friends of education is the indulgence of unreasonable hopes,

and the maintenance of extravagant views as to what they can effect by means of it. It is often supposed that great results can be produced in a single term of twelve or fifteen weeks. Both teacher and committee aim at this rapid mode of manufacture. True education is that which aids the slow and healthy growth of the mind,—the incorporation into it of principles and the formation of tastes and habits, the full value of which will appear only after mature years have developed their tendencies. The highest and best parts of education are incapable of exhibition. The show made at the close of a term is well enough to amuse children and their fond parents, but it is often like that of newly dressed pleasure-grounds, adorned with trees and shrubs fresh from the nursery, having a show of vitality in the foliage, though as yet drawing no sap from the root. Such frostwork of the school-room is soon dissolved and generally passes away with the occasion. All attempts at such premature results of education are nearly useless, and yet our system of employing teachers by the term renders it almost necessary for a teacher who is ambitious of distinction, to lay his plans for that kind of superficial culture and mechanical drill which can be produced in a few weeks, and shown off as evidence of marvellous skill. An experienced educator or observer can, indeed, inspect the processes of education, and judge of their fitness, as an agriculturist can of the preparation of the soil, and of the quality of the seed. But most persons must wait for time to bring forth the fruits of education, before they can form a true judgment of its character. All expectations of triumphant success in the schools, founded upon such views of speedy results as those above alluded to, are destined to fail of their fulfilment. And when the people have been misled by these vain hopes, and find themselves in the end bitterly disappointed, the public schools will be in danger of languishing, bleeding from wounds inflicted by their own friends.

Limitations of the Teacher's Power.

There is, moreover, in the ardor of philanthropic enthusiasm, danger of overlooking the limitations of the teacher's power. While that power is great, when properly sustained by collateral influences, it has yet many limitations, partly from the nature of the human mind, and partly from peculiar circumstances. One of these limitations is to be found in the individuality of the pupil's mind. When it is said that the teacher has a power over the young, like that of the sculptor over the block of marble, some abatement is to be made for the rhetorical character of the statement. The marble is entirely

passive. It has no embryonic nature to develop, no hidden tendencies to some unknown result, no secret processes working great changes, expected by no one, and bursting, at length, suddenly upon the view by some new exhibition of talent, or some new form of character. To such an extent have these phenomena been observed in original minds, that a conclusion has often been hastily drawn disparaging to all education. All real talent, it is sometimes said, is self-developed and self-regulated. The truth contained in this statement is, that some minds have such strong intellectual instincts, and such natural energy, that they are less dependent on a teacher's aid than others; that in struggling with difficulties and overcoming obstacles, they acquire an independence and power which more than make up for a want of early elementary training. But even upon such intellects the influence of a genial teacher must be favorable, while to those of the common class it is indispensable. Still, it must not be forgotten that there are under-currents in almost every pupil's mind, which are not easily detected by the teacher or by the parent, which sometimes conduct to issues wholly unexpected. When remarkable powers and capacities are working thus in secret, the school training may come so little in contact with them as to do but little good or harm; or it may be that an earnest teacher's endeavors have been nothing but unsuccessful contests against natural proclivities which could not be resisted, but might, with more skill, have been guided and modified. In other pupils there is a weakness or dullness of intellect which effectually limits the teacher's power. His labor is not lost, it is true; but the public expectations are not in these instances realized. No one ought to be disappointed or discouraged at such results. They ought to be foreseen, and none but reasonable expectations ought to be cherished.

School-room Education only partial.

But the greatest obstruction to the teacher's success, the most absolute limitation of his power, is to be found in the fact, that of education, in its full and proper sense, only a part belongs to the school-room. Over that larger department of education given out of the school-room he has no control. For the character of such education other parties are generally held responsible. But even this responsibility cannot always be fixed definitely upon individuals. There are circumstances in the history of a people which have their educational influence, and yet cannot be changed. The pioneer in a new settlement is not bound to perform, in respect to education, more than the state of society will admit. If the population of the country is sparse, and there is a general want of refinement, and the means of high intellectual culture do not exist, he cannot be held answerable for deficiencies which he cannot prevent. In the rapid growth of great cities, and the general increase of wealth and luxury, difficulties of an opposite character are experienced. Here there are positive tendencies to a corruption of the public manners which no merely human power can remove. In the ordinary course of events, wealth and luxury will, as all history teaches, exert an influence over the young, taking away the motives to industry, economy, and other home-bred virtues, stimulating the more dangerous appetites and passions, educating them, in short, to anything but a useful and honorable life. This is a miasmatic influence, which no vigilance of the wealthy parent can, with certainty, keep from injuring his offspring.

Influences against the Teacher.

The general tone of society, when at variance with the influence of the conscientious teacher, is a powerful check upon the success of his efforts. Indeed, as to manners and morals, it is society chiefly that educates. The influence of the school-room is limited in respect to time. A part of each day is spent by the pupil in the family, and a part in promiscuous intercourse with others. Every child, on entering a school for the first time, carries with him a character formed elsewhere. This character is what parents and companions have made it; and being daily nourished by intercourse with these, it will be very likely to be maintained, notwithstanding the efforts of the teacher to the contrary. But suppose the teacher to be so fortunate as to gain the victory for the present. When the pupil leaves the school at the early age which is now common with us, he returns to the influences of that same society where he first drank in a poisonous atmosphere, and where, in all probability, the defeated party will retrieve its losses. A teacher may not despair even in these circumstances. He may prevent much evil. He may prepare the soil for some other persons to cultivate with better success. He may produce enough of effect to constitute a sufficient reward for his labors, though far below his wishes. He may, in many instances, make an impression on the heart which time will never efface. At any rate, having done what he could, he will share with the good of all ages in the high satisfaction of having done his duty. Still, the adult portion of the community should remember that with them mainly rests the responsibility of forming the moral character of the young. And here a distinction must be made between the legitimate sphere of domestic discipline and the more general control of public

manners. Who is to guard the morals of the young, when they are abroad and in company with such persons as they may chance to meet? How can their eyes be kept from polluting sights, and their ears from sounds freighted with immorality? Here, at some place of village resort, they see what they ought never to see, and hear words of strife, of ribaldry, and of blasphemy, which ought to be confined to dens inaccessible to childhood. Still worse is it when the streets swarm with juvenile offenders, because the sympathies of the young with each other are so strong. The vicious practices of the adults may be so viewed, where proper instruction is given, as to be repulsive, and be turned into a warning. The grosser forms of vice in adults may not be so seductive as those that are more decent. But with children associating with each other it is otherwise. Their vices are more contagious. When a child is outdone by another in wrong doing, there is a silent appeal to the courage of the former, which few have sufficient strength to resist. Children, moreover, have selfish passions. They readily listen to the recitals of a companion who describes the little arts by which he procures forbidden indulgences, escapes the vigilance of parents, and deceives them. One such companion has it in his power to corrupt the children of a whole neighbourhood; and it often happens that a group of boys form connections in practising petty vices, which exert a pernicious influence upon their character far outweighing the salutary influence exerted by parents and teachers. It may be said that if parents cannot extend their control over the morals of children generally, they can, at least, keep their own children from bad companions. This is true but in part. Children are so fond of each other's society, and so weary of the monotony of retirement, that they seize greedily upon all the incidental opportunities which present themselves for meeting with companions, making choice of associates rather than congenial tastes and feelings than from moral considerations. The greatest security will therefore be found to exist in those communities where, by various means, the youthful population are generally kept far from the contamination of vice. What may be done to repress juvenile misdemeanors, as they are now manifested too commonly in public places and in the streets, is a subject worthy of consideration. The difficulty lies chiefly with those children who are neglected by their parents, and with others who, when beyond the observation of their parents, are swayed by the example of the former. The negligence of many parents, who otherwise are good citizens, in respect to the moral training of their children, is almost unaccountable. They provide liberally for their physical wants, but leave them, as if strangely indifferent to their higher interests, to form their own moral habits and tastes. They do not apply their minds constantly and earnestly to the subject of forming their character. They neither study the principles, nor inform themselves of the best methods of training their children to wisdom and virtue. Their minds are engrossed with business, or with the demands of social life. They act as if they believed that a pecuniary provision for the present and future support of their offspring were the main part of parental obligation. But is there anything more sure to end in disaster than leaving indiscreet and inexperienced children, in whom the passions are strong and the understanding weak, to choose their own ways and their own associations? Indulgence seems to be deemed equivalent to the law of love. Appetites whose excesses are dangerous to both body and mind, are allowed to grow to exuberance. Habits that enfeeble the mind, and foster a love of luxury and indolence, are suffered to be confirmed. The filial duties of obedience and respect are not insisted on. Independence and smartness in a child, with a spice of impudence, seem to be interpreted as an omen for good. The kindness, forbearance, and acts of service, are all on one side. Pure selfishness in the child, it is supposed, will, in time, if left to itself, work its own cure. Will it be strange, if such parents in their old age should have occasion to think of the proverb, "It is easier for one parent to support seven children than for seven children to support one parent!" It will not be strange if the current of love be found by them, to their grief, to be downward, from parent to child, rather than in the opposite direction. It cannot be too deeply impressed on our minds, that generally children are, in their character what we make them. How unfortunate, then, must be the condition of those children, who are not merely neglected by their parents, but are directly and deeply injured by their pernicious example! If there are persons who neglect their own moral culture, and by indulging in wrong feelings, words, and acts, are willing to jeopard their own happiness, it would seem, that in holding the place of parents, and pouring the tide of evil upon their helpless offspring, they add cruelty to immorality. At least, they should take as much pains to hide their vices from their families as from others. Yet how unrestrained are the passions, the ill feeling, the harsh words, and unkind acts of many parents, where there are none but their young children to witness them! These are lessons that are sure to produce their effect. The imitative nature of childhood will here show itself with fearful energy.

There is one more element in the adverse influence of society, as counteracting the work of the teacher, which must be mentioned. It

is that of the equivocal character of much of the reading, and of the public amusements in which the children of the present age share with others. The daily papers lie upon the tables of every household. The angry quarrels of editors with each other, the bitterness of political controversy, and the mendacity of the press on the eve of elections, furnish a very unsuitable aliment for the young. And how many of the short, spicy paragraphs, with which the editor or contributor seeks to enliven his columns, are addressed to the sensual passions, in language and tone so lascivious that no pure minded father could read it in the presence of his family. This is the more alarming as a sign of the times, from the circumstance that not only is the supply of material such in amount as no other age ever knew, and the reading habits of the young, in consequence of our public schools, far in advance of those of adults in former times, but that those papers which are the least scrupulous in their moral tone, have often a wider circulation than others, and are even extensively patronised for the use of families. It is not necessary here to refer particularly to much of the lighter literature, of no better moral tendency, which finds its way to the homes of the young, vitiating their imaginations with pictures of scenes which no pure mind can contemplate with pleasure. Many of the popular amusements, too—once an occasional luxury, but now a necessity of the young—have the same character and tendency. They must be adapted to low and vulgar tastes, in order to attract the multitude and be made profitable. A large proportion of the support they receive comes from children, for whose injury the fond, but inconsiderate parent, pays the price more freely than he does his school tax.

In view of all these facts, it will be safe to conclude that if, notwithstanding all that is done for the education of the young, they are, as is sometimes said, no more likely to make good citizens than were the children of former generations, who enjoyed no such advantages of education, the cause may easily be found elsewhere than in the character of the public schools. That they accomplish less good than they might, if more skillfully conducted, is conceded. That they produce of themselves, by a direct and positive influence, any considerable part of the evils complained of, may, it is believed, be justly denied. In all the schools which are worthy of the name, the pupils are trained to some kind of order. All teachers give directions in regard to the deportment of their pupils, exacting industry, allotting the time and prescribing the manner of their recreations, requiring submission to authority, respect and obedience to themselves, and freedom from violence and wrong to each other. So far as this goes, it is favorable to moral training. If the discipline were carried to a greater perfection, the effect would be still better. Not to have sufficient power to prevent all the evils to which the young of this age is exposed, is quite a different thing from being the positive cause of these evils. Christianity itself does not entirely arrest the progress of evil. Is it therefore the procuring cause of evil?

The spirit of the people.

In respect to the spirit of the people, in welcoming cordially our admirable system of education, little need be said. That they must adopt it, as their own, and, by their enlightened zeal and energy, work out its beneficial results for themselves, if they would experience its advantages, must be evident to all. The State does not attempt to confer the boon of education upon the people; it only gives them the power and the requisite facilities for supporting schools. It indeed requires certain schools to be maintained; but it leaves, in great measure, to the will of the people the degree of excellence which they shall attain. While this truly philosophic and well-balanced system, devised by the wisdom of the State, receives the admiration of the world, there are, we regret to say, towns, few indeed in number, and becoming fewer every year, which complain of State interference, and wish to be left in their native independence. It is regarded as an inconvenience to be compelled to maintain public schools for a given length of time each year, and to be at the expense of paying for the services of the school committee, which might so easily be dispensed with. But these are the lowest depths that have been sounded. Never were men more mistaken in regard to their true interests. The State is a nourishing mother, as wise as she is beneficent, and happily has few ungrateful children. Who that knows the inestimable value of education, and the great amount of labor and expense necessary to produce a flourishing state of the schools, would not regard it as one of the greatest of blessings for these schools to receive the constant attention and fostering care of the State?

Low estimate of the value of Education.

Of a similar character and effect, is that low estimate of the value of education, which leads a much larger number of towns to make, in their annual appropriation, very inadequate provisions for the support of the schools. No money expended by a town is surer to yield good returns than that which is judiciously applied to educate the young. The increased intelligence of the people will, among its other results, manifest its power in the increased ability and skill with which they

engage in their various enterprises, producing within the period of a single generation an increase of wealth which will far more than compensate for all the cost of education. Any town which enjoys the reputation of having good schools, will find, in that circumstance, an element of growth. It will, on that account, draw to itself from abroad, wealth, intelligence and virtue. Both the value of real estate, and the refinement and civilization of the people will be enhanced. If we take a higher view, and inquire how the inhabitants of a town can make the most valuable contribution towards the improvement of mankind, we shall unhesitatingly reply, by sending out into the world well-educated and well-trained men and women to act their part with honor in advancing the progress of civilization, and all the interests of society. That such an end cannot be attained by us in our present social condition without the aid of a vigorous system of public schools, will be admitted by all.

