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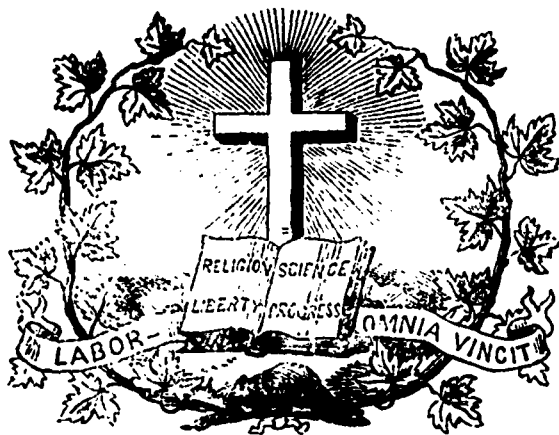
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# JOURNAL OF EDUCATION.

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**SUMMARY.**—**EDUCATION.**—**PEDAGOGY:** On the true foundation of school discipline translated from the French of J. J. Rapet by Mrs. Languedoc.—Education out of doors.—Dull boys.—School days of eminent men in Great Britain, abridged from the work of J. Froeb.—**LITERATURE:** The prayer for all, from the French of Victor Hugo.—Notoriety infamous.—**SCIENCE:** Notes on Canadian Natural History.—Description of two species of Canadian butterflies.—Dr. Smallwood's observatory at St. Martin, near Montreal.—**OFFICIAL NOTICE:** Proclamation offering a reward for the discovery of the person or persons who attempted to burn the Model School house at Montigny.—Freedom of School Municipalities.—Appointments.—Laval Normal School.—Board of Examiners for the district of Gaspé.—School Commissioners.—Situation as teacher wanted.—**MONTHLY SUMMARY:** Educational intelligence.—Literary intelligence.—Scientific intelligence.—**AGRICULTURE.**—Wong Clee: Chrysalis of two species of Canadian butterflies.—View and plan of Dr. Smallwood's observatory.

## EDUCATION.

### PEDAGOGY.

#### ON THE TRUE FOUNDATION OF SCHOOL DISCIPLINE.

(Translated from the French of J. J. Rapet, by Mrs. Languedoc.)

(Continued from our October issue.)

V

#### THE LOVE OF CHILDREN CONSIDERED AS THE TRUE FOUNDATION OF DISCIPLINE.

In the holding up the love of the children as an indispensable condition to the foundation of discipline, we made sure from the first of drawing along with us the assent of every man of experience, of all those who have made the training and education of the young their subject of heartfelt study. But we must also say that we no wise deceived ourselves upon the possibility that we would, on the other hand, probably shock the feelings of those individuals who cherish stable opinions respecting the ingratitude of children and the impossibility there is of awakening their love and regard.

Indeed there was not much time allowed us for mere conjecture. Never throughout the whole of our experience were we so beset with letters as we have been since the beginning of these articles upon discipline. Some were written to us containing thanks, others came to combat our opinions or to offer objections.

To those persons who, viewing the question in the same point of view as ourselves, and who interrupted their usual avocations to give us their concurrence, we have to return cordial thanks. To those also who were not be-

hind hand in exposing to us their objections, we do the same, for it is by such means that men of sincerity elicit the truth, and mutually reflect light upon a subject. We will endeavor to prove to both parties the gratitude that we really feel by returning here to a question that we fear, we did not upon its first mention treat at sufficient length for all. The opportunity will also serve to unfold such further explanations as these come before, as will probably dissipate the smallest remaining doubts, should any still exist.

Among those who with ourselves believe, that the best source to the government of children resides in the loving and bestowing upon them unmistakable evidences of that love, are several who have always held that opinion and have exercised it since first they practised teaching, and in their satisfaction at the results obtained, declare it as the only truthful one. Some of them go the length of saying that they cannot possibly understand how any person who has had any experience in education can believe otherwise.

Others, after a vain exercise of fear as a foundation to discipline in their schools, found it expedient, of their own accord, to renounce the system after a certain experience of its effects. They mention their recourse to it, and how they found it attended by constant resistance and disappointment, and how they have found reason only to glory in their success ever since they banished chastisement from the order of the school. These men in turn, confident in their experience of both systems, gladly coincide in approving of the latter, and of the agreeable change it affords to the teacher. That which before, was a dull labor and a torment, because but a task, not the easiest one it is true, for instruction can never be an easy task, becomes one attended both by pleasure and grateful satisfaction.

There are some who confess that we have opened their eyes and they express their gratitude in a most feeling manner. Many again, since the beginning of these articles, upon the inefficiency of fear and the influence of love, have adopted our suggestions, and have, with joy, communicated their satisfaction to us. Their eagerness to make us acquainted with the glad news was in itself a sufficient reward for the service that was intended for them by our advice. Several, exhausted with the ineffectual practise of reprimand and punishment, discouraged by the necessity of constantly wearing an expression of displeasure and severity, and, finally disgusted, from continuing in a career distinguished by nothing pleasing or any wise compensatory, were

about to abandon it for some other course. They met with our suggestions and as a last hope resolved to put them into practise; their success, they declare to have far surpassed their utmost expectations. School is no longer the same thing it was to them heretofore, and they have returned to their profession with feelings of affection and zeal.

But on the other hand and side by side, with these testimonies of unreserved approbation, lie the arguments of opponents or of teachers who offer doubts and propose objections. The first, and we regret to say it, no doubt hurried away by ancient usage, reject all systems of education that have for object and foundation of discipline, the existence of a mutual love between master and pupil. According to them, children are to be governed only by fear. To attempt any other method with love as a guide is, in their opinion, the setting up of an utopia. They will have that children are indolent, that they are dull to every proof of interest or affection, that pleasure is their only care, chastisement their only dread, and that by severity only can they be kept under dominion.

We regret that it is beyond our reach to convince such opponents, but it is not our custom to try and satisfy those who make it a practise to contradict us without, at the same time, advancing new reasons for so doing. Besides, we have no ambition to convert those whose minds are more than made up not to be convinced. Unfortunately there are many men in this world who are not open to conviction, and for our part we are not so vainglorious as to suppose that our words will work a miracle and bring all minds to the same convictions as those we ourselves entertain. Moreover, we have reason to fear that those who entertain such a style of language, no more love children than they do their calling, in which case all argument is less than useless.

