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### Origin and Progress of Penmanship by M. P. Riordan.

(Delivered before the French Teachers' Association in connection with the Jacques-Cartier Normal School, Montreal, May 28th, 1875.)

Mr. President and Gentlemen.

Having consulted several authorities on the subject of penmanship, the following opinions concerning the origin seem the most probable and correct.

It was considered in ancient times by the heathen writers that it was a gift vouchsafed to man by the gods themselves, and many enlightened christians suppose that it was first revealed to man from the summit of Mount Sinai amid the thunders of the giving of the law and testimony. Others have maintained that the art of writing must in some degree or shape have been familiar to Adam our great progenitor, since he named the objects, which God had created around him, and must have endeavoured to eternize their names, upon the earth.

To this belief incline St. Augustine and Josephus—Two pillars were said to have existed in Syria in the time of the last mentioned author, on which writing and engravings executed by Seth the grandson of Adam still remained. Modern critics on history, however have claimed, that Josephus here committed an error, and that the Seth of whom he speaks, must have been the Sesostris of a later time.

The theory of Josephus was advocated in a celebrated work called the Vatican Library, composed by Mutus Pausa the librarian, and was published at Rome in 1590; and the question of its origin was warmly debated by the Egyptians and Phœnicians who contended for the high national honor with zeal and ability:—but it is now generally conceded that Cadmus the Phœnician introduced letters into Greece about 1500 B.C., and that they were then only sixteen in number to which four were afterwards added by Palamedis and four by Simonides the poet.

From Greece letters were brought to Latium by Evander, Evander was honored as a god after his death and an Altar was erected to his memory on Mount Aventine between the temples of Juno and the Bona Dea, this was a tribute paid to him by the Romans for his scholarship and knowledge of letters.

When letters first came into use among the Romans, written history began to be regarded with great favor, every nation that could had its own records of priceless value, while the minds that ordained and the hands that shaped the forms of imagery which gave lasting existence to national glory, were regarded with reverence bordering on idolatry.

As to the manner of writing it was different in different countries:—The Greeks originally wrote from right to left and from left to right alternatively. The Hebrews and Assyrians, from right to left, and the Chinese from the top to the bottom of the page. They wrote upon bark polished wood, &c., using reed or iron for pens.

But Mr. President and Gentlemen, permit me here to remark, with regard to the art: we read in early history that the Phœnicians were a great manufacturing and commercial people, Tyre being at that time the first place or as it was termed the first work shop in the world, that from amid the noise of her looms and spindles went forth her ships laden with the Tyrian people and the products, of her handicraft:—It is not improbable then that the art of writing originated with them, from the necessity of keeping something in the shape of a record of their commercial doings, as well as some permanent description of their vast machinery and the manner of employing it: Perhaps from this has arising the saying that writing is the soul of commerce.

I now take up the Bible and in which I find that the Hebrews were a distinct and distinguished people, by the designation promise and appointment of God; yet there is nothing in sacred writ of the recording of an event by means of writing until the time of the tables of the law and testimony, which I find to be in Exodus Chap. xxiv. In that chapter, it states "Moses writes the law;" in Exodus, Chapter xxxi, verse 18, I find these words "and the Lord when he had ended these words on Mount Sinai gave to Moses, two stone tables of testimony written with the finger of God." In the following Chapter, verse 19, the people fall into idolatry, the tables are broken by Moses, after coming down from the mount, in his anger at the idolatry of the people:—and in Exodus, Chap. xxxiv, verse 1, "God commands Moses to hew two others in order that he might write upon them all that was written upon the first.

Again in Deut: Chapter xxvii, verses 2, 3, Moses commands the people that when they have crossed the Jordan and entered the land of promise which God assigned them, they are to set up monuments in the mountain of Equal, upon which they are to write all the words of the law. It would appear then, from the tenor of Sacred Scripture, that the Hebrews derived the art of writing from the Lord himself, for the art, from the completion of the first tables appears to be progressive. Thus while we admit that with the Phœnicians, and perhaps the Egyptians and Chinese also, the art of writing originated and matured in the ingenuity of the human mind, impelled by the wants and necessities of mechanical and commercial interests, we claim its divine origin as vouchsafed to God's peculiar people the Hebrews.

Having now presented to you the opinions concerning the origin of writing, the birth place of which has been claimed and contended for by ancient sovereignties, as an event conferring the highest national honor, but which is dimly traced amid the twilight of antiquity and involved in doubt by the contested claims of rival nations, it still remains a question unsolved and unsolvable.

I will now proceed with the progress of the art from the period of its origination. Astel, the English Antiquarian gives it as his opinion that the Britons were not acquainted with written characters until the time of St. Augustine who visited England in the fifth century for the purpose of converting the natives, and at that time the Roman text was introduced though it was but slightly disseminated, for he states that from the fifth to the eleventh century very few persons could write.

Now Spencer differs from Astel, in as much as he allows that it was from the Irish that the Saxons first received the Alphabet, from which admission we may infer that the Saxons had no knowledge at all of letters until they were taught by the Irish, and it is even said that several of the finest fac-similes given by Astel himself are taken from Irish manuscripts.

Mr. President and Gentlemen for the chieftains of the ancient Irish, amidst all their fierce feuds amongst themselves and their sanguinary conflicts of centuries with foreign foes, were still a religious race, true and firm in their faith and imbued with a great love of literature; and their kings, princes and chiefs founded and amply endowed vast numbers of Ecclesiastical and literary establishments, Abbeys, Colleges and Schools; as those of Armah Downpatrick, Derry Donegal, Clogher, Cloner Devenish, Fenagh, Boyle, Cong, Mayo, Clonfert Louth, Monasterboyce, Millefont, Slaine, Kells Arbraccan, Trim, Clonenagh, Tallaght Glenderrilough, Leighlin, Ferns, Lisnone, Cashel Holycross, Ross, Roscrea, Iniscatay, Anan of the saints and several others.—Here then we may deduce that from the above which were scattered over the whole island, that the knowledge of penmanship

was well known and disseminated throughout the land in the days of Erin's early freedom, and to make this assertion more forcible, the earliest authenticated specimen now extant is said to be the book of Kells.—This venerable and splendid volume is now preserved among the manuscripts of the university of Dublin. It is a copy of the Gospels traditionally ascribed to have belonged to Columba, and it is said unquestionably to be the best executed manuscript of early art now in existence, in its ornamental details, in the number of its decorations fineness of the writing, and the endless variety of Initial Capital letters with which every page is ornamented.

It is also an acknowledged fact that the Empire of learning prevailed so widely in Ireland, that swarms of her learned sons were sent forth therefrom to France, Italy, Germany, Flanders, England and Scotland to teach the natives of those countries: Oh! yes thoo land of learning, of Poet and Orators, be our lot ever so happy in the land of our adoption, still, still it can never be to us like the land of our birth, when the days of our youth lie smiling behind us in that spring time freshness, where every scene around our childhood's home is a precious picture hung up withing the picture-gallery of the mind called memory.—Yet other and more tender ties there are to bind us to our native land:

The green grass that is growing o'er our father's graves  
Full many a thought endears;  
There's a spell in the humblest shrub that waves,  
Near the home of our infant years;  
Yea the simplest leaf doth our fondness share,  
If its parent bud expanded there,  
Oh! thus tho' far on this land;  
My lot is cast,  
Still, still for thee my own green land,  
The pulse of this heart beats fast,  
While many a vision soft and bland,  
Bears me often back to thy shores my fatherland.

I have diverged a little, but to my subject;—In the thirteenth century copyists of manuscripts were attached to the principal universities, and every monastery of note had its place set apart called the scriptorium which was reserved for the business of copying; but the art of printing invented by Costor in the fifteenth century effected a complete revolution in literature, and the art of writing without abating its importance has since been applied more widely than before to the practical and every day business of life.

Look at it for the purpose of commerce for epistolary correspondence, for putting down our thoughts as they occur to us, and wafting these across the broad Atlantic to friends and relatives, besides does it not mature the mind, and therefore is of the greatest benefit to mankind, But its history and progress might be continued much longer if time would admit, suffice it to say that men of genius, taste and science have again and again been directed to the subject in order to produce uniformity ease and rapidity while not unknown to fame are such men as Columba, Astel, Beauchesne, Bales, Brayley, Brown, Butterworth, Coaker, Comiers, Carsley Carstairs Casley, Champion, D'Alembert, Hodgkins, Hugo, King, King, Kearney, Massey, Mason, Milns, Porta, Peety, Robert, Scott, Smith, Thompson, Tomkins, Wingate and Spencer as the depositaries of the varied taste of this useful art at different periods.

With regard to the Spencerian system, about which I am going to speak, and as to its simplicity, elegance, and beauty it draws (as Spencer himself has said) from nature's own peculiar model, life and action. The seed, bud, flower the fruit all take the same oval form, the tree in stem, leaf-branch and root, and even the pebbles washed on shore by the waves of the sea maintain the

same form.—The earth with all its beauteous forms, and the stars that adorn heavens broad arch, and the vast funds from which Spencer drew the magic of his pen.

Having now given the various opinions of the origin and progress of the art of writing, I come to the principles or elements which enter into the construction of letters, also a description and Analysis of the letters themselves.

Principles are the constituent parts of letters, of these there are eight in number ;

Only the first four enter in the composition of small letters, while the last four are prominent as the characteristic features of the capitals, the others being combined with them.—In the measurement of letters we make use of the terms one space, one and half space, 2 spaces &c. One space is the standard of measure.

The small letter *i* without the dot is taken for the standard in height, both for small and capital letters.—One space in height is therefore equivalent to the height of the small letter *i*, which in a medium hand is one ninth of an inch.—By one space in width, is meant the distance equal to that between the two slanting lines in the small letter *u*.

The second principle is called the right curve, so called because it is on the right side of an oval figure.

The third principle is called the left curve so called because it is on the left side of an oval figure.

The fourth principle is the extended loop ; it is three spaces in height one half space in width and combines the 1st 2nd and third principles.—The letter *r* is one and one fourth space in height and one half space in width. The letter *s* is one and one fourth space in height and one half space in width. The letter *p* is three and a half space in height and one space in width, one and a half space below the line of writing and two above. The letter *q* is two and a half spaces in length and one in width ; The letters *b*, *t*, *j*, *g*, *y*, and *z* are three spaces in length and one half space in width, the letter *f* is five spaces in length and one half in width, three spaces above the ruled line and two below ; it intersects one half space above the ruled line, and this gives it two and a half spaces from the centre of writing.

The fifth principle or capital *O*. This letter is made on the regular slant of 52°, and care should be taken in its formation, so as to avoid the slightest appearance of angularity. It is three spaces in height, its width without shade is one half its slanting height, and the distance between the outer and inner left curves, measured at one half of the height of the letter, is one fifth of its entire width.

The sixth principle is the contracted capital *O*. It is made on the regular slant and is three spaces in height, the *O* is one half in height, and the distance between the two left curves measured at one half the height of the oval is one fourth the width of the principle.