Irregular attendance and non-attendance of children—a remedy.

The irregular attendance of the pupils of the public schools is a subject that deserves the attention of all who have, in any measure, power to diminish it. The loss of one-fifth of the benefit for which pecuniary provision is made by a public tax, is a just subject of complaint on the part of the tax-payer. If society has the right to levy a tax upon his property for the purpose of preventing the evils consequent on a state of popular ignorance, it would seem that he is justly entitled to expect that there shall be no culpable neglect in attempting to secure the full amount of the benefit contemplated. The parent is bound by a two-fold obligation—to his children and to the community—to see that the means of education provided at the public expense, be not neglected by his children. Each town and city is also bound to use all reasonable endeavors, through appropriate officers, to bring all the children living within its borders under the influence of the public schools. If it can be shewn that children ought to be in the schools at all, the same arguments would prove that their attendance should be such as to accomplish, in the best manner, the object for which the schools are supported. If parents have no just right to withhold their children from the schools, much less have they a right to interfere with the progress of the children of others by the irregularity of the attendance of their own. If it be admitted that a pupil may attend school at just such time as he or his parent may choose, and is entitled to receive instruction accordingly, it will follow either that his class ought to be detained till his deficiency in the class exercises shall be made up, or that special instruction ought to be provided for him out of the class. But no one will pretend to such a right as this. Various expedients have been resorted to by different towns to diminish this irregularity of attendance. In some places it has been made the subject of public discussion, and the sentiment of the community has been so improved as to act very favorably upon the minds of parents. In others, a custom prevails of publishing in the school report the names of those who have distinguished themselves for their regular attendance. In many towns, rules have been established by the school committee, excluding from the school those whose absences exceed a certain amount. A still better method is that of degrading such pupils, by putting them into a lower class. Great success has, in several instances, attended the labors of persons appointed to look after absentees, to inquire into the causes of their absence, and to use proper means to bring them back to the schools. No doubt different courses will need to be pursued in different places. Mild and persuasive measures, if successful will prove the best. In manufacturing towns and cities, something more may be required. A very important point will be gained if the public attention is so drawn to the subject as to lead to any course of action upon it.

CELEBRATED BARBERS.

SIR RICHARD ARKWRIGHT, the celebrated patentee of the Spinning Jenny, was originally a poor barber.

From that valuable work, "*Pursuit of Knowledge under Difficulties*," we gather the following condensed account of this noted character. His parents were very poor, and he was the youngest of a family of thirteen children; so that we may suppose the school education he received, if he ever was at school at all, was extremely limited. Indeed, but little learning would probably be deemed necessary for the profession to which he was bred. The business of a barber he continued to follow till he was nearly thirty years of age. About the year 1760, however, he gave up shaving, and commenced business as an itinerant dealer in hair, collecting that commodity by travelling up and down the country, and then after he had dressed it, selling it again to the wig makers, with whom he very soon acquired the character of keeping a better article than any of his rivals in the same trade. He had obtained possession, too, of a secret method of dyeing the hair, by which he doubtless contrived to augment his profits; and, perhaps, in his becoming acquainted with this little piece of chemistry, we may find the germ of that sensibility he soon began to manifest to the value of new and

unpublished inventions in the arts, and of his passion for patent-rights, and the pleasures of monopoly.

It would appear that his first effort in mechanics was an attempt to discover the perpetual motion. In connection with this project he formed an acquaintance with a clock-maker, which had a powerful influence on his future career. In 1768 the two friends appeared together at Preston, and immediately began to occupy themselves in the erection of a machine for the spinning of cotton-thread, of which they had brought a model with them. At this time, Arkwright was so poor, that, an election contest having taken place in the town of which he was a burgess, it is asserted that his friends or party were obliged to subscribe to get him a decent suit of clothes before they could bring him into the poll-room. He shortly afterwards left Lancashire with his model, through fear of the hostility of the people, and went to Nottingham, where Messrs. Reed and Strutt were so well satisfied with his new machine as to take him into partnership with them. It required great energy, determination and fact, however, to overcome the multiplied difficulties that lay in his way, and for a long time the speculation was a hazardous and unprofitable one. It did not begin to pay, he tells us, till it had been persevered in for five years, and had swallowed up a capital of more than twelve thousand pounds. In time, however, his ingenuity and perseverance were rewarded, and he found himself raised to a position of rank and affluence, and now he is regarded as the founder of a new branch of industry, which occupies the first place among the manufactures of our country.

JEREMY TAYLOR, D. D., a theologian of high reputation, Bishop of Down and Connor, and author of several valuable and well-known works, was the son of a barber. He entered Caius College as a sizar, or poor scholar, when thirteen years of age, and was admitted to holy orders before he had attained the age of twenty-one. Though he suffered many changes of fortune during the civil commotions of the 17th century, yet his talents and worth attracted regard, and he received the honours which were his due. He died in the fifty-fifth year of his age, in the year 1667.

JOHN TAYLOR, LL. D., a very learned philologist, was a native of Shrewsbury, and died in 1766. His father followed the trade of a barber, and tried to bring up his son to the same occupation; but such was the lad's unconquerable love of books, that his father was in utter despair of making Jack a good shaver, when his strong predilection for literature recommended him to the patronage of a gentleman of fortune, to whom he was chiefly indebted for the advantages of an academic education. For many years he gave his attention to law and classic literature, but in his forty-seventh year he took orders, and became rector of Lawford in 1751, archdeacon of Buckingham in 1753, and canon residentiary of St. Paul's in 1757.

LORD CHARLES ABBOTT TENTERDEN, Chief Justice of the Court of Queen's Bench, who died in 1832, was the son of a Canterbury barber. His father is described as a "tall, erect, primitive looking man, with a large club pig-tail, going about with the instruments of his business, and attended frequently by his son Charles, a youth as decent, grave and primitive looking as himself."

LORD ST. LEONARDS, the Ex-Lord Chancellor of Ireland and England, who is regarded by the "bar" as one of the most talented lawyers that ever occupied the woolsack, is the son of a hair-dresser.

JOHN KERSHAW, of Leeds, deserves a place in our list of celebrated barbers. When he commenced business for himself thirty years ago, he announced to his customers, "This shop is closed on Sundays." Some predicted his speedily having to close altogether. John became a Sunday-school teacher, and employed his "day of rest" in doing and getting good. Being fond of reading, he purchased a few good periodicals, and laid them in his shop for customers to read whilst waiting to be shaved. Some expressed a desire to purchase the papers monthly, and John undertook to supply them. This small beginning has led to important results, for at the present day there are issued from the barber's little shop in Meadow Lane, from 70,000 to 100,000 periodicals and tracts yearly!

The Sabbath-keeping barber has prospered, for he has recently opened a printing establishment, and John Kershaw and Son now appear in the list of publishers in the town of Leeds!

A BARBER is one who makes a trade of shaving or trimming the beards of other men for money. Anciently a lute, viol, or some such musical instrument, made part of the furniture of a barber's shop; which then used to be frequented by persons above the ordinary level of the people, who resorted to the barber, either for the cure of wounds, or to undergo some chirological operation, or, as it was then called, to be trimmed, a word that signified either shaving, or cutting and curling the hair;—these, together with letting blood, formed the ancient occupation of the barber-surgeon. The instruments in his shop were for the entertainment of waiting customers, and answered the end of a newspaper—*London British Workman*.

ON THE PROGRESS AND DIFFUSION OF SCIENCE DURING THE PRESENT CENTURY.

By G. TATE, F.G.S.

In offering remarks on the progress and diffusion of science during the present century, I shall not attempt anything like a regular history. My object will rather be, to lay hold of those prominent facts and principles, which can be made interesting to the popular mind, and which at the same time may give broad views of the character and spirit of modern science.

Our own age is one of great intellectual activity. At no former period have so many scientific discoveries been made; nor have the applications of scientific principles to practical purposes ever been so numerous and important. In former periods, great men appeared and great discoveries were made, which will exercise a powerful influence on all succeeding times; but in our own age, the labourers in the fields of science have been vastly multiplied, and the additions to the stock of knowledge have been proportionally numerous.

As Astronomy had been cultivated from the earliest periods by every nation which had made any advance in civilization, it might be supposed that little or nothing remained to be discovered during the present century. The genius and labour of Galileo, or Kepler, and the incomparable Newton, had thrown a radiance over this the sublimest of the sciences, which compelled all minds to admire the wisdom displayed in the magnificent architecture of the heavens; yet even here, by means of improved instruments and the application of profound mathematical knowledge, interesting discoveries have recently been made.

Previously to the present century only seven planets were known. It is remarkable, however, that Kepler, from his knowledge of celestial mechanics, more than two hundred years ago predicted that a planet would be found between the orbits of Mars and Jupiter; this prophecy was not verified till the present century, during which 31 planets have been discovered within these orbits—all of the small, and some of them having an area not larger than that of England. Some astronomers regard these asteroids as fragments of an exploded world; and Kirkwood, an American, has discovered the law from which he calculated that the diameter of the original planet would be 5000 miles, and the length of its day 57½ hours.

It was well known that the fixed stars are immensely distant from the earth; but astronomers were unable to measure that distance. This difficult problem has been recently solved by the late Professor Henderson, and by Bessel, owing to the great skill of these observers and the perfection of their instruments. Henderson measured the parallax of a bright star, *α Centauri* in the Southern Hemisphere—that is, the apparent alteration of the position of a star from another star when observed from opposite sides of the earth's orbit, or from points of sight, one hundred and ninety millions of miles from each other. So great is the distance from the earth, that, when stated in numbers of miles, the imagination is bewildered. Some conception may be formed, if we estimate the time in which light, which travels at the rate of 192,000 miles in a second, and which reaches the earth from the sun in 8 minutes and 13.3 seconds, would traverse it. Now so immensely distant is the nearest fixed star, that 3 years and 83 days would pass away before the light which emanates from it would reach this earth.

But the distance of other stars is inconceivably greater. Patches of cloudy light, called nebulae, are distributed over certain regions of the heavens. Many of these were shown by the great telescope of Sir William Herschel to be clusters of stars; yet they are so distant as to be individually undistinguishable by the unassisted eye, to which they appear only as blended light. He thought, that two millions of years would be required for the light of these distant nebulae to reach the earth. The magnificent telescope of Lord Rosse has resolved into distinct stars many other nebulae which even the great power of Herschel's telescope failed to accomplish. So impressed was Humboldt with such revelations, that he considers it "more than probable that the light of the most distant cosmical bodies offers us "the oldest sensible evidence of the existence of matter," so that "whilst we penetrate with our large telescopes at once into time and space, and measure the one by the other, we may receive the ray of light which come to us as if they were voices telling of the "past."

One of the most remarkable astronomical achievements is the recent discovery of the planet Neptune. It must be understood that the motion of the planets around the sun is produced by two forces—an impulsive force, or force of projection, such as is given by the hand to a stone thrown into the air; and next, an attractive force, such as acts upon the stone and draws it to the earth; but so nicely adjusted are these forces, that, instead of a planet flying off into space from too great a projectile force, or falling into the sun from too great an attractive force, it moves, in an elliptical orbit, regularly around the centre of attraction. But not only does the sun exercise this attractive force, but all the planetary bodies have a mutual attrac-

tive action on each other, according to known laws. The place, therefore, of every planetary body in the system can be definitely calculated for any period.

Now it was found by independent calculations made both by Leverrier, and by Adams of Cambridge, that the observed motions of Uranus, the most distant planet then known, did not correspond with the positions it would occupy if acted on only by the sun and other known planets: there were irregularities or perturbations unaccounted for, which, taking all the premises into consideration, they concluded were caused by the action of another unseen planet lying beyond the orbit of Uranus.

Leverrier, after a vast amount of labour, determined the distance of this unseen planet from the sun—its period of revolution—its mass—and the spot in the heavens where it would be found. He communicated these calculations to Dr. Galle, of Berlin, and, marvellous to relate, that practical astronomer, on the evening of the day on which he received the communication, directed his telescope to the spot, and there caught the first glimpse of Neptune, as he pursues his course on the outskirts of the solar system.

In the experimental and observing sciences, the discoveries have been more numerous and even more important than those in Astronomy. The brilliant experiments of Davy, on the composition of bodies, shed a new light over Chemistry; and the still profounder investigations of Dalton, who unfolded the law of definite proportions—one of the most important generalizations in science—gave to Chemistry mathematical precision, and raised it to the rank of an exact science. More recently, Liebig has opened out a new field, and expounded the composition of organic bodies, and shewn the high practical value of these researches to physiology, and especially to agriculture.

Electro-Magnetism has arisen from the refined investigations of Oersted and Faraday; and it supplied the principles on which the electric telegraph is constructed—that marvellous invention, which almost annihilates time and space, conveying its intelligence with the lightning's speed over hill and vale, and even through the deep; by its means, the death of the Czar of Russia, the arch-troubler of our times, which took place between 1 and 2 o'clock on the Friday morning, was announced in Edinburgh by 6 o'clock on the evening of the same day.

To our own era belongs the construction of railways, and of the huge iron tubes (due to the experimental researches of Fairbairn) which span even straits of the sea; and more especially, the extended application of steam power to manufactures and to locomotion, whereby the productive power of our country has been enormously increased—new means of civilization have been furnished—and the comforts, and even some of the luxuries of life, brought within the reach of some of the humbler classes.

Within the present century, great additions have been made to Natural History: for example, one century ago less than 6000 plants were known to Linnæus, but at the present period 100,000 are known—a large proportion of which have been described. But it is more important to notice, that a new and more philosophical spirit has been infused into this interesting department of knowledge. Much of this is due to the distinguished Cuvier, who has shewn that in organised structure there is a purpose as well as a law, and that every organised being forms a system of its own, all the parts of which mutually correspond and concur to produce a definite purpose by reciprocal action. The application of the microscope, also, has given a new insight into organic structure, which has improved physiology and led to more scientific principles for the preservation of health and the treatment of disease.