These obdurate opponents are fortunately few in number. Others, on the contrary, without absolutely rejecting the system of love with children, are pleased to express their doubts; they fear lest we have subjected ourselves to vain and illusory hopes. They consider that that rule may do with children in isolated cases, but that with a number, it will be found unfruitful, and that with the many gathered in a class it will utterly miscarry. They look upon our proposing it as the result of certain preconceived notions of our own, and that it behoves experience to give it a denial.

These people seem to have been carried away with the supposition that in the expression of such opinions we have given utterance to ideas personal to ourself. They forget one thing that we have often repeated, which is, that we do not profess to devise, and that we are disposed to be most guarded against innovation in the matter of education. Our part is altogether a more modest one, it consists in being satisfied to collect and propose the experience of others. If, therefore, we recommend love as a basis to discipline, it is that the excellence of the principle itself guaranties us in so doing, it is the successes obtained through every age by those masters of youth and learning who made the love of their disciples the foundation upon which to build that dominion which it was their ambition to assert over their minds; (1) it is because we remember many schools whose prosperity was due to this source with many others at this moment, present to our mind's eye where intelligent and devoted teachers master every difficulty by the force of mighty love.

There is one thing forgotten or overlooked by many of those opponents who reject the proofs of their own exper-

(1) The fact that all who conquered a name in education, owed their success to a natural affection which they entertained for youth is evident throughout almost every page of the lives of those same great men and great pedagogues.

ience. They tell us that they also made trial of the means spoken of, some that they did so before they saw our articles, others after having seen them, but they both declare them a failure. Taking their own, as a ground of example, in regard to the impossibility of relying upon a mutual love between master and scholar as a guide to the government of a school, they do not hesitate to condemn as chimerical, the idea that points elsewhere than to the means of discipline already in general use, for the art of leading classes and of maintaining there, industry, order, activity and silence, as they should exist.

We will answer these objections and we will endeavor to clear away the doubts of those who seek to consult with us in sincerity and good faith, and the better to obtain that point we will make use of their own arguments in return. But, we must first premise how very common is the error of supposing that, because our individual experience has proved unfruitful that we have acquired the right to condemn the doctrine, method or system in question. Are we justified in saying that a system is worthless, before we know how it should be employed. Before proclaiming it as inadequate to the end proposed, was it given an intelligent or fair trial, and if at all attempted, were not some of those practises so foreign to its nature allowed by the force of habit to creep in, and destroy its good effects? We feel exonerated in asking these questions, when we consider how often the best things meet with condemnation by even persons of strict sincerity and minds open to conviction no doubt, but who lacked knowledge of their true understanding and who, therefore, were unfit to give them a proper and judicious trial. May not the same be the case with those who with what they call, their personal experience for the starting point agree to banish to the land of dreams, discipline as based upon affection?

One master who till that moment had maintained the use of the ordinary means of discipline, says that he made up his mind to banish them without reserve, and that the consequence was a far greater degree of disorder and boisterousness than had ever been known. His scholars became so turbulent and unruly that he was forced to return with redoubled severity to the old rule. A second one also declares how he tried gentleness with his school. He says that he substituted remonstrance and fatherly counsel in the place of reproach and chastisement. He tried the language of reason to children who till then had only been made to listen to that of fear. He laments that his scholars do not seem to understand that style, that they do not even attend to him and are wholly deaf to his voice, that they laugh at exhortations that are no longer enforced by the dread of punishment.

Another who had always lived under the impression of the absolute necessity of severity also took unto himself the resolution of acting upon love with his scholars. "I endeavored to work upon their feelings, says the last, I told them of my regard, of my love for them, and said how ungrateful it would be if they did not repay my affection by behaving better for the future and that they must no longer be idle, disobedient or noisy, but, on the contrary, industrious, docile and every way attentive. But it was all lost time, he adds, these hardened children paid no attention to my words, they serve them but as a mockery some even went so far as to take up my words and disguise their sense, so as to make the most absurd nonsense out of them, and excite laughter and ridicule among the others."

These accounts pain, but do not by any means surprise us. A system that is but half understood and acted upon cannot be expected to answer the results otherwise looked for. Besides, a change of system demands a foregone preparation. The transition from fear, to a system based upon love, must be gradual and effected with discrimination.

The master who for years had the name of being severe, harsh or roughly indifferent towards his scholars cannot easily expect to convince the children under him, that in the interval of one short day, he has been suddenly transformed into the shape of a most kind father.

Be it also remembered that we never declared that in our opinion love alone sufficed to govern the young.

We said that the first thing to be done was to penetrate their minds with the true existence of such a thing as our love towards them, but we added nothing that could be interpreted as alluding to that alone as all sufficient. On the contrary, we continued and said that as a means to the maintenance of discipline and order, their minds should be actively interested, in both an agreeable and busy manner. Moreover though we denied the influence of fear as a foundation to discipline, we acknowledged its aid in the support of authority, and with the Holy Scriptures taken in the right light that it was the beginning of wisdom. Besides, though we criticised the abuse of punishment, we did not altogether banish it from use.

In all things there is a medium, and particularly is there one in the passing from one system to another of quite a different nature. Now, we are inclined to think that those who have failed in their endeavors at a change of discipline, were not sufficiently careful to keep within those bounds without which we can hope for success no where. To renounce punishment suddenly, where before it was the pivot of discipline would be, to say the least of it, a great imprudence; it could not otherwise than provoke disorder instead of ameliorating manners in the school. Children must be brought gradually to a change of discipline: before renouncing the means of government in use for so long a period, it is necessary first, to ingratiate ourselves in the affections of the scholars, and this part neglected, nothing need be hoped for in the establishments for education. But it is particularly in regard to the affection felt, and the love to be expressed to the children, that we fear the great mistake is too often made.