The seventh principle is the capital loop ; it is three spaces in height ; a left curve begins one space above the ruled line and extending upwards two spaces, unites with a returning right curve. This line descends two spaces, then joins a second left curve, which extends upwards on the left side of the second curve, nearly to the height of the principle :—the spaces between the two right and left and left curves should be equal to each other and each equal to one half the width of the loop.

The eighth principle is the capital stem ; it is three spaces in height, beginning at the top with a very slight left curve, it extend downwards one half the length of the principle, when it is joined to a right curve, which forms the right side of a reversed oval made on a slant of 25.

I now come to position, which gives power, and as good penmanship requires an easy, convenient and

healthful position ; but with offence to none I am sorry to say that many teachers, however disregard this fact altogether, and also having been informed that in many schools no notice is taken of it.—Now this carelessness, when allowed, is not only detrimental to good penmanship, but if long continued in, I here state that I believe it is injurious to good health also.

I may here mention a few of these bad positions such as crossing the legs, bending the back, neck and head until they are quite crooked, bringing the chin in as close proximity to the hands as the hands are to the paper, crooking the fingers and pinching the pen with a vice like grasp, and finally opening the mouth and making the jaws and tongue keep time with the movement of the pen and hand.

I know the greatest difficulty is and will be found in teaching the pupil at first to remain long in proper position, for he naturally seeks relief by assuming any position, however careless or improper, but while in proper position (Mr. President and Gentlemen I would here suggest for consideration that at least one half hour every week should be devoted to proper position) no notice need be taken as to the formation of the letters, nor to the character of the paper employed, mere scraps will answer, since the aim of the exercise is simply to secure or to fix habitual correctness of position, before the pupil enters upon the more difficult task of considering the structure of letters

There are four positions, each of which is correct according to circumstances : they are the left, the right, the right oblique and the front ; of these four I prefer the left, the left side to the desk, left forearm advanced from four to six inches upon the desk and parallel with the edge of the desk, the head slightly inclined to the left arm and hand leaned upon lightly :—this is done for the purpose of holding the paper and giving steadiness to the body.—The right arm is thus left free for all motion it rests upon the muscles just below the elbow—in this position the paper or copy-book must be parallel with the edge of the desk, and the elbow of the right arm two or three inches from the right side and about the same distance from the edge of the desk. But whatever method is pursued, the teacher should engage in his work earnestly, zealously and with a genuine love for the children placed under him, and with a determination to permit no personal consideration of time or trouble to stand in the way of their interests.

That the teacher himself should be a good penman would appear at first thought indispensable to his success in giving instructions in writing, so as to make good ones in his class ; and that he should be familiar with the subject, thoroughly understanding all that appertains to a systematic structure and analysis of the letters, shading spacing, slant, arrangement &c. ; and that he should be competent to point out errors and give the rules for correction. This is not strictly true, but if the teacher can do so, so much the better for pupils :—But there are many teachers (with offence to none) who cannot do this, and who are unable to write even a legible hand themselves, and yet have produced good writers in their classes. Having thus briefly stated the origin, progress, principles ; and position of the art of writing, I may say in conclusion that if writing be fairly viewed, it must rank side by side, with all the high and noble arts which have adorned the world, and which have contributed so greatly to the pure and intellectual refinement of man : for he who loves nature and admires all that is truly beautiful will always find in the art of writing something to enlarge and develop the highest faculties of his mind : —And as the faculties of man constitute his chief dignity in his understanding, now this under-

standing can be expanded by studying the art, his intellectual powers will therefore be benefited by it, and he will thus be in a better position to improve those who are under him. Let then every teacher strive to gain a knowledge of this most important art.

### Physical Culture for Teachers and their Pupils.

The whole physical organism, bones, muscles, viscera, blood, nerves, and brain—the entire body—is but one complex instrument or organ of the mind, including thought, affection, love, moral sentiment, hope, and spirituality. It is impossible to develop and unfold the mind to its fullest capacity without simultaneous, vigorous development of the physical organism in all its parts and functions. In short, a sound mind is not possible without a sound body. Spirituality, pure love, holy affections, cheerful spirits, and vigorous thought, do not more depend upon the quality of mind than upon the action of a good supply of pure blood on the brain. This can be supplied only by a strong and healthy action of the stomach, together with a similar action of every other physical organ. The mind reacting, too, on the body, the body itself is thus affected by its own condition.

Not only is the healthy condition and vigor of the mind dependent upon the healthy condition of the body, but the sound condition of *each* organ and function of the body is conditioned upon the healthy condition of all the *other* parts of the organism. This is also true of the mind. Each organ of both body and mind is provided for, and acts with reference to the integrity of all the rest. Our entire being acts as one indivisible *whole*. Touch one part, however small and apparently insignificant, and you touch the whole. Improve or injure, however slightly, whatever function, and all thereby will be benefited or suffer. Hence, if we are weak or diseased in *one* part, we are more or less weak or diseased in *all*. Since there is such a perfect and sensitive correlation of functions, it is a matter of self-evident importance that we be physically well developed, as the indispensable condition of possessing a happy, clear, and vigorous mind. Almost all the phenomena of disease are connected with this correlation of functions. Disarrangement takes place in one organ or structure of the body, and speedily all those that are correlated with it participate in the disorder.

What then are the conditions of physical health and strength? The first condition of it is to be *born* with a sound constitution. Unfortunately, for most of the present generation, few are thus born, owing to gross neglect of physical culture by previous generations. This we cannot avoid. But, starting with whatever constitution we may have, we can so live as to make the best of what we have inherited. And how? We might say by living in conformity to all the hygienic laws, to which, of course, it is not our purpose in this article to allude; but, so far as our present intention is concerned, we shall answer by saying, first, take systematic exercise; second, *take systematic exercise*; third, TAKE SYSTEMATIC EXERCISE. Animal life is as much conditioned upon exercise as upon food. It is only by physical action that we grow physically strong, and become healthy and vigorous. It is impossible to lift the arm or contract a muscle without producing electrical changes, desintegrating old flesh and depositing new. That *action*, within certain limits, gives strength to both body and mind, in one of the most simple and evident laws of nature. Find out the weak part, or feeble function, and strengthen it by suitable systematic exercise. If the brain, or the passions,

or the muscles, are too much taxed, and so are robbing other parts of their proper share of the vital fluid—the blood—then change off the one action for another, and so strengthen the inactive organ by *action*, and the overtaxed part by *rest*.

What classes most need physical culture or systematic exercise? Not the farmer, the mechanic, the miner, or any other general laborer. These, as a rule, have too much physical development. They should have more rest from toil, and take more mental exercise. The classes requiring more physical culture are those who best know their need of it: the lawyer, the clergyman, the teacher, the student, the clerk, the banker, the book keeper, and all persons whose chief occupation consists in employing only the brains or fingers.

For all these classes, whose hours of employment and rest consume most of their time, some systematic physical exercise, not consisting of labor, is indispensable. And what shall it be? This question involves taste, cost, time, and convenience. Various methods have been practised by different persons, according to inclination, as rowing, ball-playing, horsebackriding, walking, running, jumping, boxing, fencing, wrestling, military drill, calisthenics, a systematic course of gymnastics, etc. While all of these *are good at times*, and for *some*, yet no one of them is without objection, as they all are attended with more or less impracticability, owing to either cost, inconvenience, time required, inclemency of the day or season, or distaste of the person; and, therefore, no uniform and systematic exercise can be obtained by any of these methods. Hence the exercise had by these means is spasmodic, and many times, too violent, often producing more injury than good, by straining only parts of the organism, instead of affording a general simultaneous action of the whole system at the same time. The method employed should be, as far as practicable, suited to the taste, means, and convenience of all—men, women, and children—and of such a character as to ensure certain desired results, namely: The *greatest possible amount of exercise in the least possible time*, and, consequently, with the *least possible fatigue and nervous exhaustion*. To accomplish these objects it is necessary that the means be not distasteful, or very expensive, or require much time. It is also important that exercise be graduated and cumulative, and taken with regularity as far as possible, and that the action or exertion be thoroughly and uniformly distributed over and through the whole body. For, by the law of correlation of functions, that exercise is the best which calls into harmonious, simultaneous, and co-operative action the greatest number of organs and systems of organs at the same time. For instance, it would not be sufficient for a person to move only a hand or an arm, though it be moved rapidly and for a long time. So, too, it is not sufficient that the muscular system of half the body be exercised, or even of the whole body, only as such exercise quickens and invigorates the action of all the rest of the organism, including viscera, arteries, veins, capillaries, absorbents, blood and other fluids, nerves, brain, and even the will. Hence, that is the best method of habitual exercise which most completely accomplishes this general result.

Of all the devices for habitual exercise yet produced none is less objectionable or presents greater advantages than the *Lifting Exercise*, generally termed the "Health Lift" or "Lifting Cure."

A suitable apparatus for this exercise constitutes a *complete parlor gymnasium*, affording a scientific system of cumulative exercise and physical training, by developing at once the whole muscular, visceral, and vital systems, equalizing and invigorating the circulation of the blood, and thus giving harmonious, simultaneous,

and co-operative play and action to the *greatest possible number of organs*, embracing muscles, superficial and deep-seated viscera, absorbents, veins, arteries, capillaries, nerves, brain, and will, upon which depend the restoration and preservation of health, and a uniform, vigorous action of all the functions of both body and mind.

The "Health Lift" or "Lifting Exercise," as the means of physical culture, and preserving and restoring health, has been extensively and thoroughly tested, proved, and commended, by thousands of eminent scientific, professional, and literary men, and leading journals throughout the land, such as Oliver Wendell Holmes, Henry Ward Beecher, Robt. Collyer, De Witt Talmadge, O. B. Frothingham, W. I. Buddington, H. M. Scudder, Prof. Edward Hitchcock, Horace Greeley, *Scientific American*, *The N. Y. World*, *The Home Journal*, *The Atlantic Monthly*, *The Christian Advocate and Journal*—in short, by professors of colleges, clergymen, physicians, lawyers, journalists, and professional gymnasts universally—until there is no doubt of the efficacy and usefulness of the "Health Lift" or "Lifting Exercise," as a means of physical culture and health. By such competent testimony it has been demonstrated that it affords *the greatest amount of general and invigorating exercise, in the least possible time, with the least possible trouble, fatigue, and nervous exhaustion*, curing the sick, strengthening the weak, and invigorating the healthy.

The reason why the "Lifting Exercise" is not found in every family and school is because the machines or apparatuses, heretofore produced, are so bulky, heavy, and expensive, as not to be convenient or generally afforded—those claimed to be good costing from \$100 to \$300, and weighing from 300 to 1,500 pounds.

The importance of this system of physical training has led a gentleman, whose name is not unknown to the educational world, to invent a light, cheap, compact, portable parlor apparatus, which has finally brought this invaluable method of restoring and preserving health and invigorating the reach and means of every student, every teacher, and every school. The apparatus weighs only fourteen pounds, and will cost about twenty five dollars; at the same time it possesses all the advantages of the high-priced and heavy machines. It is easy to predict that, ere long, no teacher, and no school however small, will be without the "Health Lift."