Under the influence of a kindred spirit, Antiquarianism, which formerly was too often an accumulation of useless lumber, has sprung into Archæology, which has thrown new light on pre-historic eras, and furnished interesting illustrations of the manners and habits of subsequent times; as a proof of this, I would refer to the remarkable work of Daniel Wilson, * on Archæology and the Pre-historic Annals of Scotland.

Nor is it uninteresting to observe how, in our days, the sciences have been made mutually to illustrate each other—Electricity has been connected with Magnetism—Mathematical formulæ have been given to Chemistry—and Zoology and Botany have lent material aid to Geology. In the controversy which is now going on regarding the plurality of worlds, appeal has been made to Geology—the deep and dark recesses of the earth have been summoned to give evidence whether the far distant planet is inhabited.

"Geology," which, according to Herschel, "in the magnitude and sublimity of the objects of which it treats, undoubtedly ranks in the scale of sciences next Astronomy," is almost entirely the creation of the last fifty years. The Cosmogonies of former times were either crude speculations or pleasant romances. Burnet's Theory of the Earth, which was lauded by Locke, the metaphysician, and by Addi-

son, the poet and essayist—is a work of brilliant imagination, rivaling, in this respect, the magnificent epic of Milton's Paradise Lost. But modern geologists, following the Baconian method of induction have observed and not invented—they have carefully compared their facts, and rigorously reasoned upon them, and not imagined; and by this process have arrived at the most important generalisations. The ancient archives of the earth have been laid open, and the characters impressed on the rocks have been deciphered; and it has been proved that the earth has been subjected to frequent revolutions in times long anterior to the appearance of man; that the rocks of which the crust of the earth is composed, exhibit various formations, each distinguished by the organic remains therein imbedded; the structural peculiarities of these ancient Faunas and Floras have been explained, and the different physical conditions which the earth presented at various successive periods have been revealed. These discoveries have had no unimportant influence in directing the search for coal, and on mining, engineering, and agriculture.

The diffusion of science is not less interesting than its development. Formerly it was confined to the colleges of the learned and the halls of the wealthy. Great men appeared even in the early periods of its history, but their numbers were few; the rising sun lit up with glory the mountain tops, while the plains and valleys below lay in obscurity; but, in our time, science has descended to the mechanic's reading room; she finds a place in the well-conducted parochial school, and is even no rare visitant of the cottage.

It is cheering to notice the men who have sprung upward from the lower stations of life to scientific eminence. Faraday, whose researches in Electricity, Magnetism, and Chemistry, place him in the foremost rank of philosophers, was originally a bookseller's apprentice. Hugh Millar, the most popular writer on Geology, worked as a stonemason in the Old Red Sandstone Quarries of the north of Scotland, to which his genius and eloquence have given celebrity. Dalton, the discoverer of the law of definite proportions, was the son of a small farmer: science found him a humble schoolmaster among the mountains of Cumberland; she claimed him as her son, threw her mantle over him, and pointing upward bade him explore the regions of vapour and of cloud, and the more recondite laws which govern the combinations of matter.

Northumberland has been remarkable for producing eminent mathematicians, and natural philosophers, from the lower ranks of life. George Stephenson, the author of the Railway System, was for some time a brakesman, in a colliery on the Tyne; and the man, whose fame as a practical engineer filled Europe,—who had stood before Kings,—and who could earn his hundred guineas per day, at one period of his history was engaged in pulling turnips in the field at the magnificent sum of two-pence per day. Airey, the present Astronomer-Royal, is a native of Alnwick, and I believe, the son of an exciseman. Another distinguished mathematician, the author of some profound papers on physical astronomy, was a draper's assistant behind the counter at North Shields. Three other gentlemen who were in succession schoolmasters in a small village in the west of Northumberland, eventually became mathematical professors at Woolwich and Putney; and one extraordinary man, now occupying an important position in King's College, London, and who is the author of some of the best of Weale's mathematical publications, began his mathematical career at a pit mouth in Tyneside, where he attended a steam engine, and at intervals worked his problems on the blackened door of the engine house.

Every son of toil may be encouraged by such examples to look onward and upward. The barriers of caste need not arrest or retard his advancement on the pathway of science; for here labour, if systematically pursued, and directed to a definite object, is the great element of success.

It has been said and sung that there are "mute, inglorious Miltons." I am sure, however, there are many more cultivators of science who contentedly follow their ordinary avocations, and employ their leisure hours and their holidays in scientific research. Several of these men may be found about Manchester and the vales of Lancashire. Some of the hand-loom weavers may be seen throwing the shuttle, with Newton's Principia before them. Natural History, especially Botany and Entomology, are, however, the favorite studies. When any interesting plant is in flower or rare insect on the wing, these philosophers in humble life may be seen setting off, with their dinner tied in a handkerchief, to spend the day in some distant glen, or on some hill, where the much-prized treasures may be found. Sir James Smith, an eminent botanist, relates that being on a visit to Roscoe, the historian, he made inquiry after the habitat of a rare plant which grew in Lancashire. Roscoe referred him to a hand-loom weaver. The enthusiastic botanist set off in quest of this person; and, on his arrival at Manchester, he asked the porter who carried his luggage if he could direct him to this hand-loom weaver. "Oh yes," was the reply, "he does a little in my way." Sir James Smith found that these two men were friends, skilful botanists, and able to furnish him with all the information he required.

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—Ed. Journal of Education, U. C.

It is pleasant to meet with such lovers of nature. They are generally keen observers, and enthusiastic in their admiration of the objects which they collect and study. I have known several of these philosophers in humble life; and I had the privilege of stumbling on one of the Lancashire naturalists several years ago. I had arranged to meet Mr. Gibson—a blacksmith in Todmorden Vale, and a naturalist of great attainments. By mistake, I was set down at the wrong station, and I had not time to rectify the blunder. I was, however, directed to a friend of his, whom I found in a cotton mill, covered with dust and begrimed with smoke. He gave me a hearty welcome, and took me immediately to his house—a single roomed cottage, from which we ascended by a ladder through a trap-door to a small loft above, where he kept his geological treasures. I found that this weaver had examined all the rocks in his neighbourhood, exhumed the fossils, discovered some which were new, and that one of them had been named after himself.

One more example of science in humble life I shall refer to, because "he does a little in my way." He is a mechanic, living in a town near the borders, and he has for many years been a practical geologist. He usually takes a week or a fortnight's holiday yearly, for the purpose of examining some district in his neighbourhood. On one of these occasions, he traversed on foot the greater part of Roxburghshire and Northumberland, exploring—hammer, compass, and map in hand—the course of a basaltic dike, which, after crossing both counties, runs into the sea near Bondicar. His survey is referred to in Milne's *Memoir on the Geology of Roxburghshire*. Now, my friend sometimes lectures on Geology. His first lecture was remarkable and amusing. He had facts in abundance to communicate, and he understood the principles of his science; but not being what is conventionally called a scholar, as he advanced in his lecture he became afraid of his pronunciation. He was about to describe the *Ichthyosaurus*: "Now," said he, "this strange creature combines the characters of 'the crocodile with that of the fish! it's called by a very hard jaw-breaking name, and I am doubting if I pronounce it you will not understand me, I'll therefore spell it—I-c-h-t-h-y-o-s-a-u-r-u-s." This passage electrified his audience—attention was excited, and he has since been popular as a lecturer. He has, however, got past the spelling-book, and his last lecture, delivered a few months ago, on the *Distribution of Gold*, part of which has been printed, is both ingenious and interesting.

My friend was much sneered at by his fellow-workmen for wasting his time on hobbies, as scientific pursuits are occasionally but vulgarly designated. His reply teaches important truth: "Reckon up," said he, "the hours and days wasted by you, week after week, in the 'public-house; add to that, the days you are thereby unfitted for 'your employment, and you will find that you spend more time in 'folly than I do in these excursions. I take my enjoyment in the 'lump, and I return from my rambles with my mind instructed and 'with my feelings more deeply impressed by the greatness and goodness of my Maker, as seen in his works; and with both body and 'mind re-invigorated, I am better able to endure toil, and to grapple 'with the trials and difficulties of life."

Sometimes it has been charged against scientific attainments that they make men proud and vain. Doubtless, this result may occasionally happen. It is not, however, the legitimate effect of knowledge, but arises rather from the imperfection of human nature, and may more readily be produced by the more questionable advantages of birth—of wealth—of personal accomplishments—and even of tasteful dress. It is not, however, contrary to reason, fairly to estimate and appreciate any advantage we may have gained especially through our own efforts. Less commendable, certainly, is that spirit of envy and detraction which those indulge in, who, unable to rise themselves, would reduce others to their own low level.

While the boundless views of creation which science opens out may well cause the loftiest human intellect to bow in profound humility before the Supreme Being, to whom all things are open and naked; yet, at the same time, the achievements of the human mind in expounding the mechanism of the heavens and the phenomena of nature, have an ennobling influence on the character; and of themselves raise the hope and longing for immortality. Who feels not elevated when he hears of the marvellous calculations and predictions of the astronomer?

But I know no greater—no more interesting achievement, than that of Cuvier. Paris, the scene of his labours, stands on the tertiary formation, in which are entombed the bones of extinct animals, a number of which had been collected and deposited in the Paris Museum. Here he found himself placed in a charnel house, wherein was a rude and unarranged heap of bones—"rudis indigestaque moles,"—many of them a considerable size and singular form. Now Cuvier had profoundly studied living organisms, and had arrived at the important generalisation that each animal was formed according to a definite plan, and that all the parts had a mutual relation to each other, so that it was possible from a few bones having their terminations entire, to construct the entire animal. This principle, derived from the living, he to applied the exposition of the dead. The result

was wonderful. The dry and mutilated bones became, as it were instinct with life:—to use his own language, "at the voice of Comparative Anatomy, every bone and fragment of a bone resumed its 'place,"—eventually the charnel house was converted into a menagerie. Strange forms were seen—the *Anoplotherium* was there, about the size of a dwarf ass, resembling a pig, and with a thick tail like that of an otter—the *Palæotherium* was there, as large as a rhinoceros, but with a snout like that of the tapir. For not only were the skeletons set up, but the accomplished naturalist also determined the nature of the dermal covering, their habits and mode of life, and even the physical conditions of the district, when these thick-skinned animals lived in the ancient swamps, swam over the lakes, and browsed upon the leaves and branches of the tropical shrubs and trees which grew along the borders.

Achievements such as these—the result of great labour and profound thought—evidence that the mind is a spark struck from Divinity, which, though it may be obscured, will never be extinguished.

And this conclusion derives force from the progress of knowledge. He who cultivates any department of science can claim kindred with the master spirits of the world, and can aid in the development of truth; for the larger generalisations which form the science of an age, arise out of the combined observations of many minds. The science of one generation becomes the heritage of that which succeeds, and forms the basis on which it rears its own superstructure. And thus is it that the domain of knowledge is ever enlarging, nor can any limits be drawn beyond which it may not extend. These views attest the dignity of the human mind—they raise it above cold materialism—they awaken high hopes and exalt strong desires for immortality, and at length impress us with the unfaltering belief that the faculties and powers which have already achieved so much, and which pant after higher attainments, will live on and prosecute in another state the researches begun here, and which, though but imperfect, illustrate the power, the wisdom, and goodness of Him who has made man after his own image.

Papers on Practical Education.

CANONS OF TEACHING.

1. Teachers of limited capacity, or whose command of language is limited, invariably teach best with text-books, or by the individual system of instruction.
2. Men of fervid imaginations, having a great command of language and enthusiasm of character, almost invariably become superior teachers.
3. Decision of character almost invariably forms an element in the qualifications of a superior teacher.
4. Men who are deficient in general knowledge and in enthusiasm of character are generally bad teachers even though they possess great technical acquirements.
5. An earnest man, imbued with the love of children, is rarely a bad teacher.
6. The love of teaching is generally associated with the capability for it; but the converse does not so frequently hold true.
7. A man of superior teaching-power teaches well by any rational method. But he will always teach best by that method which is suited to his peculiar capabilities.
8. Men generally teach badly when they attempt to teach too much, or when they do not duly prepare their lessons.
9. Presence of mind, and that self confidence which is based on self-knowledge, are essential elements in a good teacher's character.
10. Success in teaching is more dependent upon the capabilities of the master for teaching, than upon his technical acquirements. Teaching-power is not always associated with superior talents or great acquirements.—*From a Lecture by Mr. Thomas Tate, F.R.A.S., to the United Association of Schoolmasters of Great Britain.*

SKETCH OF THE INSTRUMENTS OF MORAL EDUCATION IN AN ELEMENTARY SCHOOL.

In moral training, we must remember the following characteristics of children:—

- 1.—That they are influenced by example. So strong is the faculty of imitation, that they will certainly copy that which they see, especially in those somewhat older than themselves.
- 2.—They are strongly influenced by sympathy, that indefinable feeling, which binds lads together for good or evil.
- 3.—They are influenced by association. The circumstances in which they are placed have a powerful influence in forming character.
- 4.—That their nature being evil, they are more disposed to follow evil than good.
- 5.—That their judgment, not being mature, they are very liable to mistakes.

The instruments of right education may be classed under the School, the Teacher, the Instruction, the Administration of Discipline.

I. THE SCHOOL. Its arrangements, cleanliness, employment, companionship, playground.

1.—The arrangements of a school as to neatness, taste, and cleanliness, must have great influence on the character of our children. Schools should have a tasteful, simple, inexpensive style of decoration. Objects of beauty and taste should be always within their sight, but of such a character as might reasonably be expected in the dwelling of the industrious artisan.

2.—The next point in moral influence is that of suitable and constant employment. The mind, pre-occupied, is not open to temptation.

"Satan finds some mischief still
For idle hands to do."

But in addition to this, there is the importance of training children to habits of industry, so that to have no employment would be painful; the mind would thus be always occupied, and the opportunities of temptation fewer.

"The devil seeks to tempt a busy man,
But an idle one tempts the devil."