It is not enough, we again repeat, to tell children that we love them, but we must first feel that love. We have already stated in what that true and sincere feeling exists and is manifested. We beg the reader who is pleased to bestow upon us his attention to re-consider what we have before written for we do not repeat. Let us remark that when we love in the manner that we have described, we feel no necessity to declare it in words to our little hearers, they feel intimation of it themselves, and are more confident of the fact, the less that it is repeated to them.

What is the case with those masters who declare, some of whom really believe that they love children? They repeat it every moment in school, they detail at length upon the great love that they feel for them, while at other moments they have nothing but coldness or indifference for them. They often let them feel how wearisome is their presence. They retain them only during the time appointed, and hasten to dismiss them or to take their own leave the moment that the limited time is accomplished, without even one word of kindness or amability, nothing but the words of conventional politeness, and perhaps not even then, to say nothing of the face of discontent and weariedness, which some make it a point of assuming.

Is this the way to prove to children that they are objects of love? In spite of the finest speeches there is no deceiving them, and when they are made to witness professions and declarations of attachment, they but see a new play and exercise for practising upon them and bringing them round to our own peculiar views.

To those who feel surprised at their want of success with their pupils, notwithstanding all their protestations of tenderness which they say they so generously bestow, we will

answer in the word of a teacher writing to a brother professor who had been surprised in the witnessing of his uninterrupted success; how do you manage, said he, one day, to the latter, you seem to have full possession of the love of your pupils? Never mind how much I may tell mine of my love and how they grieve me by their noise, indolence and disobedience, they pay no attention whatever to me. The other answered as he tells us. "You perhaps repeat that too often to them, and take no pains to make them conscious of it by your actions. For my part, I do not tell my pupils that I love them, but I make them sensible of it in every manner possible. I never speak of my love for them, but they are made to see it in all my actions and dealings with them."

It is in the above that the whole secret of real love exists.

Others fall into another error no less grievous. They may really love children, but their love is characterized by weakness. They feel sincere regard and kindness, but are withal so exceedingly indulgent that they allow every fault to pass unnoticed; they repine when harm is done, but have not the courage to check it. In this case the children love the individual best, they have no respect for his authority, and confident in the absence of restraint, think that every thing is permitted them. To such masters we must make the observation that good government should never abdicate the reins of command and that deference and respect to our orders are the first things to be required. The teacher fills the place of a father, but the kindest father knows how to exact respect and obedience when the occasion demands it.

The love that is not accompanied by this respect, no longer deserves the name of love, it is nothing but weakness and is the parent of culpable indulgence. True love does not forbid the practise of firmness, nor does it exclude chastisement when absolutely called for, but, on the contrary, uses both accordingly as the interest of the child is at stake. The difference in the latter case lies, in the fact of chastisement being used only at the right moment, and in due moderation.

True love, I will further declare, as not being incompatible with a certain quickness of temperament. There is no one perfect in this world, and it may even be found accompanied by bursts of impatience or even of temper which, though very reprehensible and much to be avoided, nevertheless, does not blind the children to the knowledge that the master loves, and is loved by them. A child makes allowance for those impulses of temper and of impatience, for he is subject to them himself and he knows that when the fit is passed, the mind will resume its ordinary condition; but coldness or indifference is always sure to alienate him from the master and to estrange him for ever.

Others there are who fall into another extreme. They make a display of ridiculous professions to their scholars full of mawkishness and insipidity. They know of nothing but to constantly address speeches, "to those dear children, those sweet little friends;" they tell them of all their great love, of their deep tenderness and watchful solicitude. They never cease harping upon all the trouble and sorrow of which they are the occasion when they are not good, "you give me so much pain and regret," say they, "and you do not seem to care any thing for it; you do not love me as I love you; I would so wish to see you studious and obedient children," with much more of the same kind, falls upon deaf ears for the tone and whole expression of the speaker are those betraying a weakness of spirit, rather than a sound action of heart and mind. Some even go so far as to call up tears to complete a comedy that can but excite the ridicule of a child who sees his master so earnestly changing places with himself.

We repeat it once more all these things are not love, they are but an apology for the name.

The love of a master has nothing in it resembling these fits of maudlin sympathy. It is a feeling as earnest as it is sincere, constant as it is firm, one that is nowise diminished by one or all of those trivial defects, which, in the young, spring more from thoughtlessness than from any innate wickedness of heart; a love, moreover, that wills the more, from the very sentiment of all that the child has to expect from us, in the fulfilment of the mission of education that we have undertaken in their behalf.

And why should we refuse them our love, particularly when we consider how much they depend upon us, how much it is in our power to benefit them and generally how desirous they are to admit those benefits? Why should we not love the little creatures, and reflect how the whole of their future welfare lies in our hands; that their peace and happiness both in this world and in the next, in a great measure rests upon what we may do, or what we may neglect to do towards them! And loving them truly and sincerely how can we behave otherwise towards them than by giving an expression to that love by every action and display of demeanor in our power.

Let us love children after this manner and we will find no reason, whatever, to doubt of a return of affection on their part, nor to hesitate in establishing it the true and proper throne for discipline.

But with love for the child, let us also entertain a love for our profession, for that alone is done well which is done lovingly.

### Education out of Doors.

Early tastes cast their influences over all our after life. The feelings we imbibe in youth become part of our nature, and it is often an Herculean task to get rid of them, even though our mature experience may teach us the fallacy of our early views. Now our tastes will greatly depend upon the habits and occupations in which we indulge. One of the great aims of education, therefore, must be to plant in children's minds those habits that will be serviceable to them in after life, such as truth, consideration for others, perseverance, industry, and many other similar qualities. The one to which we would now, however, principally draw the notice of our readers is that of attention and observation; and this habit is the more easily cultivated because nature has already planted it originally in our minds as an instinct. The first dawn of reason in a child is marked by his observing things around him, and as he grows a little older he breaks his toys to discover what is inside them, while his constant inquiry is how is this made? or, how is that done? We should endeavour to satisfy these questions, if possible, even though it may be at the expense of a little fatigue to ourselves, for to reply as some persons do, "never mind, you cannot understand it," repulses a child, and tends to repress the exercise of his intelligence, which our object should be on the contrary to assist and guide. There are of course times and seasons for all things, and a child should be taught how to be silent as well as how to speak; but he should clearly be made to understand that our motive for declining to satisfy his inquiries is not that we dislike the trouble it gives us, but that the time selected is not judicious, the mode of question objectionable—or that we have some other equally good cause for our silence.