### The Kindergarten—What is it?

By MRS. WOOLSON.

The Kindergarten is an institution of which people in general hear much and know but little. That the word means literally children's garden, and signifies some strange, foreign method of instructing children by turning study into play, is the utmost that the public gathers concerning it from the literature of the day. Some prejudice, even, attaches to the new system where it is but vaguely understood; it is supposed to be a pleasant substitute for real work, delightful to the childish temperament, but questionable as a means of instilling into it the learning of the schools. People who entertain the notion that a childhood, to be profitably spent, must be subjected to daily repression under the eye of the teacher, and take its revenges in lawless hilarities when once out of doors, distrust the new-fangled ideas that would seek only to develop, and not to oppose, the natural tastes.

They often recall, with no little satisfaction, their own early school days, when they passed their time mostly in dull inaction upon hard seats, enlivened now and

then by a recitation, which consisted in standing at the teacher's knee, in great discomfort of mind and body, and drawing out the names of certain pointed figures called letters, to which an awful penknife directed their eye. School appeared to them then as a place of penance from which their souls revolted, but to which they were driven merely because it seemed the thing most contrary to their wishes; and this is the aspect which they believe it should ever wear to the mind of the child.

But a pedagogue has risen in these latter days who insists that this process is entirely wrong; that it aims to train only one portion of our nature, and does that but poorly, and that its methods are calculated to disgust a child with learning at the very start. Rousseau, indeed, had uttered the same protest long before, vehemently, and with many fierce denunciations of the follies of his age. The world listened, admitted that he was more than half right, but laughed at his glorious chimeras, and still kept its tender youth bent over their primers and pothooks. Pestalozzi listened, and following his bold lead, reduced to successful practice many of the principles thus declared. But there was much for him to perform; he could confine himself to no one period of life. Frederick Frœbel, a younger man than he, and at one time his pupil, realizing that the bent of the mind and character is given in the earliest years, set himself to the task of evolving a course of training for the youngest minds. He spent a lifetime in studying the natures of children, and the best means of training their varied faculties; and when he died, in 1852, he had perfected a system full and harmonious, and had thoroughly tested its efficiency. It is this which is now claiming the attention of parents and instructors under the name of the Kindergarten.

The first stage of education is all that it claims to effect; with later work it has nothing to do. It must not, therefore, be confounded with object lessons, which are deservedly gaining a place in all schools, even the highest. The latter are an outgrowth of the same principles upon which the Kindergarten is founded, but they are disjointed exercises that may be grafted upon any process of study, at the pleasure of the instructor; the former is a system complete in itself, and makes no compromise with the old practices, but sets them utterly at naught, and assumes the entire control of the pupil's mind, during the first years at school.

That it is entirely unlike our present method of teaching the elements of education will be evident from a few statements. And first; while our public schools are commonly forbidden by law to receive pupils younger than four or five years of age, the Kindergarten system makes it desirable, and almost necessary, that pupils should be entered at the age of three years, and often they are admitted even younger than that. At the age of seven they have completed the instruction of the Kindergarten proper, and are ready to pass on to higher schools.

*Second.*—Although the child is supposed to be at the Kindergarten for four consecutive years, he is not taught his letters there, and has no need to use them, as he never sees a printed book in the hands of his teachers or scholars during that time. As a special favor to parents, he may be allowed to learn the alphabet and simple reading, just before he leaves to prepare him for the education that awaits him elsewhere, but this forms no part of the Kindergarten system itself.

*Third.*—In the place of text-books, he has a great variety of materials given him to work with; and from these, used with care and method, under the eye of the teacher, he learns not only the elements of many branches of study now taught in our higher schools, but also the first steps

in several trades and artistic pursuits. Of these materials and the mode of their use we shall speak more fully hereafter.

*Fourth.*—Our present schools seek to repress all activity in young children during the school hours, keeping them to desk and chair during the whole session, except at recess, and forbidding freedom of movement as detrimental to their progress; but this system recognizes the natural love of activity in children as good, and essential to their health and wellbeing. Instead of repressing it endeavors to turn it into proper channels, and to make of it one of the chief agents for the instruction of its pupils.

*Fifth.*—In all its exercises, it aims especially to train the eye as a means of informing the brain, and to endow it, early in life, with the power and habit of close observation upon objects that come before it; for it holds this to be the principal source from which knowledge is obtained, whether it be from the life around us, or from an accurate study of the printed page.

*Sixth.*—While the eye is trained to nice discrimination, the hand is practiced in many dexterous employments, that it may be fitted to manipulate different materials with accuracy and ease. The Kindergarten recognizes the dignity of labor, and insists that its pupils shall not only know, but do; that not only their receptive, but their constructive faculties shall be taught and developed. It holds that the present mode of conveying instruction tends to enervate and to undervalue the physical powers, to induce laziness of body, and to disjoin two things which should always be united, thinking and acting.

*Seventh.*—It encourages children to investigate for themselves, and to see and verify whatever the teacher tells them to be true. When a statement is made concerning any object, the object, if it be possible, is placed before them, that they may fully comprehend and believe. The mere memorizing of facts which other people have discovered, is regarded as tending toward servility of mind and a lack of selfreliance, and is contrary to the spirit of its teaching. The time has not yet arrived for the student to acquaint himself with the past labors and accumulated thought of mankind.

*Eighth.*—It believes a love of beauty to be native to all, and a source of great happiness and culture, if rightly trained; and in all its occupations the development of this is made one of its chief purposes. The harmony of colors and the charm of their contrasts, the symmetry of grace and form—about which so many adults are now lamentably ignorant—are taught in a way never to be forgotten.

These, as far as we understand and can state them, are the striking peculiarities of this new system. We might speak of many other features, but these are sufficient to prove that here is something original, at least in its conception, and striking at the very root of all our old processes of inducting children into knowledge by means of the A B C's and the spelling book.

Let us consider more minutely the means and the materials by which its lessons are conveyed. We will enter one of its school rooms and observe the pupils at their work. And, first, we may remark that a Kindergarten is not commonly a garden at all, though Fröbel would make this a part of his plan, but a large room, one portion of which is filled with small desks and the other left empty for plays. We find the little scholars at their desks, with a square piece of white paper lying before them. They are beginning their lesson in geometry, though they only call it folding paper. The teacher, standing before them, questions them about the shape of this square, about its lines and its angles, and afterward directs them to place it with a side toward them, parallel

to the edge of the desk, and to fold, it may be, the right lower corner over the left upper corner. She watches to see that each one does this exactly, and without direct assistance. Then they are asked about the triangle they have thus formed, the number of its sides and angles, and what kind of angles are again, and observe how many triangles were made by the creased line, and how this line divided the whole space and two of the angles. The square is folded also with side against side, making two oblongs, and the changes thus made are nothed. Other foldings into smaller square succeed, giving rise to repeated questions and answers. Finally, the children are allowed to make of the paper, now creased in many regular lines, any fanciful object they choose, and each one constructs for himself a table, a box, a bird, or a house. This finishes the exercise, and they rise for a play. There are many of these plays, pretty little inventions, such as only a German mind could conceive, and in them the pupils usually sing together, either in German or English, tossing a ball, perhaps, and counting; or they run and skip, or depart on imaginary travels and return to relate their adventures.

This over, they begin another exercise at the desk. If it is arithmetic, the announcement is hailed with great glee, for it is their favorite study. They count tiny wooden sticks, that are give to them tied up in bundles of ten, and from their experiments with them they learn the four elementary rules. Boxes of cubes, divided in various ways, from part of their materials, and show them the relation of solids. With two squares of colored paper cut fine slits they weave many beautiful patterns; on perforated card-board, with bright worsteds, both boys and girls learn to sew and to embroider; they draw simple lines, and prick the outline of pictures on blank paper, and in clay they model simple forms. But space would fail us to describe the varied means by which the eyes and minds of the children are kept alert and interested, and their bodies unwearied and active, while they are learning the elements of so many pursuits. All seem happy in their work and courteous to each other, and, in their games, full of fun and spirit, properly controlled. There is no unnecessary noise; no one speaks without permission, but all inquiries are encouraged and patiently answered. It is only the forenoon that is thus spent; in the afternoon they are free at home. School is a pleasure to these pupils and not a torment, and great and unusual must be the attraction which can induce them to stay away.

Thus it will be seen that the Kindergarten adapts all its processes to the nature of the child. He lives and delights in the visible world—it appears to him full of novelty and charm; the abstract is as yet beyond his comprehension. The letters of the printed page are only representations, and not the real things: he cannot yet understand their value, and turns to them with indifference. Learning, to attract him, must address itself to his perceptions; for, while his reasoning powers are still dormant, his senses are all alive, and the actual objects that surround him are viewed with the keenest interest. He must see first; afterwards he will think.

The advocates of this new system claim for it extraordinary merits, and we believe they are not exaggerated.

A long and practical acquaintance with schools leads us to be wary of many of the changes so freely proposed on every hand; but this stands the test of close study and examination. We have read its literature, heard lectures from its expounders, conversed with its teachers, and visited its schools; and the result has been to convince us that it is a true and efficient method of starting children in life with a zest for knowledge, a body active and serviceable, and senses quickened and trained. When,

in later years, the pupil will have to submit to much laborious study, as a discipline for his mental powers, and to grapple alone with many problems of thought, he will find himself well equipped for the work by that early awakening and wise direction of his powers which the Kindergarten has given.

New ideas make slow progress among masses of men; but when we consider that it is only twenty years since the founder of the Kindergarten died, that he was a man without station or influence, and took but slight pains to spread abroad his system, that he himself wrote but little concerning it, and that most works on the subject are still untranslated from the German, the progress which these schools have already made is most encouraging. The Austrian government has just issued an order establishing the Kindergarten as a part of the regular school system of the empire, and requiring educators, even those of the higher grades of schools, to receive a course of training in the principles and the methods of its teaching. In Prussia these schools exist in all the larger cities, and many of them are supported there by the municipal governments, for the benefit of their poorest classes. In France and Switzerland they are found; and the Italian Minister of Instruction has lately called public attention to the great merit of "this new evangel work," as he terms it. Even Hungary has set apart a sum for the purpose of sending young ladies to Germany to perfect themselves in the system of Fröbel. America, with the great stake she has in the right education of her people, will not be far behind in inaugurating such a reform. When once she has acquainted herself with their worth, it must be that she will give Kindergartens a hearty endorsement, and proceed to adopt them as the most valuable of infant schools. They winning able converts. Private institutions, more or less in conformity with the true Fröbel idea, succeed in many places; and some of our larger cities support four or five.