3.—Influences of a powerful character are to be found in the companionships formed, in the conduct of the children towards each other, as kindness, politeness, modes of speaking to each other, or of taking from one another, in the conduct towards the school property, such as defacing it; in truthfulness and honesty in school work. These things are the elements in the moral atmosphere of the school.

4.—The influence of the playground. The playground, from allowing character more freely to develop itself, is not only educative in itself, but furnishes the means of education to the teacher. By observing the associates selected, the positions assumed as leaders or followers, the games played, the forbearance or otherwise, he acquires knowledge which must be of great use in the conduct of his school. Should the teacher not use this knowledge, he would be very unwise, and the chief benefits of the playground be not realised.

II.—THE TEACHER. The character, habits, and daily conduct of the teacher produce their effect on the children, by the laws of example and association. But there are more direct agencies than these.

1.—There is his authority. This, as a general rule, children are never inclined to dispute.

2.—Another source of influence possessed by the teacher is the faith which is reposed in him. This is all but unlimited. In matters of school instruction it is so; but in moral matters it is lessened by the influence of home, and by the public opinion of the school.

3.—But the most powerful influence a teacher can wield is love. The love of children may be obtained, and when it is, it is all but all-powerful.

III.—THE INSTRUCTION. The moral and religious instruction should be by means of Bible lessons, moral lessons, lessons arising from circumstances in school or playground, connected with discipline. The benefits of moral and religious instruction depend.

1.—On the mind being occupied with truth.

2.—On this truth being applicable to children's circumstances.

3.—On the consistency of the teacher.

4.—On the position which moral training holds in the school.

IV.—THE ADMINISTRATION OF SCHOOL DISCIPLINE. The faults in such administration are laxity, uncertainty, and severity.

AN INCIDENT IN SCHOOL LIFE.

NEVER TWIT A BOY FOR WHAT HE CANNOT AVOID.

Incidents trifling in themselves often have an important influence in determining the character of a life. A word spoken in season, a cruel taunt, wounding the heart to its core, have been the turning points in destiny, and put a young mind on the high road to fortune, or sent it downward to ruin. Almost every person can recall some occurrence in early life which gave tone and impulse to effort, and imbued the mind with principles whose influence is even now controlling. The following narrative is an illustration of this fact, and inculcates a truth, which every man, woman and child may profitably bear in mind.

Years ago, when I was a boy, it was customary to have spelling schools during the winter term. These gatherings were always anticipated with great interest by the scholars, as at those times was to be decided who was the best speller. Occasionally one school would visit another for a test of scholarship.

A neighboring school once sent word to ours that on a certain day in the afternoon, they would meet at our school-house for one of these contests. As the time was short, most of the other studies were suspended, and at school and at home in the evenings, all hands were studying to master the monosyllables, dissyllables, polysyllables, abbreviations, &c. &c., which the spelling-books contained.

At length the day arrived, and as our visitors were considered rather our superiors, our fears and anxieties were proportionately great. The scholars were ranged in a standing position, on opposite sides of

the house, and the words pronounced to each side alternately, and the scholar that missed was to sit down. His share in the contest was lost.

It did not take long to thin the ranks on both sides. In a short time our school had but eight scholars on the floor, and theirs but six. After a few rounds the contest turned in their favour, as they had four standing to our two. For a long time it seemed as though these six had the book "by heart." At length the number was reduced to one on each side. Our visitors were represented by an accomplished young lady, whose parents had recently arrived in town, and ours by myself, a poor little boy of ten summers, who had sat up night after night while my mother pronounced my lessons to me. The interest of the spectators was excited to the highest pitch, as word after word was spelled by each. At length the young lady missed, and I stood alone. Her teacher said she did not understand the word. She declared she did; that the honor was mine, and that I richly deserved it. That was a proud moment for me. I had spelled down both schools and was declared the victor. My cheeks burned and my brain was dizzy with excitement.

Soon as the school was dismissed, my competitor came and sat down by my side and congratulated me on my success, inquired my name and age and flatteringly predicted my future success in life.

Unaccustomed to such attentions, I doubtless acted as most little boys would under such circumstances, injudiciously. At this juncture, Master G., the son of the rich man of our neighborhood, tauntingly said to me, in the presence of my fair friend and a number of boys from the other school—"Oh, you needn't feel so big—your folks are poor and your father is a drunkard."

I was happy no more—I was a drunkard's son—and how could I look my new friends in the face? My heart seemed to rise up in my throat and almost suffocated me. The hot tears scalded my eyes but I kept them back; and soon as possible, quietly slipped away from my companions, procured my dinner basket, and, unobserved, left the scene of my triumph and disgrace, with a heavy heart, for my home. But such a home. "My folks were poor—and my father was a drunkard." But why should I be reproached for that? I could not prevent my father's drinking, and, assisted and encouraged by my mother, I had done all I could to keep my place in my class at school, and to assist her in her worse than widowhood.

Boy as I was, I inwardly resolved never to taste of liquor, and that I would show Master G. if I was a drunkard's son, I would yet stand as high as he did. But all my resolves could not allay the gnawing grief and vexation produced by his taunting words and haughty manner. In this frame of mind—my head and heart aching, my eyes red and swollen—I reached home. My mother saw at once that I was in trouble, and inquired the cause. I buried my face in her lap and burst into tears. Mother seeing my grief waited until I was more composed, when I told her what had happened, and added passionately, "I wish father wouldn't be a drunkard, so that he could be respected as other folks." At first, mother seemed almost overwhelmed, but quickly rallying herself, she said:

Joseph, I feel very sorry for you, and regret that your feelings have been so much injured. G. has twitted you about things you cannot help. But never mind, my son. Be always honest; never taste a drop of intoxicating liquor; study and improve your mind. Depend on your own energies, trusting in God, and you will, if your life is spared, make a useful and respected man. I wish your father, when sober, could have witnessed this scene, and realise the sorrow his course brings on us all. But keep a brave heart, my son. Remember you are responsible only for your own faults. Pray daily to God to keep you, and don't grieve for the thoughtless and unkind reproaches that may be cast on you on your father's account.

This lesson of my blessed mother, I trust, was not lost upon me. Nearly forty years have passed since that day, and I have passed many trying scenes, but none ever made so strong an impression on my feelings as that heartless remark of G's. Now, boys, remember always to treat your schoolfellows with kindness. Never indulge in taunting remarks towards any one, and remember that the son of a poor man, and even of a drunkard may have sensibilities as keen as your own.

But there is another part to this story. The other day a gentleman called at my place of business, and asked if I did not recognize him. I told him I did not. "Do you remember," said he "being at a spelling school at a certain time, and a rude thoughtless boy twitting you of poverty, and being a drunkard's son?" "I do most distinctly," said I. "Well," continued the gentleman, "I am that boy. There has not probably a month of my life passed since then, but I have thought of that remark with regret and shame, and as I am about leaving for California, perhaps to end my days there, I could not go without first calling on you, and asking your forgiveness for that act."

Boys, I gave him my hand as a pledge of forgiveness. Did I do right? You all say, yes! Well, then, let me close as I began: BORN, NEVER TWIT ANOTHER FOR WHAT HE CANNOT HELP.

UNCLE JOSEPH.

JOURNAL OF EDUCATION,

Upper  Canada.

TORONTO: MAY, 1856.

. Parties in correspondence with the Educational Department will please quote the *number* and *date* of any previous letters to which they may have occasion to refer as it is extremely difficult for the Department to keep trace of isolated cases, where so many letters are received (nearly 600 per month) on various subjects.

THE article on the first page of this number of the *Journal* is worthy of the careful consideration of the Local Superintendents and others interested in the progress of our Public School system. It contains the opinions of an able Educationist, on the practical difficulties experienced in the working of a system of public instruction. These opinions Dr. Sears has, in retiring from the important post which he has for some years occupied, thus formally embodied in a final Report to the Legislature, as the results of his experience and observations.

In so thorough an examination and review of these difficulties, Dr. Sears designed that his remarks should serve as a check to the more enthusiastic—a corrective of the evils which an undue desire for display invariably produces, and a remonstrance addressed to those who, with less patriotism and foresight than avarice and self-opinion, seek to impede the Trustees and Teachers in the performance of their important and invaluable services to the public.

The difficulties experienced in the working of a system of public instruction, (to which Dr. Sears refers,) cannot have escaped the attention of Local Superintendents and Boards of School Trustees. Some of these difficulties may, to some extent, be removed, or at least very materially lessened, through the active exertions of Local Superintendents and Boards of Trustees; and the suggestions and advice contained in the extract from Dr. Sears' Report, will greatly aid them in this duty. We, therefore, direct their attention carefully to the subject, in connection with the article on the first page.

DISPUTES BETWEEN TRUSTEES AND TEACHERS.

A number of applications for advice have lately been made to the Educational Department, with a view to the settlement of disputes which have arisen between Trustees and Teachers in regard to salaries, &c. These applications have been made, in some instances, in ignorance of the law, and parties have incurred a good deal of expense and delay in transmitting a voluminous and detailed statement of their case, sometimes entirely *ex parte*, in order to obtain the decision of the Chief Superintendent of Education thereon. To all such applicants for advice the reply has invariably been, that the law provides but one mode for the settlement of these disputes—that neither the Chief Superintendent nor the Courts of Law can entertain them, but that they must be submitted to arbitration, and that the award of the arbitrators is *final in all cases*.

The section of the Common School Act of 1850, relating to this matter, is as follows:

“XVII. And be it enacted, That any teacher shall be entitled to be paid at the same rate mentioned in the agreement with the trustees, even at the expiration of the period of his agree-

ment, until the trustees shall have paid him the whole of his salary as teacher of the school, according to their engagement with him;* Provided always, that in case of any difference between trustees and a teacher in regard to his salary, the sum due to him, or any other matter in dispute between them, it shall be lawful to submit such matter in dispute to arbitration, and each party shall choose one arbitrator, and in case either party in the first instance shall neglect or refuse to name and appoint an arbitrator on his behalf, it shall be lawful for the party requiring such arbitration, by a notice in writing to be served upon the party so neglecting or refusing to make such appointment, to require the opposite party within three days, inclusive of the day of the service of such notice, to name and appoint an arbitrator on his behalf, which notice shall name the arbitrator of the party serving such notice; and in case the party upon whom such notice is served, shall not within the three days mentioned in such notice, name and appoint such arbitrator, then the party requiring such arbitration shall and may nominate and appoint the second arbitrator, and the two arbitrators in either way chosen, and the Local Superintendent, or any person chosen by him to act on his behalf, in case he cannot attend, or any two of them, shall have full authority to make an award between them, and such award shall be final.” The fifteenth section of the Supplementary School Act of 1853, also enacts: “That the arbitrators mentioned in the said seventeenth section of the said Act, shall have authority to administer oaths to and require the attendance of all or any of the parties interested in the said reference, and of their witnesses, with all such books, papers, and writings as such arbitrators may require them or either of them to produce; and the said arbitrators, or any two of them, may issue their warrant to any person to be named therein, to enforce the collection of any sum or sums of money by them awarded to be paid, and the person named in such warrant shall have the same power and authority to enforce the collection of the money or moneys mentioned in the said warrant, with all reasonable costs, by seizure and sale of the property of the party or corporation

* The following is the form of Agreement between Trustees and Teacher:

We, the undersigned, Trustees of School Section No. —, in the Township of —, by virtue of the authority vested in us by the fifth clause of the twelfth section of the Upper Canada School Act of 1850, have chosen [*here insert the Teacher's name*] who holds a — class certificate of qualification, to be a Teacher in said School Section; and we do hereby contract with and employ such Teacher, at the rate of [*here insert the sum in words*] per annum, from and after the day hereof; and we further bind and oblige ourselves, and our successors in office, faithfully to employ the powers with which we are legally invested by the said section of said Act, to collect and pay the said Teacher, during the continuance of this agreement, the sum for which we hereby become bound—the said sum to be paid to the said Teacher, [*quarterly, &c., as the case may be.*] And the said Teacher hereby contracts and binds himself [*or herself*] to teach and conduct the School, in said School Section, according to the regulations provided for by the said School Act. This agreement to continue [*here insert the period of agreement,*] from the date hereof.

Given under our hands and seals, this — day of —, 18—.

I. K., Witness.

A. B. } Trustees. Corporate Seal.
C. D. }
E. F. }
G. H., Teacher. Seal.

Agreements between Trustees and a Teacher must be signed by at least two of the Trustees and the Teacher, and must have the corporate seal of the section attached. But no corporation has power to make an agreement providing the Teacher with board and lodging—7 U. C. Q. B. R. 130. Agreements made after the 1st of October, are not binding after the annual meeting, unless signed by the two Trustees remaining in office.

No deduction whatever can be lawfully made from any Teacher's salary for any allowed holidays or vacations; nor for the exemption of indigent persons, authorized by the tenth clause of the twelfth section of the School Act of 1850.

against whom the same is rendered, as any bailiff of a Division Court has in enforcing a judgment and execution issued out of such court; and no action shall be brought in any court of law or equity, to enforce any claim or demand which by the said seventeenth section of the said in part recited Act, may be referred to arbitration as therein mentioned."

In connection with this extract from the law, we deem it proper to quote two paragraphs from the "General Regulations" in regard to the Duties of Trustees, adopted by the Council of Public Instruction in August, 1850, as follows:

"While the Trustees employ the teacher—agree with him as to the period during which he shall teach, and the amount of his remuneration—the *mode of teaching* is at the option of the teacher; and the local Superintendent and visitors alone have a right to advise him on the subject. The teacher is not a mere machine, and no Trustee or parent should attempt to reduce him to that position. His character and his interest alike prompt him to make his instructions as efficient and popular as possible: and if he does not give satisfaction, he can be dismissed according to the terms of his agreement with his employers. To interfere with him, and deprive him of his discretion as a teacher, and then to dismiss him for inefficiency, which is the natural and usual result, is to inflict upon him a double wrong, and frequently injures the pupils themselves and all parties concerned. It should then be distinctly understood, as essential to the teacher's character, position and success, that he judge for himself as to the mode of teaching in his school, including, of course, the classification of pupils, as well as the manner of instructing them. It is, nevertheless, the duty of the Trustees to see that the school is conducted according to the regulations authorized by law.