Nevertheless a habit of inquiry will not, if left alone, produce all the good effects upon the minds which we could wish, as it will probably become desultory, and to prevent this a constant and watchful care will be necessary. Few things will assist us more in thus bringing out a child's intelligence, than teaching him how to look thoughtfully on all around him, to notice little every day occurrences, and inquire their meaning; and for such a branch of education there is no school so advantageous as the open fields. Every leaf and flower and insect can there be made an object of interest, for it is so easy to arrest the attention of a child, but we must be careful that our information comes naturally, and not as a task, or it will instantly cease to give pleasure. If a child feels he must not run hither and thither, but is obliged to walk straight by your side and listen to a lecture, he will soon wish birds, beasts, insects, flowers, and yourself perchance into the bargain a hundred miles off. No, let him be free as the air, never force your information, but quietly lead him to ask for it, and your best way of accom-

plishing this will be by *really* taking an interest in such things yourself. Probably there never was a child accustomed to ramble about with a botanist and see him eagerly searching in banks and hedge-rows for curious plants, who did not hunt for specimens also, and bring his nosegay to his companion to be admired, and very possibly explained.

If a child sees you like these sorts of things he will soon learn to like them too, for by nature he is a copyist. If he observes you carefully opening the parts of a flower to examine its structure, he will probably open some of his, for he will like to see as much as his companion does, and then will come such a question as "Why are the seeds in my plant so different to those in yours?" or "What is the use of this or that part?" If he has gathered a dandelion in full seed, for instance, he will positively remark, "Oh! look, my seeds have little feathers to them," in answer to his observation you would then explain the object of these winged seeds; how by this means they float lightly in the air and are wafted from place to place. Such an explanation is simple enough to be remembered, and when he next comes across seed of a somewhat similar character, he will look at it with an intelligent eye, because he will understand its meaning. Or possibly after groping in the hedge-row he will come out with the seed of the burdock adhering to his clothes, and will complain to you of the 'horrid little sticking burs,' when the explanation will come most naturally that these burs are the seeds collected into a head and furnished with numerous hooks serving to attach them so closely to the hair and fleece of animals touching them, that they are sometimes carried for miles away from their native spot. Another mode for the wide diffusion of plants is thus brought before him.

Or perchance, if it is spring time, he may gather a handful of primroses and wonder why they fade so soon, even though put into water. Bid him the next time break off bunches of leaves and flowers together a little way below the crown of the root, and try how they will live in water. When he sees them for a considerable time remaining as fresh as when first gathered, he will naturally come to you for a reason, and you can explain to him that the surface of the leaves in plants is perforated with small pores through which the leaf breathes in air, the carbonic acid gas in which changes the watery particles drawn out of the earth by the root and forced into the leaf from a white fluid into green sap. This sap is then sent back through the leaf-stalk into the main stem, from which it rises again to all parts of the plant. He will now easily understand why his gathered primrose blossoms soon fade because water alone is not their proper food; they require sap also, and that they cannot obtain if separated from the leaves. This simple explanation and the experiment which accompanied it will at once give him an insight into that important branch of vegetable economy, the respiration of plants, and he will perceive how the absence of leaves in the winter arrests the growth of plants during that season. He will examine other leaves, and if you find him interested in the subject, ask him to guess why the leaves of plants that float in the water have pores only in the upper surface, and why those of submerged plants have usually none at all. He will perhaps answer that he does not know. If so, put some such leading question as this: What does the floating plant want to get through its pores? He will answer, "air." On which side does the air lie? "The upper." Then where should the pores be? "The upper, of course." He will probably catch your meaning; his mind will follow yours, and he will endeavour to work out the next problem you give him by reasoning in a similar manner upon the character and condition of the plant he is examining.

Or suppose a very probable occurrence, that in the course of his explorations he falls amongst the nettles, he will very possibly express a wish that there were no such things as nettles; he cannot see of what use they are. Point out to him the Peacock Atalanta, and tortoise-shell butterflies (and there is no child who does not love a butterfly), and then show him the caterpillar of these beautiful insects feeding on the nettle leaf as its favorite food, and you will easily lead him to draw the moral for himself that everything is of some use, and that all that God has made is very good.

Perhaps we have already dwelt too long on these simple examples of what may be done to interest a child in those things which are too often passed unheeded both by pupil and teacher. The animal kingdom presents a still larger field for our observation and instruction, and many a moral lesson will be insensibly learned as our pupil watches the habits and actions of the domestic animals to whom he is accustomed, or of the numerous insects he has hitherto passed unnoticed. Thus if you watch with him the busy labors of a colony of ants on a sunny day, and see them bringing out their stores to dry after the rain, his interest will be excited, and when next he passes the spot perhaps he will stop to see "what those

busy little fellows are doing now," and he will in looking at them learn a lesson of industry and activity. In like manner the spider in her continued efforts to fasten her thread to some adjacent twig will teach him perseverance;—the squirrel, with her store of nuts and acorns provided for winter's use the value of care and foresight; and so in a thousand other instances, similar lessons will be drawn.

In all our walks, however, there is one point we cannot too forcibly impress upon a child's mind, and that more by example than precept: it is this, to avoid inflicting pain even to the meanest creature. If a worm or a beetle be in your path be careful to step over it, and the child will soon learn to follow your example. Let him play and fondle with the animals around him as much as he pleases, so that it is consonant with safety; it gives both him and them pleasure, but never permit him to tease them. In this way you will impress a law of kindness upon his mind which will never afterwards be forgotten, and he may have occasion to bless throughout eternity the country walks he took with you when a child.—(*English Journal of Education.*)

### Dull boys:--Dont abuse them.

It seems superfluous to speak to the readers of this journal, upon the bitter wrong and injustice which dull children often suffer in school. I should hesitate to enlarge upon so obvious a sin, had not my experience and observation convinced me that it is one, which even the most devoted teachers commit: some in thoughtlessness, many more in spite of conscience. I have seen teachers, the most affectionate and devoted, who were kind and patient in school to all—but one; there was sure to be some poor little fellow, slow of speech, clumsy in movements, and of a heavy countenance, to whom the teacher was testy and unkind.