But so long as Kindergartens remain private schools, with the price of tuition fixed at from \$60 to \$100 per year, they will be of little real importance. It is only as a part of our common school system that they can produce any considerable results. The city of Boston has already shown her desire to test their merits, and for the last two or three years one has been maintained at her expense, under the supervision of a special committee. This committee, in all their reports, declare the experiment to be a success, and express their warm approval of the work this school is effecting. St. Louis has just added one to her department of normal school instruction. Other committies will be led, in time, to follow their example; and when the value and practicability of Kindergartens sre once made clear to the general public, we cannot doubt that they will become established everywhere as a new grade of our common school, intended to precede the primary schools, and to take from them one year, or more, of their present course. Our towns and cities will then be called upon to begin the education of their children at three years of age, instead of four or five. This will require a considerable addition to the school funds; and here the first practical difficulty in the way of the immediate establishment of these schools is met. Our ablest educators are beginning to concede their efficiency, and to admit that competent teachers in sufficient number can soon be trained by the superior instructors already amongst us; but they question whether the public voice will approve the additional outlay which will be required. If it will not, it is only because, there has been, as yet, no sufficient opportunity for learning the value of what this outlay will procure. Our American people do not need to be told that they can afford to retrench in all things save in education; and

that therefore they must be lavish with their money and unsparing with their pains, if they would not render their republican government a failure, and their own individual lives a series of awkward experiments. They know that the faculties of the citizen, when rightly trained, bring to the state its greatest wealth, and that it is cheaper to instruct children than to maintain paupers and convicts.

Our prisons, houses of correction, and reform schools are but the acknowledgments in brick and stone of our blunders in educating our youth. It were better to give small urchins of our worst quarters a right start in life, compelling them to attend a school such as this, and imbuing them there with a love of study and work, than to allow them to drift about among the haunts of wickedness, to learn sin and practice vice, and then to pour out our money after they are grown, in trying them for misdemeanors before our courts and in guarding their useless lives in prison for the greater part of their days. Kindergartens must in time be recognized as the first step in this great work of bending all the faculties of all our youth toward virtue, toward productive labor, and toward unselfish devotion to the general good. When we are wise enough to train twigs aright, we shall not need to wrench back and straighten the crooked trees.—*New York Journal of Education.*

#### McGill University.

The Corporation of McGill University have pleasure in acknowledging the following donations to the Faculty of Arts, during the quarter ending June 23rd, 1875.

#### TO THE LIBRARY.

From Principal Dawson, L.L.D.,—Howe's (Hon. J.) Speeches and Public Letters. 2 vols., 8vo.

From Major G. K. Warren, U.S.A.,—An Essay concerning important Physical Features exhibited in the Valley of the Minnesota River. Pamphlet, 8vo.

From Capt. R. T. Wickstead,—The Canadian Militia. 8vo.

From Harvard College, Cambridge, Mass.,—Annual Report of the Trustees of the Museum of Comparative Zoology, 1874. Pamphlet, 8vo.

From the Superintendent of the U. S. Survey,—Report of the U. S. Survey for 1873. 4o.

From the Government of the Dominion of Canada for 1870-71. vol. 2; 8vo.

From the Government of the State of New Hampshire, U.S.,—Geology of New Hampshire. 4to.

From the Right Hon. the Earl of Cavan,—When were our Gospels Written? An Argument by C. Fischendorf. Pamphlet, 8vo.

From A. Dewar, Esq.,—Origin of Creation. 8vo.

From the Hon. Justice Torrance, Mrs. Atwater, Dr. McDonnell, Hon. James Ferrier, H. McLennan, Esq., B. Gibb, Esq., H. Lyman, Esq., and G. H. Frothington, Esq., through Dr. P. P. Carpenter—Guyon Mme. De La Mothe, Œuvres. 21 vols. 8vo.

From F. P. Labilliere, Esq.—The Permanent Unity of the Empire. Pam. 8vo.

#### TO THE MUSEUM.

From A. R. C. Selwyn, Esq., Director of the Geological Survey—Specimens of *Verellia Blakei* from British Columbia.

From Mrs. Molson, Belmont Hall—Specimen of *Euplectella*.

## SCHOOL EXAMINATIONS.

### Model School.

#### *A Gala Day for Bright-Eyed Little People—The Prizes and Recipients.*

Closing day to the average young Canadian in Montreal, as well as elsewhere, is an era in school history never to be forgotten. For more than one reason, it is made at once joyous, impressive and sorrowful; for there is the flow of gladness to the heart of the school-boy of tender years, if he has fulfilled the tasks imposed upon him during the term; gratification that he has pleased teachers and friends; pride that his efforts have been crowned with success and rewarded by a suitable acknowledgment from the school authorities. There is a feeling, however, that cannot help weighing with the boy who, gifted with perhaps more than ordinary talent, lacked application necessary for success, and failed for that reason, and which impresses him, at least for the moment, with the result of his neglect. There is withal a sadness about the final close of the year's exercises that tinges with sorrow even the joyous carol of the young voices that well up in the school songs—harmonious evidence of the power of training experienced in the past term. It may be itself more manifest, however, when "God Save the Queen" brings the exercises to a close, and the moment arrives for the parting of classmates—many of whom leave school to enter life's battle, and experience the first struggle with wind and tide which follow childhood's days so closely in the after school life, that one never knows where it began until school-boy days become the theme of full-grown men, well up in years, who may meet in the course of events and retail the loved experience. The parting with the school teacher, and the head masters and principal too—all unite to throw the slightest tinge of discomfort around the parting, and as the handshaking goes on, and pupil and teacher meet for the last time, the discipline of the school hour and its consequences are alike buried, and in many cases tears dim the bright eyes and course down the ruddy cheek of the little one, and the teacher often cannot help the moisture which will make itself felt as some little favorite bids the good-bye that is to be farewell, perhaps forever. But this is not for long. The vision of relaxation in the long holiday has its anticipated delight both for the teacher and scholar; and if the latter forget the parting sorrow almost in the same instant it is experienced, it is all the better so. But to the closing day.

#### IN THE MORNING,

the examinations were commenced at ten o'clock, and carried on under the supervision of Principal Hicks. A number of visitors—friends and parents of the children—were present, and the programme was carried out in a manner highly creditable to Principal Hicks and the efficient corps of teachers connected with the school. Under the direction of Professor Fowler the pupils sang a number of school songs very nicely, and the examination being concluded, the children were dismissed—to meet again in the afternoon to witness the award of prizes to successful scholars.

#### IN THE AFTERNOON,

a large number of spectators was present, the hall being crowded so that scarce standing room was obtainable. Present on the platform were Dr. Dawson, in the chair, Principal Hicks, Mr. Frank Hicks, Professor Fowler, and Misses Derrick and Murray.

Principal Hicks having called the children to order, said that he would not detain the eager little people around him with an address of any length. They had now met for the purpose of closing the School, as was usual at this season annually. He must say that he would like to see more of the parents and friends of the children present at the examination of the young people in the morning, but accepted the presence of the large number there in the afternoon to witness the distribution of the prizes as evidence that the parents were well satisfied with the manner in which the examinations were carried on, and showed their confidence in the principal and teachers by preferring to stay away from the morning examinations and show by their presence at the distribution of prizes in the afternoon that they appreciated the labors of those who had the education of the children in charge. (Applause.) The principal further briefly alluded to the utility of the school, not only in affording education for the young people, but also as the means of sending to the Normal School students who after going through the preparatory training there afforded, were of great service in disseminating knowledge throughout the Province as teachers of others. He would now with much pleasure introduce to them the chairman of the afternoon, Dr. Dawson, who would announce the programme.

Dr. Dawson said that he was glad to see so many of the children before him, and proceeded to carry out the programme, requesting Miss Derrick to read the list of those entitled to prizes in the junior and intermediate divisions. The prizes were distributed to the juniors and intermediate classes by Dr. Dawson, after which the girls of the Junior Division sang "Fear Not but Trust in Providence," in a style that only little girls' voices are capable of, Professor Fowler accompanying on the pianoforte. Mr. F. Hicks and Miss Derrick then called up the remaining divisions, and after the prizes had been presented, a recitation was well given by one of the boys:—"Edinburg after Flodden." A little girl about 12 years old from the advanced class gave a comic rendition of "Counting chickens before they are hatched." The advanced class of girls having given an excellent piece of vocalism.

Dr. Dawson arose to close the proceedings. He expressed in a few words the pleasure everything had given him, and advised the children who were now closing their studies for the season, not to forget that they could devote much of their time to useful objects and still have plenty left for recreation. He advised the pupils of the advanced classes especially to improve and open their minds by reading books that were capable of affording much information to them—not light trashy reading, but such as would be of service to them in their studies next year. One thing he wished to say to the boys was that the school authorities had arranged that hereafter, boys in the higher departments could compete in the University for the degree of B.A., a distinction which would be of much service to them in after life; he hoped that the day was not far distant when the same thing would be done for the young ladies as well. The advantages afforded pupils for access to the Normal School were alluded to, and Dr. Dawson mentioned the fact that the Dufferin Medal had this year been taken by a former pupil of the school, and that last year the Princes of Wales' Medal was also taken by an old school-fellow of theirs. Dr. Dawson further wished the pupils to inform their friends that this afternoon (Friday) would be the occasion on which those who had passed successful examinations as well as teachers would be awarded their diplomas. It was to the exertions of those young people training as teachers that those before him owed much of their proficiency, and their parents would certainly manifest their interest.

by being present, if the scholars would tell them that a cordial invitation was extended to them and all friends of education to be present. He would now wish them good bye and God bless them. After reminding the children that the school re opened on 1st of September, Dr. Dawson announced that "God Save the Queen" would close the term. It was sung by all present, the spectators joining, and in few minutes teachers and scholars were bidding each other good bye, and the term of 1874-'75 was over.

The following is a list of the successful pupils in the various departments:—

#### BOYS' DEPARTMENT—JUNIOR DIVISION.

2nd. Young—Reading, spelling, writing, mental arithmetic, arithmetic, geography, grammar and French. King—Drawing and credit marks.

3rd Cooper—Writing drawing, and grammar. Mooney—Reading and French.

4th. Hannah—Spelling, geography and French. Rey—Drawing and mental arithmetic. J. Leishman—Writing, arithmetic, grammar and credit marks.

#### INTERMEDIATE.

5th. Varner—Reading, spelling, drawing and mental arithmetic. Drumm—Reading, drawing, mental arithmetic, geography, grammar, history, French, conduct. Lemontais—Drawing and credit marks.

6th. Stephen—Reading, spelling, geography, grammar and French. Cockburn—Theoretical arithmetic and history. Chadwick—Mental and practical arithmetic.

7th. Coyle—Reading, spelling, mental arithmetic and practical arithmetic

#### SENIORS.

8th. Boyland—Spelling, primary arithmetic, grammar and French. Chipchase—Drawing, composition and geography. McPherson—Theoretical arithmetic and mental arithmetic. R. Mooney—Reading, writing and conduct.

9th. Maynard—Physics, grammar and French. Hamilton—Writing and Drawing. Ogilvie—Mental arithmetic and conduct. McFarlane—Mental arithmetic and history. Olsen—Reading, spelling and composition. Smith—Theoretical arithmetic and geography.

10th. Allan—Reading, spelling, writing, physics, mental arithmetic, grammar and history. Ludwig—Spelling, geography and composition. Building—French and conduct.