"It is therefore important that Trustees should select a competent teacher. *The best teacher is always the cheapest.* He teaches most, and inculcates the best habits of learning and mental development in a given time; and time and proper habits are worth more than money, both to pupils and their parents. Trustees who pay a teacher fairly and punctually, and treat him properly, will seldom want a good teacher. To employ an incompetent person, because he offers his incompetent services for a small sum, is a waste of money, and a mockery and injury of the youth of the neighbourhood."

DUTIES OF EDUCATED MEN.

Every educated man should endeavor to add something to the extent of human knowledge or wisdom by original investigation. Many men, amidst the pressure of professional pursuits and of narrow circumstances, have toiled to accumulate those treasures by which your own minds have been enriched. The wide fields of literature and of abstract and applied science lie before you; select some favorable spot, cultivate in your leisure moments, and you may hope to repay to those who follow you some portion of that debt which you owe to those who have gone before.

Further, every educated man should be an educationist. I trust that your promise to promote the interests of this institution will not be empty words. Regard all other Universities as kindred institutions, laboring in the same great cause. Nor should you neglect the interests of the humbler sources of learning. Good common schools nourish our colleges, and colleges foster the schools; and both united furnish the best means for the real elevation of any people. Let it be your endeavor to maintain large and enlightened views on this subject in opposition to the narrow prejudices which tend to excite division where there should be most complete unity of effort.

Every educated man should also be a man of public spirit, taking a warm interest in all that tends to promote the material, social, or political welfare of his country; and it is especially your duty to do all in your power to develop, in this country, those British political

institutions, which, in their happy combination of security with progress, so far excel those of all other ages and nations, and which it seems to be the special province of Canada to work out in their application to new circumstances and conditions.

Lastly, allow me earnestly to urge a supreme regard to our holy christian faith. It is one of the most lamentable of all spectacles to behold a young man of liberal education and of respectable abilities, with high hopes and prospects, burying all in the mire of intemperance and sensuality; and it is almost as sad to see such a man looking with cold unconcern on his highest spiritual interests, or joining the scoffer in his ridicule of the sacred things which he does not comprehend. I trust that you, on the other hand, will endeavour to attain to that highest style of man, the Christian gentleman, earnest and zealous in every good work, forbearing under provocation, humble in every position in which he may be placed, cherishing in his heart the love of his God and his Saviour. May God grant that this may be realised in you, and that useful, honoured, and happy lives may conduct you to a glorious immortality.—[*Principal Dawson's Address at a recent Convocation of Magill College.*—See page 77.

A PLEA FOR PLAY.

The old saying, that "all work and no play," only made "a dull boy," is one which every Teacher would do well to remember. And carrying out educationally its spirit, we hold that every school should if possible have its play-ground attached, and include among its "apparatus" some of the more common appliances of harmless and healthy recreation. This may be a difficult matter in which to achieve success in a town, but the very existence of the difficulty should only serve to stimulate efforts to overcome it. In the rural districts, where the obstacles are not so great, the moral importance of such an adjunct to the school, from its not being so prominently brought before the eye, is often not sufficiently recognized. We must regret the too early employment of children, more especially in the various branches of manufacturing industry, not only on purely educational, but also on physical grounds. The unexpanded intellect and untrained moral nature, are almost always accompanied by a constitution more or less enfeebled, and a physical development checked and stunted. The child, debarred from the healthy and requisite exercise of its faculties, left without time to store its young mind with information, or forced to have even its scanty opportunities occupied by a cramming process in barren facts and necessary rules, alien after all to a child's vivid imagination and eager fancy, may, from its contact with older and a certain class of associates, grow up endowed with a kind of vulpine acuteness, which, nevertheless, will differ much from the complete and healthy development of "thw and sinew" which we picture in a model Englishman. But Nature, with a happy stubbornness, will vindicate her rights. Working-hours may be long, but play hours will still be found afterwards. Play-grounds may be scarce, but childhood with the instinct of a Parisian revolutionist, "descends into the streets." We have often too good reason to regret the locality thus forced on childhood's sports; it is undoubtedly an evil that the eyes of Her Majesty's lieges should be endangered by "tip cat," their unwary tread betrayed by treacherous marbles, or that kite-strings and skipping-ropes should hinder their lawful progress; yet while we grumble at the inconvenience to ourselves personally, as we wend at evening our somewhat meditative way, of having to walk unwittingly within the limits of "Tom Tiddler's ground," or of being involved in apparently unlimited "tick," we can scarcely avoid sympathising with the terror, and regretting the hasty flight caused by the distant apparition of a blue-coated guardian of the peace. It may be well to inveigh against street games, but scarcely fair when we provide no other play ground. When we speak of a "play-ground," we mean expressly, "a space of ground to play in;" not a certain area which the teacher regards solely as a convenient spot wherein to assemble and marshal the scholars before school-hours, with a view of insuring an orderly entry into school, nor a "tabooed" inclosure, in which after school-hours the school-room is to be left alone in its glory, every child being rigorously excluded, and the key put into the teacher's pocket. But while we would have the school-room properly adapted and employed for work, so would we wish to see the play-grounds well furnished and employed for play. Among our school books we would decidedly number a "Book of Sports." The teacher may train and educate assiduously through a long summer's day, while unhappily the long summer's evening may find agencies unravelling the day's work as effectually as did the Penelope of Grecian story. We have the highest authority for believing that "evil communications corrupt good manners," and it is surely needless, if by any means preventible, that daily temptations should be allowed—if not to undo, at least sorely to try the result of each day's labour. If schoolmates were playmates, the danger would be lessened. Parents who keep their children from the contamination to which street-play is almost unavoidably exposed, would be able in confidence to give leave for their needful recreation, if they knew that with the school play-ground open for school-children only, that their associates, locality

and employment were easily ascertainable; and from the teacher whose heart was in his work, a just source of anxiety would be removed. But not merely a negative but a positive benefit would arise from such a provision,—not only would both parent and teacher be relieved from one cause of uneasiness, but the latter would be furnished with an appliance of education of almost unlimited, and certainly unappreciated value. The great lessons of life, many of them, are neither best nor fully learned from school-book or in school-room. It may be the fitting place for head work, but heart-work finds a wide scope outside the school-room walls. Where can be so effectually illustrated and enforced as in the play-ground, lessons of kindness, tender-heartedness, forgiveness? where taught so forcibly forbearance, and that Christian honesty which men call honour? We think it an ominous sign when the teacher is afraid of playing with his children; “names of great men all remind us” that those endowed with the highest intellect could enter into their children’s sports without any misgiving as to the possible detriment which might accrue to parental authority, or any degradation in the eyes of lookers-on; the teacher is in fact as well as law “in the place of the parent,” and when he feels that his dignity and influence would evaporate outside the school-room walls, or that they are inseparably connected with a “time-table” and a desk, we can neither flatter him or ourselves into the persuasion that he is “the right man in the right place.” But when we see “Master” surrounded in the play-ground by a group of happy faces, hailed with exultation as an ally, made general umpire and referee, we feel tolerably confident as to the character of the school-work, and that the teacher’s heart is in it. Yet, our “plea for play” would be incomplete if we rested it merely on the negative benefit to which we have alluded,—the preserving the children from the contamination of evil influences by making a provision for their play as well as work; while it would be both short-sighted, if we advanced it merely as bearing on the period of school-life. The true educator will see how far-reaching are its influences. The play-ground, properly used and superintended, is a moral engine acting upon the future; it is forming a healthy habit both morally and physically of play, which however as years pass on, and the school boy grows into the youth and man, we speak of more staidly as “recreation.” It is a common phrase to speak of the “working man,” we know not whether it is designed to be employed in contradistinction to the “gentlemen of England who live at home at ease,” but we should think not; all of us may seek and find opportunity, “painfully and laboriously to serve God in our vocations and callings,” to be “working-men” in His eyes who allots daily duties as well as daily bread; and perhaps this habit of almost unconsciously regarding one class as the sole inheritors of “all work and no play,” may lie deep at the root of many of our social evils. We cannot expect the active youth when his day’s work is over to sit in perpetual listlessness in his parent’s cottage; and the wife would find her husband sometimes in the way, even at his own fireside. Both go forth for recreation; at present, the man accustomed to sedentary employment finds a sedentary pleasure in the ale-house, with its glass, its pipe, and its paper; the one whose muscles are strung by labour to a higher tension, seeks a laborious pleasure in the “skittle-alley.” Is it an impossibility to supply the one with his paper or his chess board in the reading-room, converted from the class-room of the school “contrived a double debt to pay;” or to send him home with a book from the Lending Library; or to persuade the other that cricket is at least on a par with skittles, or that strength and skill, however exerted, are not necessarily connected with “potations pott’e deep?” Is it not possible to make the singing-class at the school pleasurable? or where locality admits, may not the unpretending flower show, with its prizes for cottagers’ flowers, vegetables, and gardens, (and even for the wild-flower posy gathered by little hands from brake and dell,) be made antagonistic to evenings wasted in the village alehouse? And may not all these things have incidentally something to do with the better keeping of one Day holy, and making it emphatically a Day of Rest? While we endeavour to raise the standard of knowledge, let us not forget to elevate the standard of recreation; in a measure both are needful; but difficult as it is to furnish even hints applicable to every locality, we trust our “plea,” may have set before the Schoolmaster the fact, that “play,” as regards its present or ultimate object, is not beneath his notice, or attention to it foreign to his aims.—*Papers for the Schoolmaster.*

M. U. R.

EDUCATE THOROUGHLY.

BY HON. H. H. BARNEY.

The habit of forgetting some things when attention is turned to others, especially in the earlier stages of education, is so great an evil in itself, and so discouraging to the learner, that it is far preferable for him to know perfectly, and retain easily and securely a part, than to have so many studies, that each, in turn, passes through the mind as clouds sweep through the sky.” The want of attention to this important principle, renders the knowledge acquired in school exceedingly insecure, causing many things to fade from the memory in order to

make room for others. Let the pupil, therefore, at the very commencement of his education, understand that he is to be benefitted, mainly, by what he learns and remembers, and not by what he learns and immediately forgets, and never allow him to think that he has learned a lesson perfectly till he can explain clearly and intelligently to others, and readily recall it at any future time.

Another principle, equally important with the foregoing, is “to make sure of what has been once learned,” either by constantly reviewing it, or by frequently using it in the subsequent part of the course, or both. It is also essential that every review should be conducted in some new way, so that the same principle shall reappear under ever varying forms. The novelty of its new phases will keep up a fresh interest in the mind.”

It is not essential to good education and proper mental discipline, that the field of study should be very large, but it is indispensable that every inch of it should be thoroughly cultivated; for the reason that a few subjects, fundamental in their character, which are well understood and fully digested, are of far greater value than a large number hastily and superficially studied. Not only is the effect upon the mind better, but the value of the habit, as an aid to future acquisition, is vastly superior. If the first acquisition of the scholar be of a faulty character, all of his subsequent acquisitions will, in all probability, be equally so.

In schools where education is estimated by the number of subjects studied, rather than by the amount of mental discipline secured, and the accuracy and security of the knowledge obtained, the effort of the scholars seems to be, to store the memory with an immense mass of words and sentences, which are to them little better than the words of a dead language, or with a great number of facts without understanding their nature, relations or uses. The minds of such scholars are like furniture rooms, crammed with articles without utility or order. The acquisitions made are not deeply and securely fixed in the mind. The objects presented to view leave no distinct impression. They are not compared, classified and arranged into a system by the intellect of the pupil, and consequently the memory holds them by a slight tenure. Knowledge thus acquired is too superficial to deserve the name, and rather injures than improves the mind. It tends to weaken the understanding, to destroy its soundness and integrity, and to render it incapable of those decisive and sure acts which are necessary to command reliance. What is chiefly to be aimed at in training this faculty is to give it power and precision, so that it may be both effective and safe in its operations. Such a result can be produced only by patient, exact and thorough training.

Systematic and efficient mental training is a primary object of education, to which the acquisition of knowledge is but secondary. The latter is, in the earlier stages of study, chiefly important as a means of mental discipline, having, at the same time, a true but subordinate value.

It is much better for a student to be able to master a few studies well, than to be hurried through a large number in that superficial manner so popular at the present time; for the object of education, in its first and earlier processes, is not so much to impart a given amount of learning, as it is to form correct habits of study, and secure the power of future acquisition. This subject should never be overlooked, for it lies at the foundation of all success with the scholar and the man of business.

The success of the student depends not so much upon the extent of his acquisitions as upon the manner in which they have been made. A few subjects properly studied afford more real mental discipline than a score hastily and superficially pursued. In the former case, the acquisitions are wrought more deeply into the mind, and converted, as it were, into its own substance.

Though elementary knowledge be limited, if it be well chosen, and used chiefly as a means of intellectual training, it will constitute a solid and secure basis, on which the acquisitions of a whole life may safely rest.

If every exercise in the school were such in its disciplinary character that it might serve as a pattern to be copied in all the remaining studies and business of life, this one feature in a system of education would be so valuable that, in comparison with it, all the superficial and ostentatious attainments made without method or discipline, would be of little account.

Habits of order, of accuracy and thoroughness, lie at the foundation of all success in business no less than in scholarship.

This building up of the solid framework of the mind, giving it capacity and aptitude for vigorous and systematic action, is a principal object of education. A contrary course impairs the strength of the intellect, weakens the whole foundation of character, begets disgust with intellectual effort, and produces just such a character, as it is the business of education to guard against.

Not only should the number of studies be diminished, but the extent to which each is usually pursued in the primary schools, should be abridged. It is of but little use to proceed far in studies in that superficial manner so common in many schools. If the plan be well

laid out, and the studies properly arranged, the more labor bestowed upon the elementary part of each, the better will it be for the future progress of the learner.

Subjects which require a certain amount of preparatory knowledge, and maturity of judgment in order to be understood, fail of their object when prematurely introduced, and lose, perhaps forever, the power of creating interest in the mind. It matters not how important and useful in themselves such studies may be; they can be more advantageously pursued at a future time.