Reader! are you ever guilty of this sin? I know that a dull scholar is a sore trial to his instructor. After laboring anxiously over some simple point, trying invention to the utmost, and all in vain, it is hard to suppress a hasty word, or a weary sigh, to see a boy still hold his stolid look—no ray of intelligence in his heavy eye; to know that all your ingenuity and devotion are of no avail, is surely a miserable disappointment. But think: are you alone disappointed? Is not the poor, tired child with nerves excited, brain confused, and heart downcast and sorrowful, — is not he too worthy of some compassion? Will you reproach him in such a case? Reproach him! For what? If he does not understand you, may it not be your fault, not his? Do you not rebuke yourself when you reproach the child?

I once saw a teacher engaged in hearing a brilliant recitation, where all was prompt and successful.—The class was in high spirits, the teacher in fine temper; but when it came the turn of an honest looking boy at the foot, with large heavy eyes, and a troubled look, I saw the smile of satisfaction leave the teacher's face before he had finished putting the question: I saw the class sneer in anticipation of the blunder; and I saw too the poor boy, flinching from the gaze of the school, and the impatient look of his teacher. He failed, of course. The teacher turned away with an expression of resignation, which was a more severe blow to the boy, than if he had been struck. Reader! have you never done this thing? Never be impatient with dullness in school. Do not merely refrain from contemptuous epithets, (for who would be so brutal?) but avoid every shrug of the shoulder, every gesture of impatience, every sigh of disappointment. It is mortification enough to the scholar, to know that he is not so bright as his companions; do not add to his shame the sense of injustice.

Children are often considered dull, who have in fact, superior intelligence. An excessive diffidence, a stammering utterance, or a slowness of speech, may so embarrass a scholar, as to ensure his defeat by some quick and fluent lad who has not half his mind.—Hence, quickness of thought and facility of expression are, too often, the only qualities that receive a marked approval from the teacher. Let these have their due; but remember, that a sound understanding is not always accompanied by an acute perception, and that a mind may be large, without being brilliant. Moreover there are superior qualities of the mind, which may not be called into action in school, so that a boy of fine intellect may pass for a dullard, while he is, in fact, superior to his companions. A child may be quick to grasp principles, yet slow in learning facts; he may be deficient in mathematical ability, and yet possess much poetic feeling, and an earnest, ardent love of the beautiful. A bad memory, or some other defect will keep him back in recitation, though his mind may be full of precocious thoughts, which find no utterance in the bustle and hurry of the school-room.

I had a case of this kind in my first school; it was a poor little fellow who always seemed puzzled; he was slow to take an idea, and appeared to have no power whatever to express his mind. His companions thought him stupid, and I shared the general impression. In the course of the term, I introduced exercises in composition—a thing hitherto unknown in the school. To our astonishment, his first effort exhibited an originality of thought and a facility of expression, which no other boy could equal. On one occasion he wished to introduce a few stanzas of poetry into his composition, and not remembering the exact form of the original, substituted his own expressions; they were all correct, poetic, and metrical. On conversing with him about his pursuits, I found him altogether superior to his companions, in all the more mature and valuable properties of the mind.

I learned wisdom by that experience, and have since found many similar cases: indeed, so many, that I am sometimes inclined to think that a slow manner of thought, in a child, is a sign of a good intellect. Therefore, if I find that a boy is unsuccessful in ordinary school studies, I look round to see what I can do for himself. If he has a poor memory, I often find that he can grasp a thought; if he cannot read well, he may nevertheless understand thoroughly what he is reading about; if clumsy in speech he may be skilful in expressing his thoughts in writing; if he is deficient in mathematical ability, he perhaps has talent for drawing, for mechanics, music, or the languages; though hating arithmetic and geography, he may have a love of poetry and art, that may be turned to account. Thus I find the law of compensation exhibited even in the school-room. Many a man or woman has developed a symmetrical mind and character in after life, who in childhood seemed only "half made up."

Therefore, O teacher, be not hasty in your judgments! remember that the scope of your influence is limited; that there are chambers of the young mind which, with your parade of school-books, you have never entered; remember that the heavy-eyed lad whom you deem so obtuse may yet grow to be a man whom you will delight to honor. Be patient.—*R. J. Schoolmaster.*

### School days of Eminent Men in Great-Britain.

By JOHN TIMBS, F. S. A.

(Continued from our last.)

#### VIII.

##### RISE OF ANGLO-NORMAN SCHOOLS.

Schools and other seminaries of learning were zealously established in connexion with the cathedrals and monasteries in all parts of the kingdom. In 1179 it was ordered by the council of Lateran, that in every cathedral should be maintained a head teacher, or *scholastic*, as was the title given to him, who, besides keeping a school of his own, should have authority over all the other school-masters of the diocese, and the sole right of granting licences, without which no one would be entitled to teach; and this office was filled in many cases by the most learned persons of the time. Besides the cathedral schools, there were others established in the religious houses; and it is reckoned that of religious houses of all kinds there were found no fewer than five hundred and fifty-seven, between the Conquest and the death of King John: and besides these, there still existed many others that had been founded in the Saxon times. All these schools, however, appear to have been intended exclusively for the instruction of persons proposing to make the church their profession; but mention is made of others established in many of the principal cities, and even in villages, which would seem to have been open to the community at large; for the laity, though generally excluded from the benefits of learning, it is presumed were not left wholly without elementary education.

#### IX.

##### RICHARD I., THE POET KING.

Richard I., third son of Henry II., born at Oxford in 1157, lived much in the court of the princes of Provence, learned their language, and practised their poetry, then called the *gaye science*, and the standard politeness of that age; it is recorded of him, that "he could skilfully make stanzas on the eyes of fair ladies."