#### ADVANCED CLASS.

Smith—Theoretical arithmetic, geography, general history, Latin. History of Canada. Berger—Spelling, drawing, practical arithmetic, grammar and physics. Cunningham—Algebra, geometry, book-keeping and credit marks. Young—Reading, French, practical arithmetic, composition. Mooney—Writing and composition.

#### GIRLS' DEPARTMENT—JUNIOR DIVISION.

Class I.—Emily Gross, prize in spelling, composition and grammar; Maggie Longmoore, drawing and sewing; Ida Robins, mental arithmetic and French.

Class II.—Dora McMann, writing and drawing; Maggie Douglas, arithmetic; Henriette Skinner, spelling, composition and mental arithmetic; Grace Thomson, French; May Cox, geography, grammar, French, punctuality and credit marks.

Class III.—Lizzie Baylis, composition, reading and arithmetic; Sarah Thurston, drawing, mental arithmetic, grammar, Scripture history, French and map drawing; Maude Austin, reading, writing, drawing and geography.

#### INTERMEDIATE DIVISION.

Class IV.—Amelin Smith, prize in reading, arithmetic, geography and French.

Class V.—Helena Hart, punctuality; Emily Buchanan, spelling and composition; Rertha Goss, punctuality; Mary Weir, arithmetic, geography, grammar, French, map drawing and credit marks.

Class VI.—Eliza Boyd, arithmetic; Eliza McLaren, Canadian history and sewing; Helen Duval, drawing, mental arithmetic and French; Sidney Austin, reading, spelling, composition, geography, grammar, French and map-drawing; Isabella Laidlow; writing and credit marks.

#### SENIOR DIVISION.

Class VII.—Barbara Neill, writing, practical arithmetic and

grammar; Henrietta Anderson, spelling and physical geography; Ressie Radford, composition, mental arithmetic and parsing; Kate McLeod, reading; Sarah Misell, physiology. British-American geography, map drawing and sewing; Nellie Cockburn, drawing and English history.

Class IX.—Katie Sheehan, reading, physiology; Lydia Sinclair, mental arithmetic and English history; Helene Taylor, writing and punctuality; Henrietta Greenshields, spelling, drawing, composition, grammar, British-American geography and sewing; Ann Jane Cooper, theoretical and mental arithmetic parsing.

Class X.—Katie Longley, writing; Jessie Leishman sewing and punctuality; Jennie Tees, reading, writing, composition, mental arithmetic and parsing; Maggie Clark, grammar; Louisa McFee, spelling, drawing, physical and British-American geography, English history, French, map drawing and punctuality.

Advanced Class.—Jennie Law, punctuality; Annie Ward, reading and composition; Amy McKee, algebra and punctuality; Maggie Gilmour, spelling and physical geography; Annie Cameron, writing, English history, book-keeping, map drawing and punctuality; Mary Rutledge, theoretical and practical arithmetic and punctuality; Louisa Norris, French, physiology, grammar, British American geography, general history, geometry, Latin, Canadian history, parsing and punctuality.—*Montreal Gazette*, 25th June.

#### Catholic Commercial Academy.

A very successful musical and dramatic entertainment was given last evening, 25th June, by the pupils of the Catholic Commercial Academy of Montreal, in the large hall of that institution, on the occasion of the *Fete de St. Jean Baptiste*. Mr. P. S. Murphy presided, and amongst those present were Hon. Gideon Ouimet and a number of Catholic clergy. The programme, a well-selected one, commenced by the Academy Band, who rendered "*Marche Canadien*" in a very creditable manner.

Principal Archambault then addressed the audience, a very large and fashionable one, and after congratulating them upon the very successful manner in which the *Fete* had been celebrated on the day previous, said they had then met to celebrate the children's *fete*, that of the day previous being for the parents. He spoke of the success of the Academy, and described it as consisting of three schools, the primary, commercial and scientific. The success that had attended these schools, he said, was due to the co-operation and assistance of his colleagues—Mr. O'Donohue, director of the primary, and Mr. Demers, of the commercial school. The former school had been attend during the past year by 232 pupils, the latter by 262, and the scientific school, which had only been lately opened, by 12, being a total of 506 pupils; the daily average attendance of whom had been 400. In comparing the number, 506, of this year with that of the year preceding, 386, he felt proud of the success of the Academy, which he attributed principally to the zeal of the professors and partly to the destruction of Masson College by fire.

He described the advantages of the Commercial School in fitting boys, when they leave, to enter banks or counting-houses, and stated they had since last September opened an evening class for those engaged during the day, but who would have the same advantages and rights of competition as the others. He also stated that Hon. G. Ouimet and Mr. J. J. Curran had undertaken the task of instructing that class in commercial law. That class was also instructed in chemical analysis, which must be of great assistance to them in a commercial life. He then referred to the Scientific School, of which we spoke a few days since, saying it was founded by the Local Government. He spoke at length on the great advantages of this school, and said the diplomas received the highest consideration from all business men, as also those of the Commercial School. In connection with this school he referred to the generosity and kind patronage bestowed on

it by Messrs. Edward and Peter Murphy, Benjamin Comte, Amable Jodoin and Prudent Beaudry, the last of whom had established a scholarship of \$150 for the Canadian Catholic pupil who showed the best abilities for a profession, but was pecuniarily unable to follow it. He concluded by thanking the commissioners for their kindness and attention to the school, and also the professors and the Secretary, Mr. Desnoyers, and sat down amidst loud cheers.

The programme was then proceeded with. The two-act Chinese comedy of "Sin-a-li" was very well played by a number of the pupils, notably William Forbes in the title-role, he being only 9 years old, yet attaining the highest honors in his school. A flute solo by Albert Murphy; a song by Arthur Francœur; a Piano solo from "Fra Diavolo," brilliantly executed by Emery Lavigne; a comic act by William Haynes, and a chorus and piece by the choir and orchestra then followed, and the entertainment concluded with "God Save the Queen."—*The Sun*.

### Commissioners' Schools.

*Distribution of Prizes to the Model School Seniors—A Large Gathering of Scholars, Teachers and Friends of Education—The Addresses and Prizes.*

The High School was the scene yesterday morning 29th June, of the closing proceedings of the Protestant Board of School Commissioners' Model Schools, the occasion being the distribution of prizes to the senior divisions of the various schools in the city.

There were on the platform the Rev. Dr. Jenkins, Dr. Dawson, Mr. William Lunn, Professor Robins, Mr. William Clendinneng, Dr. Kelley and others.

Shortly after 11 o'clock the Rev. Dr. Jenkins took the chair, and the pupils and prize winners having previously been seated, the exercises of the morning were opened by a chorus of the children, under the direction of Mr. Oliver Barwick.

Professor Robins then read the statement of Messrs. Sandham and Bell, to whom had been entrusted the task of selecting the prize winners in the drawing classes. The statement testified to the great proficiency attained by the scholars, especial notice being drawn to the Ann Street School, to which was awarded the first, second, third and fourth prizes in drawing, with the addition of an honorable mention. The designs which were arranged around the room gave ample proof of the aptitude of the scholars, some of the drawings being faultless in their execution.

The Chairman having read the following list of prizes, Mr. Lunn, the donor, presented them, giving each scholar some word of encouragement or congratulation.

#### DRAWING.

##### ANN STREET SCHOOL.

*First Prize*—William Matthews.

*Second Prizes*—Annie Whinton, Nathaniel Drew.

*Third Prizes*—James McLeod, Maggie Kirkham, Hugh Moore.

*Fourth Prizes*—Chas. Mackwood, Jas. Rutherford, Samuel Burnett.

Hon. Men.—Maggie Scott.

##### ROYAL ARTHUR SCHOOL.

*Third Prize*—Harriet Symington.

*Fourth Prizes*—Arthur Waldron, Sarah Boyd, James Ellis, Agnes King, Helen McDiarmid.

Hon. Men.—William King.

##### SHERBROOKE STREET SCHOOL.

*Third Prizes*—Nellie Weston, Eloise Weston.

*Fourth Prizes*—Kate Wilson, Isaac Hargrave.

Hon. Men.—Julia Weston.

##### PANET STREET SCHOOL.

*Third Prize*—Sarah Little.

Hon. Men.—Wm. Savigny, Walter Lancy, A. F. Scroggie.

##### BRITISH AND CANADIAN SCHOOL.

*Third Prize*—Louisa Cole.

*Fourth Prize*—C. Ross.

Dr. Jenkins then presented the following prizes:

##### BRITISH AND CANADIAN SCHOOLS.

Frothingham medal and purse of \$10, Annie Masslin and Albert Low.

##### ANN STREET SCHOOL.

*First Prize*, \$20, given by Mr. William Clendinneng—Wm. Schofield.

*Second Prizes*, \$5, Margaret Campbell and Nathaniel Drew.

*Extra prize in Mathematics*, given by Mr. McLaren—Wm. Schofield. (Two prizes.)

##### PANET STREET SCHOOL.

*First Prizes*—Walter Lancy and Elizabeth Loverin.

*Second Prizes*—Eliza Reid and William McGuinness.

##### ROYAL ARTHUR SCHOOL.

*First Prize*—Cornelia Aiken.

*Second Prizes*—Harriet Symington and Arthur Waldron.

##### SHERBROOKE STREET SCHOOL.

*First Prizes*—Rachel Corner and Frank C. Foster.

*Second Prizes*—Bertha Graham and George Falconer.

William Schofield and Nathaniel Drew of the Ann Street School, John McGregor of the British and Canadian School, Walter Lancy and Wm. McGuinness, of the Panet Street School, and Frank C. Foster of the Sherbrooke Street School, are admitted to the classical side of the High School on Free Scholarships.

The prizes having been given, singing was again the order of the day, after which.

The Chairman requested Mr. Lunn to say a few words.

Mr. Lunn said he was delighted to have the opportunity of meeting so many of the scholars, and promised all that the Commissioners could do in the way of furthering the interest in future. After a few further words of encouragement to those who were to continue their studies, he concluded by wishing them all a pleasant holiday.

Mr. Clendinneng addressed the children, briefly alluding to the progress which education had made during the last few years, and holding up for commendation the efforts put forth by them for the furtherance of education. The citizens, he thought, were slow to appreciate the efforts of those gentlemen and the professors and teachers under them, and he desired—he spoke as a citizen—to place upon record his sense of gratification at the efforts of the Protestant Board of School Commissioners as far as they had gone. The children in Montreal now had a chance of gaining a first-class common school education, and he felt, as they must all know, that in these enlightened times this was something to be thankful for. In Ontario, of course, the system of education was known to be second to none upon the Continent; but in our Province, where we were a mere handful, he thought much of the advance in Protestant education was due to the moral courage and perseverance of the Commissioners, and he honored them and thanked them for it. He wished also to call attention to another matter, and that was the position of teachers, who, as a class, were, he thought, not rated in proportion to the great importance of their calling. He did not think they were anything like well paid for their labors, and hoped to see this remedied.