Thoroughness, therefore, *thoroughness*, for the sake of the knowledge, and still more for the sake of the habit, should at all events, be enforced; and a pupil should never be permitted to leave any subject, until he can reach his arms quite around it, and clench his hands on the opposite side.

It is of far more consequence to give the mind a degree of power, which it shall be able to apply to any future study when needed, than it is to store it with any conceivable amount of learning.

Miscellaneous.

A PICTURE.

In a school-room small and low,
This is the way the minutes go—
If you further wish to know,
Call, and facts will plainly show :

Eyelids drooping,
Figures stooping;
Classes listless,
Scholars restless;
Teacher weary,
School-room dreary,
Looking sadly,
Lessons badly ;
Many sighing,
Some are crying ;
Others idling,
Sitting sideling ;
Left their seat
To pinch or beat ;
Study loudly,
Answer proudly ;
Circumvention
Claims attention ;
Air is horrid,
Faces florid ;
Learning never,
Sickness ever.

THE PICTURE REVERSED.

To a school-room large and airy
Hastens many a little fairy ;
Flowers are blooming all around,
Wide and smooth the green play ground
Boughs are waving in the breeze,
Birds are singing in the trees,
Sunlight streaming gayly over
Fields of waving grain and clover ;
Some are shouting, some are singing,
Till the clear-toned school-bell ringing,
Calls them from their happy play
To the labors of the day.

Sunny locks and rosy faces,
Wearing childhood's thousand graces,
Bow in solemn silence there
While they lisp the morning prayer ;
And each sparkling eye is hid
By its fringed and drooping lid.
Softly falls, with holy seeming,
Love, from realms of glory streaming,

While each spirit eye is open
To behold some heavenly token
Of a blessing on the hours
They shall spend in learning's bowers.

Happy seems each little creature—
Happy, too, their smiling teacher,
While 'mid truth and bloom and song
Glide the rapid hours along.

Those young hearts are learning well
Nature's most enchanting spell ;
Souls to holier life are bounding
By the influences surrounding ;
Spirits plume their new-fledged pinions
For a holier home's dominions,
And in wisdom's pleasant ways
Fleets the morning of their days.

Connecticut C. S. Journal.

IGNORANT TEACHERS FOR CHILDREN.

"There are certain fathers, now-a-days," says Plutarch, "who deserve that men should spit upon them with contempt for intrusting their children with unskillful teachers, even those who they are assured beforehand are wholly incompetent for their work; which is an error of like nature with that of the sick man who, to please his friends, forbears to send for a physician that might save his life, and employs a mountebank, that quickly dispatches him out of the world. Was it not of such that Crates spake, when he said that it he could get up to the highest place in the city he would lift up his voice, and thence make this proclamation: 'What mean you, fellow-citizens, that you thus turn every stone to scrape wealth together, and take so little care of your children, those to whom you must one day relinquish all?'"

"Many fathers there are", continues Plutarch, "who so love their money and hate their children that, lest it should cost them more than they are willing to spare to hire a good master for them, they rather choose such persons to instruct their children as are of no worth, thereby beating down the market that they may purchase a cheap ignorance." He then relates the anecdote of Aristippus, who, being asked by a sottish father for what sum he would teach his child, replied, "A thousand drachms." Whereupon the father cried out, "Oh, I could buy a slave at that rate!" The philosopher replied, "Do it, then, and instead of one thou shalt have two slaves for thy money—Him whom thou buyest for one, and thy son for the other."—*Illinois Journal.*

WORDS OF KINDNESS.

Let all thy words be words of kindness and love; let kindness beam on thy countenance, and smile in every look. Friends will cluster around thee, and their pleasant greetings and smiles of welcome will make the most delicious music to thy soul. Speak gently! sunshine will stream around thy path, and shed a halo of light around thy footsteps, and perfume the air with their delightful fragrance. Speak gently? another world will be all sunshine—bright, golden, gorgeous sunshine—and though clouds may arise and shadows play around, their shade will only add a tender chord to the silvery notes; for shadows are but mosaics set in sunshine, and gentle words will give to them a gilding which gloom can never hide.

BRITISH RAILWAYS.

At the Institution of Civil Engineers, Mr. Stephenson, M.P., president, applied himself to the great question of the British Railways, which were spread over the United Kingdom to the extent of 8,645 miles completed—more than enough of single rails to make a belt of iron round the globe. The cost of these had been £286,000,000. With regard to railway works, these had penetrated the earth with tunnels more than 50 miles in length; there were eleven miles of viaduct in the neighborhood of the metropolis alone; the earthworks measured 550,000,000 cubic yards, which would form a pyramid a mile and a half in height, with a base larger than St. James' Park. 80,000,000 of train miles were annually run on the rails. 5,000, engines and 150,000 vehicles composed the working stock. 2,000,000 of tons of coals were annually consumed, "so that in every minute of time four tons of coal flashed into steam twenty tons of water." The wear and tear was great; 20,000 tons of iron were annually required for repairs, and 300,000 trees were felled each year for sleepers. 90,000 men were employed directly, and 40,000 collaterally. These 130,000 men with their wives and families represented a population of 500,000, so that one in fifty of the entire population might be said to be dependent on railways. In 1854, 111 millions of passengers were conveyed on railways, each passenger averaging 12 miles. The receipts in the same year amounted to £20,215,000. As to accidents, on the first half of 1854 one accident occurred to every 7,195,343 travellers. How frequent, in comparison, were the accidents in the streets; how fearful the misadventures to those "who go down to the sea in ships!" Railway communication was free from the difficulties of the old road and canal traffic, and every obstacle that had opposed science had hitherto been effectually surmounted. The postal facilities afforded by railways were very great. Without them, indeed, the penny postage plan never could have been carried out. On Friday night, when the weekly papers were transmitted, from eight to ten vans were

required for the North-Western Railway alone. The electric telegraph was the indispensable companion of railways. 7,200 miles of telegraph, or at least 36,000 miles of wires, were laid down. 3,000 people were continually employed, and more than a million of messages were annually flashed along this silent highway.

ANIMALCULÆ—THE WONDERS OF THE MICROSCOPE.

The recent astonishing discoveries of Ehrenberg, a Prussian naturalist, have given a new aspect to this department of animated nature even in a geological point of view. He has described seven hundred and twenty-two living species which swarm almost everywhere, even in the fluids of living and healthy animals in countless numbers. Formerly they were thought to be the most simple of all animals in their organization: to be in fact little more than mere particles of matter endowed with vitality: but he has discovered in them mouths, teeth, stomachs, muscles, nerves, glands, eyes, and organs of reproduction. Some of the smallest animalculæ are not more than the twenty-four thousandth of an inch in diameter, and the thickness of the skin of their stomachs not more than the fifty millionth part of an inch. In their mode of reproduction they are viviparous, oviparous, and gemmiparous. An individual of the *Hydatina senta* increased in ten days to one million; on the eleventh day to four millions, and on the twelfth day to sixteen millions. In another case Ehrenberg says that one individual is capable of becoming in four days one hundred and seventy billions! Leuwenhoeck calculated that one billion animalculæ, such as occur in common water, would not altogether make a mass so large as a grain of sand. Ehrenberg estimates that five hundred millions of them do actually sometimes exist in a single drop of water. In the Alps there is sometimes found a snow of red colour; and it has been recently ascertained by M. Shuttleworth that the coloring matter is composed chiefly of infusoria, with some plants of the tribe of *Algæ*. And what is most singular is, that when the snow had been melted for a short time, so as to become a little warmer than the freezing points the animals die, because they cannot endure so much heat! A specimen of *meteoric paper* which fell from the sky in Courland 1686, has been examined by Ehrenberg, and found to consist like the red snow, of *Conferva* and *Infusoria*. Of the latter he found twenty-nine species. Surprising as these facts are, it will perhaps seem still more incredible that the skeletons of these animals should be found in a fossil state, and actually constitute nearly the whole mass of soils and rocks, several feet in thickness, and extending over areas of many acres. Yet this too has been ascertained by the same acute Prussian naturalist.

"SPARE THE ROD, SPOIL THE CHILD."

A German magazine, some years ago, announced the death of a school-master in Suabia, who for fifty-one years had superintended a large institution with old-fashioned severity. From an average, inferred by means of recorded observations, one of the ushers had calculated that in the course of his exertions he had given 911,500 canings, 121,200 floggings, 209,000 custodies, 139,000 tips with the ruler, 10,200 boxes on the ear, and 22,700 tasks by heart. It was further calculated, that he had made 700 boys stand on peas, 6,000 kneel on a sharp edge of wood, 5,000 wear the fool's cap, and 1,709 hold the rod.

THE PARISH SCHOOLS OF SCOTLAND.—MORAL AND RELIGIOUS CHARACTER.

DEVOTIONAL EXERCISES.

The daily routine of exercises in the parish schools of Scotland, at the period to which I refer,—the early part of the present century,—was uniformly such as to favor the most salutary impressions on the young mind. The duties of the day commenced with prayer; and among the regular classes of the school, was always to be found one whose reading lessons were in the New Testament, and another whose lessons were in the Old Testament. One of these lessons followed the prayer.

THE BIBLE AS A CLASS-BOOK.

To the Scottish people, our mooted question, whether the Bible ought to be used as a class-book in schools, would, fifty years ago, have seemed a strange and most unaccountable one to exist in an intelligent Christian community. The worthy dominie, in particular, would have had very little respect for any such doubt or scruple. It would have seemed to him a fancy, or an absurdity. He would have asked, at once, how children were ever to learn to read aright in the devotional exercises of the family, if they did not receive the requisite training on the chapters of the sacred volume at school. He well knew that the peculiar style of expression in the Scriptures, and the many difficult proper names occurring in them, rendered a separate and frequent practice in Scripture reading indispensable.

Aside from the daily use of the Bible in the regular reading exercises of the classes, there was a time specially appropriated to reading

the Scriptures, as a volume of sacred history. Saturday forenoon was customarily devoted to this purpose; and all faithful teachers made it a point of duty to prepare themselves for this exercise, by extensive reading in books of commentaries, history, travels, antiquities, and whatever else might serve to render the weekly lesson instructive and interesting. Those teachers who were themselves students of theology, or licensed preachers, had it, of course, easily in their power to make the Bible lessons peculiarly attractive; and those who did not possess such advantages would, in many instances, make it a weekly practice, on their own part, to call at the minister's study at a convenient time, and obtain from the pastor or his library,—ever open to such calls,—the requisite aid.

The effect of the reverential regard for the sacred volume, and of the earnest desire to understand and treasure up its contents, which are so characteristic of the Scotch, was to render the Bible readings on Saturday forenoon a kind of sacred festival to both teacher and pupils, even to the youngest, who were, on that day, permitted to lay aside a portion of their accustomed lessons, and indulged in the delightful privilege of listening to the readings and explanations going on in the older classes. These explanations turned, it is true, chiefly on points of history, customs, manners, and scenery. But they were by no means limited to such topics. The faithful teacher omitted no opportunity to explain, where it seemed necessary, any spiritual truth, to enforce any moral injunction, or to comment on any instructive exhibition of Divine Providence. A thorough understanding and an early love of the sacred Scriptures, were thus infused into the mind and heart of childhood, and much done to produce one of the most prominent traits of the Scottish national character.

LESSON FROM THE CATECHISM.

Monday morning was regularly appropriated to hearing lessons from the Assembly's Catechism, unless in the case of such pupils as were excused from this exercise, on the score of their parents being dissenters of some communion which did not sanction the use of that manual. The lessons from the Catechism were meant to produce useful and salutary occupation for the otherwise unemployed hours of Saturday evening and the Sabbath day. But the teacher usually exercised his own judgment as to the age at which his pupils should commence such exercises, so as to secure, as far as practicable, a sufficient maturity of understanding for the profitable performance of them; and at the same time, to avoid laying on the tender mind a burthen too heavy for its powers, and thus producing an aversion to such employments.

SCHOOL DISCIPLINE.

The discipline adopted in the Scottish parochial schools, at the period to which I refer, was of a sterner character than is deemed necessary or appropriate at the present day. It depended, however, to a great extent, on the disposition and habits of the teacher individually; as parental interference, or opposition on the part of the pupils, was a thing never apprehended or experienced in the management of a school. An occurrence of such a character would have been generally regarded as bordering on sacrilege. The parent gave up his child unreservedly to the control of the teacher; and seldom, indeed, was this sacred confidence misplaced. Parent, teacher, and pupil, alike regarded education as a hallowed privilege, and instruction as a sacred office. This very circumstance precluded the necessity of recourse to harsh measures to subdue turbulence, or of extreme resorts to assert or maintain authority, or resent indignities. The current of control accordingly ran smooth, as did that of submission. Such, at least, was the ordinary course of things; and, in most cases, even the master who was severe in office, was regarded with reverence and awe, as only the more inflexibly just. Hatred or aversion to a teacher was nearly as rare among pupils, as among parents.

MORAL INSTRUCTION.

Another most effectual aid to the government of the Scottish schools was the high standard of moral influence which was uniformly aimed at in the daily business of the school. Familiar and affectionate conversation, aided by striking and impressive anecdotes, illustrative of the importance of moral and religious principle, was usually a daily resort. The sacredness of filial duty, the reverence due to parental authority, the sanctity of religious obligation, the indispensable necessity of the fear of God, and of devout regard to the authority of his word, as the only security for character and happiness, were daily interwoven with the topics of admonition from the lips of the teacher. The slightest deviation, in any case, from the laws of rectitude or of kindness, occurring in even the youngest classes of the school, would cause an instant suspension of the merely intellectual processes or instruction, as of inferior things which must stand aside till the higher claims of morality and of principle were duly attended to, and the occurrence presented to the whole school in all its relations to character and habit. The sternest sentence, pronounced or executed under such circumstances, was necessarily freed from vindictive violence or passionate ebullition, and the compassionate tones of the teacher, and

the sympathetic tears of the pupils, would go far deeper into the offender's heart than any severity of corporal infliction.