Richard, the earliest recorded writer of French verse,—although nothing of his poetry remains except the fame, preserved in the



writings of another Trouvère of the next age—was sent by his father to be educated at Bayeux; and his taste for poetry is said to have been first awakened by the songs of the laud of his ancestors. According to Ritson, Richard is never known to have uttered a single English word, unless when he said to the King of Cyprus, "O dole, this is a fole Breton." Many great nobles of this century were utterly ignorant of the English language: even Longchamp, Bishop of Ely, chancellor and prime minister to Richard, I., according to a contemporary letter, did not know a word of English.

## X.

## CHURCH SCHOOLS.—BENEFIT OF CLERGY.

At the close of Richard's reign, about the year 1188, there was founded at Bury St. Edmund's a school for forty poor boys, by Sampson, Abbot of St. Edmund's, a man of great force of character, who had risen from the people to wear a mitre and be a Peer of Parliament; and in his greatness he did not forget his lowly origin, for he is recorded to have said to one suing him for a benefice, "Thy father was master of the schools, and at the time when I was a poor clerk, he granted me freely and in charity an entrance to his school and the means of learning; now I, for the sake of God, do grant to thee what thou dost ask."

The same good work which Abbot Sampson accomplished at Bury was being accomplished throughout the land for several centuries before him, and several centuries after him, so that knowledge became the special inheritance, not of the high-born and the rich, but of those of low estate. It is true that for the most part those who were educated in the chantries and schools attached to cathedrals and monasteries were the recruits whom the Church was preparing for her militant service. But they were taken from the people, and they lived amongst the people, keeping alive in the hearts of the community the humanizing influences of letters and of religion. Few of the laity, rich or poor, could read; but the poor saw their children winning the rewards of learning without favour or affection; and the light of truth, spread from the altar to the meanest hovel, and kept our fathers from barbarism. The old law called *Benefit of Clergy* shows how gradually the ability to read extended to the clergy. In the early times clergymen claimed the privilege of being exempt in certain cases from criminal punishment by secular judges. They appeared in clerical habit, and claimed the *privilegium clericale*. At length, the *ability to read* was considered sufficient to establish the privilege, and all offenders who claimed their "clergy" had to read a passage from the Psalms, which came to be humourously called "the neck verse." This was no merely theoretical privilege, for the *ability to read*, absurd as it may appear, saved an offender in the first instance from the full penalty of his crime. In the *Paston Letters* it is recorded that in 1464, Thomas Guerne employed his man to slay "my Lord of Norwich's cousin." They were both tried and convicted of the crime. Thomas Guerne pleaded his clergy, and was admitted to mercy as "clerk convict;" the less guilty servant, being unable to read, was hanged. But the rank of Thomas Guerne gave no assurance that he possessed any knowledge of letters.

## XI.

## RISE OF UNIVERSITIES.

The twelfth century was the age of the institution of what we now call Universities in Europe, which had, however, long before existed as schools, or *studia*. Oxford and Cambridge had undoubtedly been seats of learning long before this time; but there is no evidence that either had at an earlier date become anything more than a great school, or held any assigned rank or privilege above the other great schools of the kingdom.

Since the conquest, Oxford, ill treated by William, and disregarded by his son Rufus, under Beaulerc again became the object of royal favour, and numbers flocked to her academic groves. The predilection of Beaulerc for the muses made him partial to the neighbourhood; and he granted some privileges to the place. In his time, Robert Pulleyn, who had studied in Paris, gave lectures in theology at Oxford; and by his exertions the love of science was greatly revived, and the number of students increased. Here the study of the civil law began at this period. Oxford continued, throughout the reign of Henry II., to follow the line of studies which the fashion of the age recommended; and her pupils were second to none in fortune and fame. Thomas à Becket, who had studied at Bologna, disdained not to receive academical honours at Oxford, as honours were then conferred; and after his promotion to the highest dignities in church and state, he attended, on all occa-

sions, his kind remembrance of the favours, which he had received. Richard I., who was born at Oxford, is stated to have patronised and fostered the University. To this statement, however, Berington denurs, and ask: "Because Richard's father often resided at Woodstock, and sometimes visited the monks at Abingdon, can it be thought that the love of letters attracted him to the spot, as on grounds not more substantial it is said of Beaulerc, who was probably impelled by the joys of the woods of Cunner and Bagley?"

Cambridge, which, from the ravages of the Danes, and the insults of the first Normans, had long lain in obscurity and neglect, revived about the year 1108, when Joffrid, Abbot of Croyland, intending to rebuild his monastery, which had been lately destroyed by fire, sent Master Gislebert, with three other monks, to his manor of Cottenham, whence they went every day to Cambridge, where, having hired a barn, they gave public lectures, and soon collected a great concourse of scholars; for in the second year after their arrival, the number of their scholars from the town and country increased so much that there was no house, barn, nor church capable of containing them. They accordingly dispersed over different quarters of the town: brother Odo read grammar early in the morning, to the boys and younger students; at one o'clock, brother Terricus read Aristotle's Logic to the elder class; at three, brother William gave lectures on Tully's Rhetoric and Quintilian's Institution; while master Gislebert, not understanding English, but very ready in the Latin and French languages, preached in the several churches to the people on Sundays and holidays. "Thus, from this small source, which has swollen into a great river, we now behold the city of God made glad, and all England rendered fruitful by many teachers and doctors issuing from Cambridge as from a most holy paradise." But a few years after this was written, during the war between King John and his barons, this paradise was entered and plundered by both parties.

Antony a Wood has preserved a few Latin verses by an English student at Paris, written in 1170, which well describe the spirit of display and love of expense for which his countrymen were already noted. The translation is as follow:—

Of noble manners, gracious look and speech,  
Strong sense, with genius brightened, shines in each.  
Their free hand still rains largess; when they dine,  
Course follows course, in rivers flows the wine.

The erection of Colleges in the Universities for the residence of their members, as separate communities, may be dated from about the middle of the thirteenth century.

University College is the *foundation* of King Alfred; but the present building is not of a date earlier than Charles I. The right of the crown to the visitation of the college rests, however on the ground that it is a royal foundation through Alfred; a claim which was preferred in favour of the royal prerogative in the Court of King's Bench, so lately as the year 1726. The University of Oxford is not much indebted to the kings of England for their munificence and benefactions, if we except Alfred.