Professor Robins, being called upon, spoke of the strides which had been made in education since he first came to the Province upon the invitation of Dr. Dawson, some years ago. He alluded to the great commercial prosperity which had attended Montreal since that time, and said

that the education of the children should at least keep pace with that prosperity. He hoped to see education in even a much higher state of advancement than it was at present. This was the charge which those whom he now addressed must take upon them. He looked around among his colleagues and saw them dropping off one by one, others growing old and grey, and was himself commencing to feel the march of time, and some of those pupils who were now before him must at some future day stand in the places of those who were passing away. He trusted that he would see the day when education would be much more widespread than it was at the present moment, and concluded by advising that more attention be paid to the education of our mechanics who toiled in the workshops and factories, in order to more properly fit that class for the labor of their lives.

The Chairman then announced that those scholars who had earned the position on the classical side of the high school would have their names so placed, and also that the number of girls who were qualified would be transferred to the girls' High Schools. He concluded by wishing all a pleasant holiday, and "God Save the Queen," followed by the Benediction, brought the proceedings to a close.

#### Montreal Collegiate School.

This old established school went through its usual long and searching examination, which on the whole was highly satisfactory in its results. The Principal, at its beginning, informed the pupils that could he get through all the work earlier than on former years, those that were going from the city with their families could do so without any infringement of scholastic discipline, forfeiture of prizes, or distinction of any kind. This announcement gave a wholesome stimulus to the whole affair. Each class was examined separately in every distinct subject, and from April 28th to June 30th the pupils were under examination, and, as may be easily imagined, were glad when all was over, and on 30th June the under-mentioned lads received the reward of their application.

#### PRIZE LIST.

*First Class.*—Leslie Foley, good conduct, Thomson's Malacca, &c. Leslie Foley, Captain's prize, Thackabury's Atlas of the Dominion.

*Additional Prizes.*—James Barclay, The Conquest of the Sea. E. M. Nichols, Home Influence.

*Second Class.*—Louis Barbeau, good conduct, Shanley's Livingstone.

W. Norris, Captain's prize, Half-Hours with the Best French Authors.

Honorable Mention, John Bailey.

*Third Class.*—Horace Joyce, good conduct, "My School-Masters."

Henry Hogan, Captain's prize, "My Schoolboy Friends."

*Honorable Mention.*—Papineau Besserer, Edwin Oliver, Edward Reilly, Ferdinand Macculloch, Richard Lynch, Derby Winning.

*Fourth Class.*—Vivian Dowker, good conduct, "Animal Life in Europe."

Captains' prize not awarded.

*Fifth Class.*—Rollo Campbell, good conduct, "Night before the Holidays."

James Muir, Captain's prize, "Travellers' Tales."

*Additional Prize.*—Samuel Holcomb.

*Honorable Mention.*—Aaron Boas, Percy Barclay, Percival Tibbs, W. Rhind.

*Sixth Class.*—Albert Dawes, good conduct, "Little Folks Picture Gallery."

Lawrence Hogan, Captain's prize, Pictures and Stories of Natural History."

*Honorable Mention.*—Alexander Milloy, Meredith Howard, Edgar Jacobs.

The breaking-up day took place on Wednesday last, when the remaining pupils were addressed by the

Principal. He passed a great encomium on the great industry and gentlemanly bearing of Leslie Foley and Louis Barbeau, who had studied so diligently as to be nearly exhausted. The map of South America drawn by the latter gentleman is a beautiful specimen of art, and was pronounced to be without exception the best map drawn in the Montreal Collegiate School since its opening, nineteen years ago. The elocution was superior in former years. The following resident pupils were presented with prizes, the gift of Mrs. Nichols, for good conduct in the house:—

Arthur Heward, "Macaulay's Essays."

L. D. Ross, "Shakespeare's Dramatic Works."

Albert Dawes, "The Story of a Summer Day."

On the delivery of the prizes the recipients were loudly cheered. Some wholesome advice having been given to the pupils as to their future guidance in life, the proceedings were brought to an end by the lads giving three hearty cheers for their masters, three for Mrs. Nichols, and three lusty ones for Her Majesty.

#### Catholic Commercial College.

The closing exercises at the above named institution took place yesterday morning in the presence of a very large number of citizens, friends and parents of the children, and clergymen connected with the Roman Catholic Church in Montreal. Among those prominent citizens who were present, were His Worship Mayor Kingston, Judge Monk, Edward Murphy, Esq., and others.

The number of prizes and recipients was so large as to make a full report of each an impossibility, owing to the press of matter on our columns, and we will, therefore, give the principal prizes and names of recipients.

The Edward Murphy prize, a gold medal and \$50, awarded to Frederick Doran, a pupil attending the commercial course, 1st degree, for irreproachable conduct, constant application and marked success during the past session. The Jodoin prize, \$50, awarded to George Desbarats, pupil in the Commercial Department, 1st degree, for the same reasons. The Comte prize, \$50, awarded to Maximilian Martin, pupil in the Commercial Department, 1st degree, do.

Pupils in the Commercial Department who received diplomas:—F. Doran, G. Desbarats, M. Martin and John Ostell, with marked distinction; Theophile Chabot, William Anderson, James Monk, John Gallagher and Edward McGowan, with distinction; James O'Brien and James Tansey, examination satisfactory.

The long list, of names was then called over, and as each pupil was presented with his honors, he took a place upon the platform until the class was finished, when they paid their respects to the audience, and afterwards resumed their seats. This was repeated until all the prizes were given—a seemingly endless operation, some four or five hundred books being given. The pupils attending the Primary Course received their prizes first in order; the pupils attending the Intermediate and Commercial Courses second in order; and lastly, the pupils attending the Polytechnic School. During the intervals the Academy Orchestra played a march from "Norma," "Boatmen of the St. Lawrence," by Boucher, and the "Ireland Quadrille," by Mariott; M. Ernest Marceau played "Falling Leaves" fantasia, for violin solo. Master Ed. Dupuis delivered an address in English; and Master George Desbarats an address in French, towards the close of the proceedings.

#### St. Patrick's Academy.

On Wednesday evening 30 June we had the pleasure of being present at a literary and dramatic entertainment

given by the pupils of St. Patrick's Academy, Point St. Charles, and we must say that it was one of the most enjoyable evenings we have spent for some time. The large hall of the Academy was tastefully decorated for the occasion, and there were about 600 persons present; among whom we noticed Rev. Canon Leblanc, a few other priests whose names we did not learn, Messrs. Myles Murphy, A. Brogan, N.P., &c. The programme consisted of vocal and instrumental music, recitations, and two dramas—one in French, entitled "Le Medicin Malgré lui," in which ten of the pupils took part; the other, a comedy entitled "The Ghost" was performed by Masters T. Wall, A. McVey, E. Colfer, F. Salmon, R. Phelan, J. Dorion, M. Monaghan, and P. Brennan being crier of THE SUN. In both pieces the performers acquitted themselves in a very creditable manner, Masters Wall, McVey, Colfer and Phelan being specially deserving of mention. Father Ryan's grand poem, "Erin's Flag," was recited by Master Wm. Wall in fine style, and was most enthusiastically applauded. We regret that pressure on our space prevents us giving a more extended report, but we cannot conclude without expressing our thanks to the worthy and devoted Principal of the Academy, Professor McKay, under whose care parents may rest assured their children will receive a sound Catholic and commercial education which will fit them for important and responsible position in life.—*The Sun.*

#### Bellevue Convent, St. Foye Road.

We always visit a well-conducted institution with the same pleasing emotions, that we do a highly cultivated garden. Nothing but the useful and the ornamental meets the eye. The rank weeds have been subdued and the ground has been judiciously laid out and tilled. Here blooms the bright and the delicate flower, fragrant with its own perfume and destined to ornament the boudoir or the drawing-room; there, thrives the less beautiful but more useful plant and vegetable; but everywhere the evidences of the minutest care and the most skilful culture are evident. Such are the ornamental and useful branches of education. Yesterday 30th June we had the pleasure of witnessing one of the happy events that marked the scolastic year 1874-75, the exhibition of the Bellevue convent, St. Foye Road, under the charge of the far-famed ladies of the Congregation de Notre Dame. Though it is not the first we had the privilege of attending the distribution of prizes at this educationnal establishment, which ranks one of highest in the Dominion the programme performed by the young ladies, yesterday far exceeded our fairest anticipations. The instrumental and vocal music could not be surpassed. The proficiency of the pupils in this accomplishment is really marvellous. Among the pleasing features of the programme were a solo by Miss Venner, and a duett by the Misses Labelle of Montreal; those young ladies' vocal powers won the enthusiastic admiration and elicited the warmest applause of all present. Indeed for careful training, strength and sweetness, the voice of those young ladies could not, to say the least, easily be surpassed. A "Bird Cantata" was also splendidly rendered by Misses. Laroche, Venner, Rocket and Johnston. In Elocution, both French and English, the pupils shew careful and methodical training. It was indeed a relief to hear those two leading languages of the day, of which the knowledge is so important in a country like ours, spoken with so much precision and with a pronunciation so correct and elegant. In this particular regard, we may say that the reputation of Bellevue convent stands high and unsurpassed. Pupils who come out of this Institution after a complete course of studies speak both languages equally well. We were

agreeably surprised to see rewards granted, as stimulants of emulation in the pursuit of knowledge by His Excellency Lord Dufferin. We regret that we have not been able to retain the names of all those who had the honor to compete; the victorious alone reached our ear; the silver medal won by Miss Johnston, and the bronze medal by Miss Blouin. The diplomas and gold medals were received by Miss Laroche and Miss Boyce. Those young ladies have completed their course of studies in this establishment, with the greatest satisfaction. Two addresses in French and English were admirably well spoken by Miss O'Grady and Miss Laberge, whose natural and distinguished elocution everybody very much admired. We can truly say, that in the convent of Bellevue is found all that is calculated to fit a young lady to adorn and dignify domestic and social life, even in the highest circles. No more beautiful or more healthy boarding-school, for young ladies, than Bellevue, exists in the country. Bishop Persico presided the *seance*, and, together with Madame Caron, distributed the rewards, crowns and Medals to the pupils. The venerable Bishop congratulated, in the English language, the pupils and their teachers of this splendid success: he was particularly happy and graceful. Revd. Mr. Cazeau addressed also the pupils in French; and after a lovely festival of about two hours duration, the *elite* audience retired expressing highly its satisfaction and admiration.