Scott's beautiful and touching picture of the character of a parish schoolmaster, in the Tales of My Landlord, and Galt's humble sketch of a similar character, in his scene from the early days of Sir Andrew Wylie, are no exaggerations of the wisdom and humanity which generally characterized the discipline of the Scottish schools.

The moral code which prevailed in these schools at the time to which I have referred, was no dry collection of maxims and precepts, but an emanation of the living principles of virtue and piety, from the lips, the heart, and the life of the teacher. In the daily instructions of the school, every principle of moral action was referred to its genuine source in the higher sphere of religion; the monitions of conscience were uniformly traced to their connection with the authority of Scripture and the will of God. A pure morality was always shown to spring from a sound and intelligent piety.

Our New England district schools have, within the last twenty years, undergone a decided melioration, as regards government and discipline. But, in too many instances, we yet see either a fatal relaxation of authority, and a corresponding scene of disorder and wrong-doing, or an habitual resort to severe castigation, and a consequent deadening of the heart. Moral instruction, notwithstanding the express requirements of State legislation to that effect, is either wholly neglected, or limited to the mechanical repetition of abstract and uninteresting precepts, or to the study of a manual of moral philosophy, to be recited by the pupils to the teacher, instead of being a living influence poured from the heart of the teacher into those of his pupils, and thus becoming a breath of life to the soul.—*Massachusetts's Teacher.*

Educational Intelligence.

CANADA.

MONTHLY SUMMARY.

At a recent Convocation of McGill College the Vice Principal presented the candidates for graduation—Messrs. Gould, McLaren and Kershaw, in a highly complimentary speech; and having taken the usual obligation, they were severally "capped" by the Principal as B. A.'s amidst loud applause. The Dean of the Faculty of Medicine (Dr. Holmes) read the Prize list in that Faculty. The fortunate competitors were Messrs. Henry Jones, Laberge and Church. The Dean next read the names of gentlemen who had passed their primary examination, and also the names of the candidates for graduation. These latter were addressed by Dr. Hall. The graduates, Messrs. Lee, Stevenson, Henry, Jones, Laberge, Hamel, Dupuis, Kirkpatrick and Kollmyer, were then severally presented and capped Doctors of Medicine. Professor Abbott announced that in the Faculty of Law, Mr. Gardner in the senior class, and Mr. Daly in the junior class had taken prizes. He also presented Messrs. Gardner, Snowdon and Barnston, graduates, who were each capped B. C. L., by the Principal. Professor Abbott then delivered a short and appropriate address to the graduates. The Hon. Judge Day announced that the University had determined upon conferring the following Honorary and *ad eundem* degrees. The Honorary degree of M. A. on T. A. Gibson, Esq., first assistant master in the High School. The Honorary degree of M. D. on G. D. Gibb, Esq., of London. The Honorary degree of Doctor of Laws on Sir Wm. Logan, Rev. B. Davies, and Charles Smallwood, M. D. of University College.—The Honorary degree of B. C. L. on Fredrick Torrance, Esq., P. R. Lafrenaye, Esq., and R. G. Lafamme, Esq., Professors and Lecturers in the University. The *ad eundem* degree of M. A. on the Rev. C. Bancroft, M. A., of Columbia College. The *ad eundem* degree of M. A. on James Barnston, Esq., M. D., of the University of Edinburgh. His Honor spoke in the highest terms of the services to science rendered by Sir Wm. Logan and Dr. Smallwood; and expressed his pleasure that the Faculty of Law had now been rendered complete by the consent of Mr. Justice Aylwin to take a chair in it. The Principal having delivered an eloquent and able address upon the duties and obligations of educated men, [see page 73] the Rev. Dr. Davies pronounced the benediction, and the assembly broke up.—John Langton, Esq., M. A. has been elected Vice-Chancellor of the University of Toronto.—The 16th session of the Normal School for Upper Canada commenced on the 15th instant. 117 candidates presented themselves for admission. The St. Catherines *Constitutionnel* gives a highly flattering account of the examination recently held in School Section No. 3, Township of Grantham, Mr. W. R. Biggs, lately of the Normal School, Teacher. A Sketch of the history of Common Schools in the City of Toronto is about being prepared by G. A. Barber, Esq., local superintendent.

THE PROTESTANT EPISCOPAL SYNOD AND SEPARATE SCHOOLS IN UPPER CANADA.

Extracts from the Bishop's charge.

The system of education established in Upper Canada seems, at first sight, to have something very favorable in its general aspect. It proceeds upon the principle, that the great and indeed the first object of education is to give men and women such instruction as shall serve the purpose of their temporal advancement in the present life and shall enable them to pursue with efficiency any calling to which they may turn their attention. And so far as it furnishes the tools and instruments best adapted for the advancement of the scholars in the arena of social competition, it promises a fair measure of success. Religious subjects are not allowed to interfere with any of its arrangements, nor is the necessity of adopting any distinct religious teaching admitted. On the contrary, to avoid all such difficulty, the Gordian knot is cut, and the process of instruction is almost entirely secular, and confined to that description of knowledge of the practical utility of which there can be no doubt; and christianity and its doctrines are left to be dealt with by every one according to his pleasure.

This I believe to be a fair representation of the teaching of common schools in Upper Canada.—The system has assumed great dimensions, and no labor or expense is spared to promote its efficiency.

On referring to the Chief Superintendent's Report for 1854, I find the number of schools to be 3,244, being an increase of 243 upon 1851. The schools in which the Holy Scriptures are to any extent used, may be taken at two-thirds of the whole number, as there appears only a trifling difference since 1851,—shewing that of the 3,244 common schools in Upper Canada in 1854, two thirds (2163) read the Bible, and one-third (1081) did not.

One new feature which I consider of great value, and for which I believe we are altogether indebted to the able Superintendent, deserves special notice; it is the introduction of daily prayers. We find that 454 schools, or about one-seventh of the whole number, open and close with prayer. This is an important step in the right direction, and only requires a reasonable extension to render the system in its interior, as it is already in its exterior, nearly complete. But till it receives this necessary extension, the whole system, in a religious and spiritual point of view, may be considered almost entirely dead.

I do not say that this is the opinion of the Rev. Dr. Ryerson, who, no doubt, believes, his system very nearly perfect; and so far as he is concerned, I am one of those who appreciate very highly his exertions, his unwearied assiduity, and his administrative capacity. I am also most willing to admit that he has carried the meagre provisions of the several enactments that have any leaning to religion, as far as seems consistent with a just interpretation of the law.

Fortunately this system, vicious as it is at present, may be very easily amended, and without losing a particle of its value, may be made to supply with efficiency all that is wanting.

1st. Let separate schools be admitted in all villages, towns, and cities, when required, and let the same privilege be extended to the country, whenever the population warrants their introduction.

2nd. Till this regulation take effect, let it be provided that all Public Schools, whatever, be opened and closed with prayer, and a portion of the Holy Bible be daily read; and farther, that the Lord's Prayer, the Apostle's Creed, and the Ten Commandments, be regularly taught in every such School; provided, nevertheless, that no child be compelled to receive religious instruction, or attend any religious worship to which his or her parents, shall on conscientious grounds, object.

These simple provisions would interfere with nothing of importance that exists in the present system, nor in any way disturb its elaborate machinery, which would apply as well as it does now to every exigency that might occur.—*Russell's Edition of the Charge.*

Proceedings of the Synod.

Rev. Mr. TOWNLEY moved that it be resolved that application should be made for the right of having separate schools being extended to the Church of England.

Mr. O'BRIEN seconded the motion.

Rev. Mr. PALMER said, that no man could be more strongly in favor of having religious education than he was, but after careful consideration, he had come to the conclusion that to attempt to obtain the establishment of separate schools for the Church of England was simply impracticable. He moved the following resolution in amendment:—

1. That this Synod earnestly desires that such measures shall be taken as shall impart to the Common Schools of this Province, a religious character so far as its unhappy state of religious division can be done consistently with the rights of conscience,—and to that end, that all the Common Schools be opened and closed with prayer, and that a portion of the Holy Scriptures be daily read therein; provided always, that no child shall be compelled to be present at such prayers or reading of the Scriptures, whose parents or guardians shall object to his doing so.

2. That this Synod does not deem it expedient to seek the establishment of any other separate schools, except those which the members of the Church shall be enabled to establish, seeing that in contending for separate schools as part of the Common School system, they would only be seconding the too successful efforts of the Roman Catholic Church to inculcate its system of intolerance and superstition at the public expense.

Mr. GEDDES was surprised to hear one whom he had looked upon as one of the pillars of the Church, express views on this question such as Mr. Palmer had just given.

Mr. GAMBLE was sorry that this subject had been brought up, for he thought that any attempt to obtain separate schools would be a step in the wrong direction. It was most painful to him to feel compelled to differ on this point from men from whom he had received instructions that he could never forget, and it was only after the most serious consideration that he had come to the opinion that he had. He denied that the majority of the common schools were Godless institutions, and he went on to draw a distinction between Common School and College education, as in the one the children were only taken for a short time from their parents, while in colleges they were left home altogether, religious education was absolutely essential. He thought that the clergy should, whenever it was practicable, take the office of local superintendent, as they would thereby obtain a very large influence, and enabled to exercise a very powerful effect for good over the common schools. He thought that to attempt to extend the principle of separate schools would be to destroy a system which he believed on the whole to be the best in the world.

Mr. CAMERON said that no one could be more in favor of religious instruction than he was, but no one could say that it was practicable to have separate schools in the rural districts. That was impossible. Then they must remember that if it was voluntary for the people to send their children to the Church of England schools, if such were established, they might by declaring that they did not subscribe to the common schools, and thereby they would escape the tax and would not send their children at all. If they decided on having separate schools for themselves, they must give the same to all denominations, and if that was done they could not help feeling that the system would be entirely done away with, and the children would go without education altogether. They should try for what they could accomplish, and if they could succeed in having daily prayer in the schools, and had the Lord's Prayer and ten Commandments read, and the Apostle's Creed, and if the Clergy went once a week to give religious education to the children of the church, who would not say that the Church of England would not acquire a strong hold in the hearts of the people. He thought that if they confined their efforts to what they readily could obtain, they would be taking the only course that could lead to any practicable result.

Mr. BROUGH was of opinion that it was not practicable to carry out the separate school system, and he found that in his district the reading of the Bible was always attended to.

Rev S. B. ARDAGH, as a superintendent of three townships, confessed that he came forward as a convert to the common school system, for he had found that every year there were increased facilities for religious instruction, and there was now a petition before the Church Society for 250 copies of the Church catechism, which were given to the children with the consent of the Trustees, the approbation of the teachers, and the acclamations of the Church of England parents, and he found that it was possible to introduce the Church catechism into the Common Schools.

Rev. Mr. TOWNLEY said that they asked for nothing which they would not give to the Presbyterians, or to any other denomination.

The BISHOP expressed his opinion that after the discussion they had had it would be better that the motion should be withdrawn which was agreed to.

—*Colonist Report.*

COMMON SCHOOLS IN THE CITY OF OTTAWA.

At a recent meeting of the Board of Trustees the following resolutions were passed:

Moved by Mr. Cousins, seconded by Mr. Perkins:—That from and after

the 1st May, inst., the Common Schools of this City be opened to all male and female children resident therein who may be desirous of attending the same, whose parents have not subscribed to separate schools, without being charged with any rate bill, and that the Secretary do notify the Teachers accordingly. Carried.

Moved by Mr. Perkins, seconded by Mr. Cousins:—That this Board is of opinion that the Common Schools in this city may be greatly improved by building proper School Houses, and engaging a more efficient class of Teachers, as under the present system, the children are often crowded into small rooms without proper ventilation, where both Teachers and scholars are more anxious to see the end of the day than the improvements of their minds—that, under such circumstances and with the view of improving the state of things;

Be it resolved, that a Committee be appointed, to consist of Messrs. Workman, Cousins, Egleson, McCormick, the Chairman, and the Mover, to enquire and ascertain at what price and on what terms of payment two suitable lots of ground can be obtained, one in Upper Town and the other in Lower Town, sufficiently large to erect School Houses to contain at least 500 scholars in each, and Teachers residences,—said Committee to report to this Board at its next meeting. Carried.

Moved by Mr. Workman, Seconded by Mr. Cousins:—That the Chairman be requested to order for the use of the members of this Board and also for the Teachers, one copy of the *Journal of Education* for each for the current year. Carried.

The Board then adjourned.

BRITISH AND FOREIGN.

MONTHLY SUMMARY.

From financial and other tables relating to the expenditure on education it appears that, in the year 1855, £369,602 was expended from education grants, making a grand total, since 1839, of £2,002,586. Last year £71,287 was appropriated to the building and enlarging of elementary schools; £6,154 to building and enlarging training schools; £2,455 to books and maps; £44,878 to augmenting the wages of certificated masters and mistresses; £142,806 to the stipends of pupil-teachers; £39,960 to normal schools, and £30,241 to inspection. £239,997 was expended on Church of England schools, £14,975 on Wesleyan schools, £13,272 on Romanist schools in Great Britain, and £9,802 on workhouse schools. In Scotland the Established Church schools received £22,959, and the Free-church schools £20,693. The number of children for whom new schools were built from 1839 to 1854 amounted to 438,980, the number for whom schools were enlarged and improved to 19,081, and the number for whom accommodation was created, improved, or extended to 458,061. Last year new schools were built for 33,460 children, and the number of children for whom accommodation was created, extended, or improved was 36,918. The number of certificated teachers actually employed in teaching amounts to 3,432 (2,242 men and 1,190 women,) the number of assistant-teachers to 221 (of whom 48 are women,) and the number of pupil-teachers to 8,524. The number of persons presented for examination to Her Majesty's inspectors between 1841 and 1852 amounted to 4,407, and of these 2,882 received certificates—283 of the first class, 1,027 of the second, and 1,572 of the third class. 417 teachers have thrown up their vocation for other more profitable occupations, and 241 on account of ill-health or death. 9,788 pupil-teachers and stipendiary monitors were trained at the public expense to become teachers, but were not received into the normal schools between 1847 and 1855. . . . Her Majesty intends laying the corner stone of the Wellington Memorial College on the 4th of June. . . . At the instance of the Archbishop of York an Educational Conference will be held in that City early in July. . . . We regret having to announce the death of Sir Wm. Hamilton, Professor of Logic and Metaphysics, at the Edinburgh University. . . . Dr. Sullivan, of the Dublin Normal School, has recently issued three numbers of a publication, entitled, "Papers on Popular Education, original and selected, for the use of the managers and teachers of Elementary Schools." The work has been discontinued. . . . The Queen has appointed James Clerk Maxwell, Fellow of Trinity College, Cambridge, to be Professor of Natural Philosophy at the University of Marischal College, Aberdeen.