## XII.

## HENRY III.—SETTLEMENT OF THE ENGLISH LANGUAGE.

Henry III., surnamed of Winchester, from the place of his birth, was the eldest son of King John, and was born in 1206: he succeeded to the throne in the tenth year, his education being, in all probability, superintended by his guardian, William, Earl of Pembroke, who acted as Protector of the Kingdom.

With the thirteenth century, the English language began to be cultivated; and, about the commencement of the fourteenth century, our language had undergone the great change through the introduction of Norman words. Many French and Latin words have, indeed, been introduced in later ages, but by learning or caprice, rather than by the convenience of familiar intercourse.

An able critic in the *North British Review* thus describes this important epoch in the literature of our country:

An immense distance continued to exist between the Normans and the English people even so late as the early part of the fourteenth century. A Poitevin, who was prime minister in the time of Henry III., being asked to observe the great charter and the laws of the land, answered—"I am no *Englishman* that I should know these charters and these laws." Robert Grosse-tête, bishop of Lincoln, principal chaplain to the army of the barons, then reckoned only two languages in England, Latin for men of letters, and French for the uneducated, in which language he himself in his old age wrote pious books for the use of the laity, making no account of the English language, or of those who spoke it. The poets, even those of English birth, composed their verses in French; but there was a class of ballad-makers and romance-writers who employed either

pure Saxon, which was now revived, or a dialect mixed up of Saxon and French, which served for the habitual communication between the higher and lower classes. This was the origin of our present language, which arose out of the necessities of society. In order to be understood by the people, the Normans *Saxonised* their speech as well as they could; and on the other hand, in order to be understood by the upper classes, the people *Normansed* theirs. This intermediate idiom first became current in the cities, where the population of the two races had become more intermingled, and where the inequality of conditions was less marked than in the rural districts.

About the middle of the fourteenth century, a great many poetical and imaginative works appeared in this new language. At length, the French language was entirely laid aside, not only in the courts of justice but also in the high court of Parliament, as well as by all the writers who addressed themselves to the middle classes and the lower populations. We still indeed retain a venerable relic of the old Norman, in the custom of giving the royal assent in that language:—the formulè is—*Le Roy le veult—le Roy scatisera*,—not even, we believe, modernizing the orthography.

## XIII.

## ROGER BACON, AN EDUCATIONAL REFORMER.

At this early period, (about the middle of the thirteenth century,) there appeared a sagacious advocate of reform in education, reading, and reasoning, in Roger Bacon, who was born at Ilchester, in Somersetshire, near the year 1214. Till nearly the middle of the last century, the vulgar notion of him was that of the learned monk searching for the philosopher's stone in his laboratory, aided only by infernal spirits. He was accused of practising witchcraft, thrown into prison, and nearly starved; and, according to some, he stood a chance of being burned as a magician. He was educated at Oxford, and next proceeded to Paris, then the first university in the world. Returning to Oxford, he applied himself closely to the study of languages and experimental philosophy; but the lectures which he gave in the University were soon prohibited, and he was accused of magic, a charge then frequently brought against those who studied the sciences, and particularly chemistry. The following detached passages of his *Opus Majus* no doubt contain opinions which its author was in the habit of expressing:

Most students have no worthy exercise for their heads, and therefore languish and stupify upon bad translations, which lose them both time and money. Appearances alone rule them, and they care not what they know, but what they are thought to know by a senseless multitude:—There are four principal stumbling-blocks in the way of arriving at knowledge—authority, habit, appearances as they present themselves to the vulgar eye, and concealment of ignorance combined with ostentation of knowledge. Even if the first three could be got over by some great effort of reason, the fourth remains ready.—Men presume to teach before they have learnt, and fall into so many errors, that the idle think themselves happy in comparison—and hence, both in science and in common life, we see a thousand falsehoods for one truth.—And this being the case, we must not stick to what we heard read, but must examine most strictly the opinions of our ancestors, that we may add what is lacking, and correct what is erroneous, but with all modesty and allowance.—We must, with all our strength, prefer reason to custom, and the opinions of the wise and good to the perceptions of the vulgar; and we must not use the triple argument; that is to say, this has been laid down, this has been usual, this has been common, therefore it is to be held by. For the very opposite conclusion does much better follow than the premises. And though the whole world be possessed by these causes of error, let us freely bear opinions contrary to established usage.

The *Opus Majus* begins with a book on the necessity of advancing knowledge, and a dissertation on the use of philosophy in theology. It is followed by books on the utility of grammar and mathematics; in the latter of which the author runs through the various sciences of astronomy, chronology, geography, and music. Bacon was also long reputed to have been acquainted with gunpowder and the telescope; but the former is proved to have been known centuries before his time; and though he discovered optic lenses, he was not acquainted with the principle of the telescope.

## XIV.

## EDWARD II.—SCHOLARS IN HIS REIGN.

Edward II, the eldest surviving son of Edward I., born at Carnarvon in 1284, at the age of seven years lost his excellent mother, Eleanor of Castile, who would probably have guided his education better than his less stern father. He was of a kindly nature, of impulsive character and passionate will, though not wanting in courage; for at seventeen he led a battalion against the Scots.

Among the most distinguished names in literature and science that belong to the reign of Edward I. is Duns Scotus, a Franciscan

friar, educated in a convent of that Order at Newcastle. He became a Fellow of Merton College, Oxford, and professor of theology in the University, his great fame causing incredible numbers to attend his lectures. Although he died at the early age of forty-three, "he wrote so many books that one man is hardly able to read them." In his day he was accounted "the Subtle Doctor;" but his teaching was only in the Divinity of Schoolmen—far removed from the sound and useful learning which enables the scholar to discover the truth, and to impart the knowledge of it to others. Scotus having dared to controvert some positions of Thomas Aquinas, who was deemed the oracle of the Schools, he became the founder of a new sect in philosophy, and revived, with inexhaustible ardour, the old disputes between the *Realists* and the *Nominalists*. The Greeks and Persians, it has been observed, never fought against each other with more fury and rancour than these two discordant sects. Oxford was a grand theatre of their contests. Though much poetry now began to be written, the name of only one English poet has descended to posterity: Adam Davy or Davie, the author of various poems of a religious cast, which have never been printed. There is still extant a curious Latin poem on the battle of Bannockburn, written in rhyming hexameters, by Robert Baston, a Carmelite friar, whom Edward carried along with him to celebrate his anticipated victory; but who being taken prisoner, was compelled by the Scotch to sing the defeat of his countrymen in this jingling effusion. Bale speaks of this Baston as a writer of tragedies and comedies, some English: but none of them are now known to exist.