## EDUCATIONAL.

### The Centennial and Education.

The judicious Dr. Whewell aptly styled the first of the world's fairs "the great university of 1851." Ever since that time its educating influences have been apparent, and not solely in the new departures it has occasioned in industry and science. Its utility has been recognized in the frequency with which the civilized nations have provided for such exhibitions, each on a grander and more comprehensive scale than its predecessors. In the pains taken by governments, by manufacturers, by all who avail themselves of skilled labor, to enable those in their employ to study these industrial collections, proof is to be found of the stimulus they have given to invention, to science, and to art. Now, the educational effects of the International Exhibition of 1876 will have one wholly exceptional aspect which we have not yet seen considered. Until now these gatherings have been summoned in the midst of long-settled communities, the inheritors of centuries of industrial culture. It is true that each looker on has beheld products of distant lands which were novel to him, and perhaps suggestive; yet in the main they were all alike in being the gradually developed products of approximately coeval civilizations. Next year the experience of the untraveled American—that is to say, of the great mass of our best artisans—will be of a wholly different sort. He will see for the first time, and in infinite variety, things which he has till now but read of, or never heard of at all; and if the opportunities for study so afforded do not leave distinct traces upon our figure industries, then the reputation of American ingenuity and adaptable skill will be wholly belied. It has been too much the fashion to assume, with our wonted self-complacency, that we have invited foreign nations hither simply that they may marvel at the wondrous fruit of a century's growth. A year hence we may have discovered that we have at least as much to learn from them and have, moreover, such an opportunity for learning as was never vouchsafed to a nation before. It is in this view of the case, and in view also of the historical importance of the occasion, that we appeal to those immediately charged with the direction of education throughout the land, to do what they can to invest the exhibition with its proper dignity, and at the same time to derive from it the utmost possible benefit. "Better twenty years of Europe than cycle of Cathay" is not without its application to the humdrum routine of collegiate study. A fortnight

spent in careful scrutiny of the vast stores which will be collected in Fairmount Park next summer will be of more immediate interest and lifelong benefit to the average undergraduate than a whole term's application to the everyday curriculum. Why, therefore, should not the colleges signalize the year of jubilee by proclaiming an unwonted holiday—by closing their summer term a month in advance of the usual period, and transferring themselves with their stated meetings of alumni and other ceremonials to a grand national collegiate gathering at Philadelphia? Education of every grade and from every quarter of the earth will be represented there; societies, scientific, learned, professional, industrial, social, religious, will be assembled; athletic sports of every kind, including, we assume, the collegiate regattas, will be held; and for undergraduate and professor alike the occasion is one to be cheaply purchased at the sacrifice of a month's study. The great educational possibilities of the Centennial will largely have been squandered if they are not brought to bear upon those whose minds are now in process of formation, and who will shape the national destinies in the next generation. The annual college meetings are now on the point of being held, and we trust that they will carefully consider the part they are to take in the Centennial celebration.—(*Philadelphia Times*)

### Orthography, what is it.

Dr. J. Hammond Trumbull, delivered an address lately before the American Philological Association, of which he has been appointed president, on the occasion of its annual session at Newport, Rhode Island, in the course of which he made some remarks on methods of spelling adopted by writers of the English language in the present day. In beginning this part of his lecture, he says that the popular mind seems awake as never before, to appreciation of the difficulties, eccentricities and absurdities of the present standard English *cacography*—that is, bad or wrong spelling. After quoting several advocates of reform, to the ranks of which he mentions the newspaper press as largely contributing, he quotes the following extract from a journal of which, however, he omits to give the name: Why perpetuate a system of orthography which it takes not less than five years of active life to acquire, when, with a regular system once established, those five years might be devoted to studies of some positive value? He then goes on to say that legislators are beginning to look at the subject from an economic point of view, and somewhat startles us by the statement that bad spelling (that is, the ordinary system) cost the United States \$15,000,000 a year, and adds that half the time and money annually spent in teaching children to read and spell might be saved by a consistent, phonetic orthography. The spelling matches, which last winter were almost epidemic, and of which we had a visitation here in Canada, are also cited by Dr. Trumbull, as having a strong tendency to excite dissatisfaction with our traditional modes of spelling, by proving how difficult a thing it is in some cases, for even educated people to agree in their literal combinations with any of the great lexicographers.

These are the chief points in Dr. Trumbull's discourse. He does not claim to present, nor do we find, anything particularly fresh in his arguments for a wholesale departure from the old way in which we have been taught to spell our words. He touches hastily or not at all on the objections to the change which he proposes—the loss to philological science, the difficulty in establishing uniformity, and the confusion which would result to foreigners learning our language.

For our part, while we cannot help owning that there are anomalies in the spelling of English words, for instance those to which Dr. Trumbull triumphantly refers, words ending in "ough," we would be very sorry to see the proposed revolution accomplished. Every language has features and a character of its own, and the spelling is an integral part of these features and this character. If English words in their spelling are marked by "difficulties, eccentricities and absurdities," so are those of French, German and other languages. Perhaps the most formidable of all words to spell are Celtic. To conform the spelling to some arbitrary standard would be to disfigure, not to improve the language. And if such a transformation were begun, it could not stop with English. Then there would be the insurmountable difficulty of finding an alphabet for all the modern languages, the letters of which should have the same power and sound for each and all.

Again, as to the new plan being easier for children learning

to read, we believe there would be very little appreciable difference. Boys and girls soon become accustomed to the look of the words they most frequently meet with, and the more extended their reading, the more words will they be able to spell and understand; and this is true of all children, whatever be their race or mother tongue. In spelling, as with other branches of knowledge, some make good and sure progress in a short time, others take years to accomplish very little. Much depends on grade of intellect, attention, mode of imparting instruction, and other causes. As for the oft-quoted saying of Dr. Franklin, that "those spell best who do not know how to spell,"—it is a piece of epigrammatic smartness, nothing more. Orthography of any language, at any date, is an indication of the condition at which the people speaking it have arrived—it is what they, in the course of centuries, have come to regard as the correct manner of writing it. It cannot be changed arbitrarily any more than the language itself.

We must confess that we are not a little surprised that such a proposition should have the support of the President of a Philological Association. Philology is one of the most important sciences of the day. In some respects—in connection with oriental monuments, for instance—it has wrought wonders in filling up the gap of history, in substantiating cherished, old-world prejudices. And there is still plenty of work for its followers to do. Let only Dr. Trumbull and the other members of the American Philological Association set their minds to the study of the aboriginal languages and dialects of this continent and trace their connections with those of the East and West of the ancient hemisphere—if, indeed, this be not, as some argue, the earlier peopled of the two—let them compare these languages with the vestiges of an antique civilization which abound amid the uproar of the modern—let them, at least, do something to lighten the labour and gladden the hearts of American archaeologists in Europe, and they will have achieved a work far more satisfactory and grateful to the world at large, than they can ever hope to effect by truckling to the prejudices of ignorance, idleness or mere love of change. Let them leave the English language to complete its destiny according to gradually working natural laws. Needed changes will come when the need of them grows too burdensome. But by no fell swoop of pedantic Vandalism can a language which every day circumscribes the globe, be pillaged and rent and mutilated until it is unrecognizable.—(*Montreal Gazette*.)

—The London Quarterly *Review* thinks the American School system, judged by its results &c. as exhibited in recent official reports, not the glorious system its admirers imagine it to be, but a defective system indeed. That the American people are intelligent they owe it says to circumstances:—

"They are born into a world of active, eager, restless enterprise, and of universally diffused responsibility—commercial social political—where the ready change of information is in continual circulation; where knowledge and quick faculty pay a thousand fold, and pay at once; where there is every incentive to enterprise, every opportunity for talent; where the cheap newspaper has for some generations been in every man's hand; where the best literature of England is the cheapest book-reading to buy, and the easiest to get; where no dead-weight of hereditary pauperism has for ages dragged down the general standard of intelligence, and held back the development of the national energies. The rising population of such a country, if they have but learned reading, writing a little commercial arithmetic, and the lowest rudiments of geography, during these school years can hardly fail outside of school, and after school days are over, however short they have been, to learn enough besides to carry them forward in life, as their opportunities offer them, and to enable them in some fair proportion to cultivate their general intelligence.

"The Americans are accordingly an intelligent and well-informed people, although this is by no means the results of anything like a widely diffused or superior system of school education. One of their great wants is such a system. Intelligence and ambition, without thorough culture of educational discipline, stamps the character of very much of the conversation, the oratory, the newspaper writing of the States. There would be less 'highfalutin,' and less of slang if there were better means of national school education."

—The absence of parental control is undoubtedly one of the greatest of the dangers which imperil society in the United States where the family ties are all so loose and are daily growing weaker. The same *Review* says:—

"We cannot fail to connect the principle of free education with that weakening of parental influence and that perilous depreciation not to say contempt, of family responsibilities and duties, which are at this moment, the most painful and portentous symptoms in connection with the fast and ambitious social life of the States. This is a subject on which we dare not enlarge, but it cannot but be felt that for children to be educated not under any direction or responsibility of the parent, but solely at the charge and under the direction of the State, and for parents to shrink from family responsibilities, are two facts which well agree. Other points also may be noted. The youth whom the State has educated, *in loco parentis*, has scarcely left school before he becomes in most parts of the Union an independent citizen and voter, from whom an original and individual opinion on civil and political questions is due; and so, under his father's roof he becomes an independent political power. All matters go together and all tend to add intensity to the social evils over which the wise and good in the United States lament."

## SCIENCE.

### Two Astronomic Discoveries.

The year 1875 seems likely to be distinguished in the annals of astronomy for the new evidence it is perfecting of two important facts, both of which have been held probable but have hitherto lacked complete demonstration. The first of these facts is that we are some 4,000,000 or 5,000,000 of miles nearer to the sun than we had been taught by our old textbooks on astronomy to believe; and that consequently the distances of all the planets from the sun and from each other are to be calculated over again and set down at much lower figures. The evidence which the recent observations of the transit of Venus have contributed to this important subject is well known to our readers, and is brought forcibly to mind by the recent return of the *Swatara* to New-York with the transit expedition. The second of the demonstration we have referred to is that of the motive force of light. At a meeting of the Royal Society of Great Britain a few weeks ago, Mr. William Crookes, Fellow Royal Society, who had previously communicated some interesting facts on this subject, read a paper which may give rise to much more important discoveries perhaps than any contribution to Celestial mechanics since the law of gravitation was demonstrated by Newton. It has always been assumed, and Dr. Balfour Stewart and other authorities have affirmed that light, apart from heat, has no mechanical force whatever. This old theory is overthrown by Mr. Crookes, who for some years past has been making experiments, and has at last constructed an ingenious apparatus, by which he shows the power of luminous rays to drive round and round a little vane when the heat rays are excluded, being thoroughly sifted out by means of a screen of alum. We abridge from the London *Telegraph* the following account of one of the experiments, and regret that our space does not allow a more extended notice of the phenomena submitted to examination before the Royal Society. With an air pump Mr. Crookes first exhausts a tube with a bulb at its end and in the bulb he mounts upon a delicate pivot a little vane of glass or straw. This vane is made in the form of the letter X, and on each of its four arms is mounted a disc of pith blackened on one side. The use of this blackened surface is ingenious, as will be presently seen. As soon as the machine is ready, it is exposed to the sunshine, when its discs immediately become endued, as it were, with life. They revolve around their common axis just as the planets revolve about the sun in the orrery. What is the motive force in this beautiful experiment? It is not heat. For, as before observed, the heat rays can be sifted out by the alum screen without stopping the rotation of the machine. The atmosphere and its changes have nothing to do with producing the motion. Prof Osborne Reynolds some time ago suggested that the discs revolved because there was a latent moisture in them which, being evaporated in the experiment, gave a resilient impulse to the little orrery. To refute this theory and, at the same, to show that the sole motive force engaged in driving the orrery was the luminous rays of the sun, Mr. Crookes exhibited a machine made wholly of platinum which had been heated to redness while under continuous and absolute exhaustion. The discs

being made of platinum instead of pith, as before, revolved as obediently as the discs of pith; inasmuch as they could contain no appreciable amount of latent moisture, the theory of Prof Reynolds was, of course, exploded. The final result was that light is now acknowledged for the first time as one of the mechanical forces, and such eminent men as Profs Stokes and Huxley, Dr. Carpenter, Mr. Norman Lockyer, and others, agree that the demonstration was perfect.