PROGRESS OF INSTRUCTION IN ART.

Notwithstanding the war, Birkenhead, Andover, Southampton, Plymouth, Belfast, Cork, and Limerick, have established, or re-established schools of art during the past year, making at the present time a total of 63 schools

throughout the United Kingdom. At the beginning of this year, Manchester started elementary drawing classes in no fewer than fourteen parochial schools; each class numbers 40 students, and each student pays a penny a week for the instruction, which is thus wholly self-supporting.

UNITED STATES.

MONTHLY SUMMARY.

The New York Legislature have finally restored the office of County Superintendent of Schools. The office has the name of "School Commissioner," and the Territory over which each Commissioner presides, is the Assembly District. The duties are similar to those of the old County Superintendency. The salary is fixed at \$500. Expenses to the amount of \$100 may be added to this. The salary may be increased, by paying the amount out of the County funds. The regular salary is paid out of the United States Deposit fund. The law also abolishes the office of Town Superintendent.

The income of the Connecticut school fund for the year was \$131,066, which was disposed of for the benefit of 100,820 children, between the ages of four and sixteen, being an amount \$1.30 each.

The President of Yale College, Connecticut, has issued the following notice:

That from the income of a fund established by David C. De Forrest of New Haven, provision is made for three scholarships in Yale College of *three hundred and thirty-three and one third dollars* each, per annum. Preference is to be given to those applicants who are nearest of kin to the founder. In default of suitable candidates of his kin, or of the same surname, those scholarships may be given to indigent young men, duly qualified, "who are willing to assume the name of *De Forrest*. One of these scholarships is now vacant. Application for this vacancy, or for any other which may occur during the coming year, should be made as early as practicable.

Literary and Scientific Intelligence.

The oldest English poets, since the death of Mr. Rogers, are said to be Walter Savage Landor, born 1775; Leigh Hunt, born 1784; and Barry Cornwall born 1790. The *Illustrated News* remarks that—

The only English poets who attained an age of nearly equal duration with that attained by Mr. Rogers was the poet Waller. Waller was born in 1607, two years after the death of Queen Elizabeth. He sat as a member of Parliament in the reign of James I. He was a member of the celebrated Long Parliament of Charles I. He sung the Panegyric of Oliver Cromwell, and celebrated the restoration of Charles II. He was alive at the coronation of King James II.; and, if his life had been spared barely beyond another year, would have witnessed the abdication of James and the accession of William and Mary. He was like Mr. Rogers in other respects than his poetry. He was a man of wealth and he was a wit. Waller at eighty was still the delight of the House of Commons. Rogers at eighty-eight was still the delight of the most fashionable dinner-tables in Tyburnia and Belgravia. The sayings of Waller have deservedly found a place in some of the best volumes of our Ana; and the repartees of Rogers are likely to find a celebrity that is equally enduring.

THE STEREOSCOPE.

By the extreme sensibility of the photographic processes, we are now enabled to obtain pictures of objects in remarkably short spaces of time. The moving clouds and the restless sea can equally be fixed upon our sensitive tablets, and these, viewed in the stereoscope, become so real as to cheat the senses. Under every aspect of light and shadow we can copy nature in her wildest as in her tranquillest moods. The humid valley, with the sinuous river, reflecting back the sun's rays more lovely than he sent them; the forest with its mazy windings, and the fitful strugglings of light to pierce its leafy recesses, are brought out in the stereoscope with a magical reality. The gigantic vegetation of tropical climes, the stunted growth of arctic regions, are realised here in a way which defies the most skilful painter, and thus the stereoscope may be made the medium of conveying the best possible lessons in natural history, and by calling into play the powers of observation, greatly advance the education of the people.—By means of the stereoscope and photography, the Bible student may examine the rocks of Ararat and the plains of Mamre; the desolation which marks the submerged cities of the plain, and the endurance of man's work in the pyramids of the desert; the homes of the idolatrous Assyrian, and the temples of Darius the Persian. The student of profane history ma-

wander over Marathon, and grow patriotic at the view of Thermopylae. The works of the intellectual Grecian who breathed the breath of poetry into marble, and the efforts of the sterner Romans, who had more of the genius of war than of love in all their efforts after the beautiful, may be studied in a modern drawing room and in the labourer's cottage.—*Professor Hunt, in the Art Journal.*

PROGRESS OF SILK MANUFACTURE.

Though silk was made into cloth at a very early period, in China, India, Persia, and some other countries of Asia and its use became known to the Romans before the Christian era, yet the rearing of silkworms and the silk manufacture were not introduced into Europe until the time of the Emperor Justinian, about the year 530. But after the introduction of these arts at Constantinople, Corinth, Thebes, and Argos, Greece continued to be the only European country in which they were practised until about the middle of the twelfth century, when they were introduced into the Island of Sicily, whence they spread into Italy, where the extent and beauty of the silk manufactures soon became renowned. From Italy, also, the art was introduced into Tours, France, in 1480, and at Lyons in 1520; and into England about the same time, though it did not make much progress there until the age of Queen Elizabeth.

DISCOVERIES.

It is disputed—and probably always will be—who was the original inventor of printing; several cities of Holland, of Germany, nay, even of China, have claimed him. The gravity of air was discovered by Galileo, to whose mind it was suggested by observing that a fountain-player rose only to thirty-two feet in a forcing-engine. It was children, playing with the glasses of a spectacle-dealer, that suggested the first idea of a telescopic cylinder. The origin of the mariners' compass is entirely unknown; it is asserted that Marco Polo brought it from China, in the year 1260. The property of the loadstone was known to the Chinese at a very early period, and used by them in navigation. The art of communicating the magnetic virtue to steel, and suspending the needle on a point, is undoubtedly an European invention.

THE TREATY OF PEACE PEN.

The eagle pen with which the treaty of peace was signed was pulled from a wing of the imperial eagle in the Jardin des Plantes. The statement that it was ornamented with precious stones is contradicted. Immediately after the signature the pen was attached to a sheet of pasteboard, and surrounded by the seals of each of the Powers represented at the Congress, and by the signatures of the Plenipotentiaries M. Feuille de Conches, the *chef du bureau* of the protocols, wrote underneath as follows:—"I certify that this pen was pulled by me from the imperial eagle of the Jardin des Plantes, and that it is the pen which was used for the signature of the treaty of peace of March, 1856." The pasteboard was afterwards framed and glazed, to be presented to the Empress.

FRESH WATER FOR MARINE STEAM BOILERS.—Mr. J. Biden, of Gosport, has obtained a patent for feeding fresh water to marine steam boilers, which water he obtains by the condensation of the steam after it has been employed in the cylinders of engines. This he carries into effect as follows:—He leads a pipe from the cylinders into the water outside of the ship at one side, and after carrying it round the stem of the vessel, he causes it to enter the vessel at the other side, and open into a reservoir in the hold of the ship. A pipe opens from the reservoir to the atmosphere, to allow any uncondensed steam to pass off. As the steam from the cylinders passes through the water of the ocean outside of the ship, it becomes condensed, and the fresh water thus produced flows into the reservoir, from which it is pumped into the boilers. This invention is really an outside condenser, the ocean being made the grand cooler. The condenser pipe must be set on an incline to allow the condensed water to flow into the reservoir. Each pipe should be provided with a cock, so as to be shut off, if damaged, from communication with the cylinders.

SUBTERRANEAN PARIS.—MM. Lorieux and Eugène de Fourey are preparing for publication, in seventeen large maps, an Atlas of Subterranean Paris. It is well known that a great (say the tenth) part of the French metropolis and its environs (namely, the communes of Vaugirard, Montrouge, and Gentilly) rest on an immense and intricate system of quarries and excavations, which, from the first century of the Christian era down to the seventeenth century have furnished Paris and its neighborhood with building materials. The extent of these excavations (of part) was hardly known during the eighteenth century, and still less was it suspected that they could become

dangerous to the streets and houses above them, until, in 1774 and 1777, the sinking down of a number of buildings in the vicinity of the Boulevard Neuf and the Barrière d'Enfer, (one house among others, was buried in an abyss of eighty feet depth) drew the attention of the public to the alarming fact. Since then, up to this very day, uninterrupted even by the political revolutions of France, examinations and labors of all kinds have been set on foot at the expense of the city of Paris in order to prevent further accidents. The whole of this cavernous maze has been explored in every direction, the streets and roads running above have been ascertained, and props, pillars, supports, and buttresses have been erected wherever they seemed necessary, so that, at present, it appears the Parisians may sleep in quiet. At least, one is led to this conclusion by the fact, that the annual expenses for the works, which in former years, reached the average amount of 100,000 francs, have been reduced, for the present year, to 5,000 francs. The Atlas of MM. Lorieux and De Fourey will be, at all events, a most useful and interesting addition to our knowledge of Paris.

Departmental Notices.

To Municipal and School Corporations in Upper Canada.

PUBLIC SCHOOL LIBRARIES.

The Chief Superintendent of Education is prepared to apportion *one hundred per cent.* upon all sums which shall be raised from local sources by Municipal Councils and School Corporations, for the establishment or increase of Public Libraries in Upper Canada, under the regulations provided according to law.

In selecting from the General and Supplementary Catalogues, parties will be particular to give merely the catalogue number of the book required, and the department from which it is selected. To give the names of books without their number and department, (as is frequently done,) causes great delay in the selection and despatch of a library. The list should be written on a distinct sheet of paper from the letter, attested by the corporate seal and signature of the Trustees; or by the corporate seal and signature of the Reeve or Clerk of the Municipalities applying for libraries. See accompanying Form.

SCHOOL MAPS AND APPARATUS.

The Legislature having granted annually, from the commencement of 1855, a sufficient sum of money to enable the Department to supply Maps and Apparatus (not text-books) to Grammar and Common Schools, upon the same terms a Library Books are now supplied to Trustees and Municipalities the Chief Superintendent of Education will be happy to add one hundred per cent. to any sum or sums, not less than five dollars transmitted to the Department; and to forward Maps, Apparatus, Charts, and Diagrams to the value of the amount thus augmented, upon receiving a list of the articles required by the Trustees. In all cases it will be necessary for any person, acting on behalf of the Trustees, to enclose or present a written authority to do so, verified by the corporate seal of the Trustees. A selection of articles to be sent can always be made by the Department, when so desired.*

* *The Form of Application should be as follows:*

SIR,—The undersigned, Trustees [Reeve, or Clerk] of _____, being anxious to supply the Section (or Township) with suitable school requisites, [or library books,] hereby make application for the [maps, books, &c.,] enumerated in the accompanying list, in terms of the Departmental notice, relating to maps and apparatus, [or library books.] The [maps or library books] selected are, *bonâ fide*, for the use of the school [or municipi-

ality:] and they hereby pledge themselves and their successors in office, not to dispose of them, nor permit them to be disposed of to any private party or for any private purpose whatsoever; but that they shall be appropriated exclusively to the use of the school, [or municipality,] in terms of the Regulations granting one hundred per cent. on the present remittance.

In testimony whereof, the Trustees [Reeve, or Clerk] of the _____ above mentioned—hereto affix their names and seal of office this—day of—, 185—, at—.

[Name.] [Seal.]

We hereby authorise _____ to procure for us the _____ above mentioned, _____ in terms of the foregoing application.

[Name of Trustees, &c.]

TO THE CHIEF SUPERINTENDENT OF EDUCATION, TORONTO.

NOTE.—A Corporate Seal must be affixed to the foregoing application, otherwise it is of no legal value. Text-books cannot be furnished on the terms mentioned above. They must be paid for in full at the net catalogue price. The 100 per cent. will not be allowed on any sum less than \$5, which must be remitted in one sum.

SPECIAL NOTICE TO TEACHERS.

Public notice is hereby given to all Teachers of Common Schools in Upper Canada, who may wish to avail themselves at any future time, of the advantages of the Superannuated Common School Teachers' Fund, that it will be necessary for them to transmit to the Chief Superintendent, without delay, (if they have not already done so), their annual subscription of \$4, commencing with 1854. The law authorising the establishment of this fund provides, "*that no teacher shall be entitled to share in the said fund who shall not contribute to such fund at least at the rate of one pound per annum.*" This proviso of the law will be strictly enforced in all cases; and intimation is thus early given to all Teachers, who have not yet sent in their subscriptions, to enable them to comply with the law, and so prevent future misunderstanding or disappointment, when application is made to be placed as a pensioner on the fund.

EXAMINATION OF GRAMMAR SCHOOL MASTERS.

The next quarterly examination of Grammar School Masters will be held at the Normal School, Toronto, on the first Monday in July. Names of candidates to be sent in to T. J. Robertson, Esq., the Chairman of the Committee of Examiners, one week previous to the day of examination.

SEMI-ANNUAL RETURNS.—The forms for Common School Trustees' Semi-Annual Returns will be sent to the Local Superintendents for distribution early in June.

The APPORTIONMENT FOR 1856 will be published in the next number of the Journal.

ADVERTISEMENTS inserted in the *Journal of Education* for one half-penny per word, which may be remitted in postage stamps, or otherwise.

TERMS: For a single copy of the *Journal of Education*, 5s. per annum; back vols. neatly stitched, supplied on the same terms. All subscriptions to commence with the January number, and payment in advance must in all cases accompany the order. Single numbers, 7½d. each.

All communications to be addressed to Mr. J. GEORGE HODGINS, Education Office, Toronto.

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