Another point of importance is that the force which light delivers is not like the force of gravitation, but differs from it in several essential respects. One of these is, that while gravitation attracts and gives a centripetal impulse the force of light is centrifugal, and repels or pushes away the objects on which it is delivered. Thus the black side of the disc is pushed from the sun, and the orrery of Mr. Crookes is kept in constant rotation so long as the lightwaves dash themselves against the black surface and drive it before them. Shut out the light by covering the machine with a hat, and the rotation instantly stops, to be renewed again the moment the obstruction is taken away and the light readmitted. A green or blue screen diminishes the force of the rotation. Yellow or red glass quickens it into a much more lively activity. If a cloud passes over the face of the sun while this little orrery is working at full speed its movements are checked and somewhat slower, but the moment the sun is visible again the mechanism responds with alacrity, and its revolutions are as swift as ever.

Mr. Crookes is well known as the man to whom science owes the discovery of the metal thallium, and the complete establishment of its atomic weight. He has also invented the radiometer. But the little orrery we have described above is a much more remarkable contrivance. It contains the promise of further discoveries. It will perhaps raise its inventor to the front rank among the explorers of physical science. In this simple little machine one of the most occult forces of nature is for the first time revealed to the eye of man. In it, says the authority from which the foregoing facts are chiefly taken, "we see the subtlest of imponderables set like a willing slave to turn a wheel; while tiny as that wheel is in these experiments, we must remember that light pervades it, flashing perpetually from countless centres like our own sun, across the infinite ether, and it may be fairly imagined that the interplanetary ether resembles the vacuum in the bulb, so that the condition of these revolving disc is, perhaps, much the same as that of the planets in space. Strange, indeed, are the thoughts which must be started by this revelation that light, pouring upon bodies freed from atmospheric friction, is in itself an active and mighty force. That so remarkable a discovery solves at once the mystery of the comet's tail—which is always seen to be driven violently away from its natural line upon approaching the sun—is, we believe, affirmed by more than one high astronomical authority. But may it not also have something to do with the axial motion of the planets? May it not have something to do with the maintenance of centrifugal force, balancing, as it were, that of gravitation? Can it be for nothing in the celestial universe that this potency and stress of light sweeps from centre to circumference of each system, exercising a power which, in its totality must be something prodigious? It seems not impossible that our mathematicians, calculating from the surface of these disks the motive force of sunlight, may soon tell us pretty accurately what is the aggregate power which the luminous rays of the sun command; and nothing of this, by the law of forces, can be really wasted. 'Let there be light and there was light' seems to derive a new majesty of meaning from the discovery which shows us this subtle something, no more undulation nor 'mode of motion,' but a living force as well as the illumination of all life. It does appear as if a marvellous expansion of knowledge is about to open in these delicate experiments."

But there are no limits to the ingenious conjectures which may be advanced. To pursue them would be unprofitable in the present state of our knowledge. What is certain is that a great cosmic force has been discovered and submitted to experiment and investigation. But how long this force will be before it finds its Kepler and its Newton the future will show. "Why in the ranks of our American astronomers should we not look for the expected teacher to rise up?" Sir William Herschel, in his "Lectures on Astronomy," gives some interesting calculations as to the enormous waste of the rays of light in the solar system. He concludes that "taking all the planets together, great and small, the light and heat they receive is only 227 millionth part of the whole quantity thrown

out by the sun. All the rest escaped into free space and is lost among the stars or does there some other work that we know nothing about. Of the small fraction thus utilized in our system, the earth takes for its share only one-tenth part, or less than one 2,000 millionth part of the whole." What is that "other work" to which Herschel refers? To this question the discovery of Mr. Crookes suggests an answer. For as Providence has created nothing in vain, so analogy would lead us to expect that the solar rays fulfil many useful purposes which, though long unknown to science, will hereafter be discovered by the advancing knowledge of man. The present discovery, whatever else it may suggest, affords a new and beautiful illustration of the well-known law of "the conservation of forces," for it teaches us that the light which is incessantly pouring from the sun is perpetually converted into force, and that this force is utilized in the economy of the universe, no part of it being wasted, or latent, or lost.

## POETRY.

### The Scholar and the World.

In mediæval Rome, I know not where,  
There stood an image with its arm in air,  
And on its lifted finger, shining clear,  
A golden ring with the device, "Strike here!"  
Greatly the people wondered, though none guessed  
The meaning that these words but half expressed,  
Until a learned clerk, who at noonday  
With downcast eyes was passing on his way,  
Paused, and observed the spot, and marked it well,  
Whereon the shadow of the finger fell;  
And, coming back at midnight, delved, and found  
A secret stairway leading under ground.  
Down this he passed into a spacious hall,  
Lit by a flaming jewel on the wall;  
And opposite a brazen statue stood  
With bow and shaft in threatening attitude.  
Upon its forehead, like a coronet,  
Were these mysterious words of menace set:  
"That which I am, I am; my fatal aim  
None can escape, not even yon luminous flame!"  
Midway the hall was a fair table placed,  
With cloth of gold, and golden cups enchased  
With rubies, and the plates and knives were gold,  
And gold the bread and viands manifold.  
Around it, silent, motionless, and sad,  
Were seated gallant knights in armor clad,  
And ladies beautiful with plume and zone,  
But they were stone, their hearts within were stone;  
And the vast hall was filled in every part  
With silent crowds, stony in face and heart.

Long at the scene, bewildered and amazed  
The trembling clerk in speechless wonder gazed;  
Then from the table, by his greed made bold,  
He seized a goblet and a knife of gold,  
And suddenly from their seats the guests up sprang,  
The vaulted ceiling with loud clamors rang,  
The archer sped his arrow, at their call,  
Shattering the lambent jewel on the wall,  
And all was dark around and overhead:—  
Stark on the floor the luckless clerk lay dead!

The writer of this legend then records  
Its ghostly application in these words:  
The image is the Adversary old,  
Whose beckoning finger points to realms of gold;  
Our lusts and passions are the downward stair,  
That leads the soul from a diviner air;  
The archer, Death; the flaming jewel, Life;  
Terrestrial goods, the goblet and the knife;

The knights and ladies, all whose flesh and bone  
By avarice have been hardened into stone;  
The clerk, the scholar, whom the love of pelf  
Tempted from his books and from his nobler self.

The scholar and the world! The endless strife,  
The discord in the harmonies of life!  
The love of learning, the sequestered nooks,  
And all the sweet serenity of books;  
The market-place, the eager love of gain,  
Whose aim is vanity, and whose end is pain!

—Extract from "Morituri Salutamus," by HENRY W. LONGFELLOW,  
in *Harper's Magazine* for August.

## Obituary.

### DEATH OF SIR W. LOGAN.

A cable dispatch to the *Globe* announces the death of Sir William Logan, which from information received in this city as to his illness, must have occurred at the family residence near Cardigan, in Wales. Sir William was born in Montreal in April, 1798, and was therefore in his seventy-eighth year. He was educated at the High School in Edinburgh, and graduated at the University of that city in 1818, when he entered the establishment of his uncle, Mr. Hart Logan, then carrying on business as a partner in the house, and after a short visit to Canada, returned to England, and took up his residence in Swansea, where he became manager of copper smelting and coal mining operations, in which his uncle was interested. During the eight years that he remained connected with these works he studied accurately the coal fields of that region, and the maps and sections which he made were adopted by the Ordnance geological survey, and published by the Government. In 1841 he visited the coal fields of Pennsylvania and Nova Scotia, and communicated several valuable papers to the Geological Society of London. About the same time he began an examination of the older palæozoic rocks of Canada, and the geological survey of the Province having been commenced, he was appointed as its head, a position which he occupied with great advantage to Canada until 1871, when he retired, recommending Professor Selwyn as his successor, a recommendation which was acted upon, and the wisdom of which has been fully established since.

In 1851, says Morgan's book, from which we derive our information, Sir William represented Canada at the Great Exhibition in London, taking charge of the splendid geological collection which he had himself made. It was so displayed as to exhibit to the best advantage the mineral resources of Canada. Medals in profusion were allotted to Canada, and the Royal Society of London elected Mr. Logan a Fellow, the highest attainable British scientific distinction. He was also a Commissioner from Canada at the Paris Exhibition in 1855, when he received from the Imperial Commission the grand gold medal of honour, and was created a Knight of the Legion of Honour. In 1856, he received the honour of knighthood from the Queen, and the same year was awarded by the Geological Society, of which he was a member, the Wollaston Paladium medal for his eminent services in geology. Few men have rendered more substantial service to their country than has Sir William Logan to his native country, Canada. To his eminent abilities we owe much of the information we possess of the hidden riches of the Dominion. To wonderful energy and untiring zeal in the pursuit of his work, he added a conscientious love of truth, and a character high-toned and honorable to a degree. His statements in relation to the geology of the country came to be accepted with the most unbounded confidence, and have all been verified by further exploration and research. In the times of wildest speculation in relation to mining operations, he never permitted himself to be carried away. Many whose chief appreciation of the value of mines consisted in their ability to bond them at a small price and sell them at a large, thought him unnecessarily cautious. But with him truth stood before all other considerations, and his name never could be used to build up mere speculative ventures. He was an enthusiast in science, not for its own sake only, but for the sake of his country and its prosperity. His purse, as well as his genius, was ever at the service of Canada, and one of his latest acts was that of contracting with parties in England for a boring operation in the Eastern townships to test the accuracy of his theory of the geological formation of that part of the country. Although he had ceased to be officially connected with the survey, his death will be regarded as a national calamity, while his name will continue to be revered as that of one of Canada's best and truest friends.

## MISCELLANY.

*The habit of disrespect.*—Few things are more damaging to the character than that habit of disrespect which many people allow themselves to contract under the name of "sharpness," the "critical faculty," "not to be taken in," "not to be humbugged," "letting one's mind be seen," and the like delusive euphemisms; not one of which is true; the real source being that overweening egoism which regards no feelings and recognises no rights in comparison with one's own. One of the commonest manifestations of disrespect is suspicion of motives, doubts of a Man's honesty of purpose, integrity of design. Your lawyer advises you to such action; you cast about in your mind for motives, collateral issues which will be for his own advantage; you hesitate so long, doubting, that the right moment passes; and when you act as he advised you act wrongly. By which you are confirmed in your suspicious that his purpose was less than honest for all your life after, and cudgel your brains in vain to fathom his secret meaning. So with your stockbroker. He recommends you to take up certain shares which are depressed for the moment, but sure to rise in a short time. You lose the auspicious hour by going