## XV.

## EDWARD III.—HIS ACCOMPLISHMENTS.

Edward III., the eldest son of Edward II., was born at Windsor in 1312. Joshua Barnes, in his life of this renowned king, a closely-printed folio volume of 900 pages, gives the following 'small taste' of his character.

Edward was proclaimed king when in his fifteenth year, and in a few months marched at the head of a large army against the Scotch; so that his boyhood presented few opportunities for his intellectual culture; but the glories of his reign of fifty years gave "a more vigorous activity to the faculties of England." This was the golden age of chivalry, of architecture, and of costume; and in literature the age of Chaucer—his tales being read alike in the baronial hall and the student's chamber. The universities were filled with scholars. From the Anglo-Norman had finally been evolved that noble tongue upon which our literature has been built, though many books perfectly intelligible to us were written before his reign. In 1307, Sir John Mandeville wrote a narrative of his Travels in English, as well as in French and Latin; and Wickliffe, the great Reformer, delivered his earliest appeals to the people on questions of religion in English.

(To be continued.)

## LITERATURE.

## POETRY.

## THE PRAYER FOR ALL.

(From the French of Victor Hugo.)

To prayer, my child! and O, be thy first prayer  
For her who many nights with anxious care,  
Rock'd thy first cradle; who took thy infant soul  
From heaven, and gave it to the world; then rife  
With love, still drank herself the gall of life,  
And left for thy young lips the honied bowl.

And then—I need it more—then pray for me:  
For she is gentle, artless, true like thee;—  
She has a guileless heart, brow placid, still:  
Pity she has for all, envy for none;  
Gentle and wise, she patiently lives on,  
And ill endures, nor knows who docs the ill.

She knows not,—nor mayst thou,—the miseries  
In which our spirits mingle: vanities,  
Remorse, soul gnawing cares, pleasure's false show;  
Passions which float upon the heart like foam,  
Bitter remembrances which o'er us come,  
And shame's red spot spread sudden o'er the brow.



I know life better—when thou'rt older grown  
 I'll tell thee; it is needful to be known—  
 Of the pursuit of wealth—art—power—the cost—  
 That 't is folly—nothingness—that shame  
 For glory is oft thrown us in the game  
 Of Fortune's chances where the soul is lost.

The soul will change, although of everything  
 The cause and end be clear, yet wildering  
 We go through life (of vice and error full).  
 We wander as we go:—we feel the load  
 Of doubt, and to the briars upon the road  
 Man leaves his virtue as a sheep its wool.

Then go pray for me!—and as the prayer  
 Gushes in words, be this the form they bear:  
 "Lord! Lord our Father! God, my prayer attend  
 Pardon!—Thou art good—Pardon, Thou art great!"  
 —Let words go freely forth, fear not their fate,  
 Where thy soul sends them, thitherward they tend.

Pray for thy father! that his dreams be bright,  
 With visitings of angels forms of light,  
 And his soul burn as incense flaming wide—  
 Let thy pure breath all his dark sins efface,  
 So that his heart be like that holy place,  
 An altar's pavement, each one purified.

### Notoriety not Fame.

The sound of the trumpet of Fame is very sweet and pleasing to our ears. The young aspirant, who fancies that he hears it calling to him, rushes "on the field of glory" to trials and hazardous conflicts, perhaps to death. We all naturally love earthly distinction, and would love to have our names remembered upon the earth when we shall have passed away. But in only a few does this desire become the master passion. In most men, avarice, the love of ease or of power, or devotion to the truth and the good of others, partially or wholly check these aspirations. Often this desire, becoming the ruling principle, leads to most foolish and wicked actions. One man, whose name history still keeps—as flies and bits of wood are preserved in amber—is said to have fired the great Temple of Diana, at Ephesus, in order that his name might be handed down to posterity. He has had the desire of his heart. Let him keep the coveted notoriety; it only trumpets the more widely his folly. Though not all are willing to seek a notoriety by such means, yet none of us are pleased with the thoughts of utter oblivion. And we always take a deep interest in the history of those who, by their own exertions, have gained for themselves a worthy immortality. But a few attain this. The ravages of time are terrible. The great majority of men live and die unknown. They have eaten, and drunken, and slept, lived, loved, and died, but whether well or ill no man knoweth. The example of their virtues, or the warning of their follies, can never instruct or benefit the world. Such is the "common lot." The history of the mighty armies of the world is a most instructive comment upon this truth. Once, as history tell us, a Persian King invaded Greece, with all the pomp and pride of royalty. More than two millions of men, with their wives and children, attended his progress. The names of the King and of a few of his generals may yet be read in the histories of that great invasion. But that great mass of human beings, in whose breasts fiercely surged pride, exultation, and finally despair, their names, their hopes, their fears, are all covered by oblivion. Thus it has ever been. What the great mass of men have done and thought has never gained the ear of the world amid its turmoil and confusion. In life, a few friends and neighbors know them; at death, a few years suffice to blot their names from all save the head of the tombstone.

He, then, has been favored above the common lot to whom the world awards a lasting remembrance. His life and his principles must have been, in some respects, different from, and superior to those of the great mass of men, else none will care to keep him long in memory. Hence, the lives of such men are worthy of study, that others, catching their spirit, may emulate their high resolves and noble aspirations. For though their greatness belongs to themselves alone, yet the fountains whence they drank are open to all.

Earth's roll of fame is filled with a long array of noble names; often, too, of those little known in their own generations. How often in the history of such as these do we find the ardent devotee of science or art bending himself to his tasks all night, even till the day dawned, bringing to light new truths in the realm of science, or

new beauties in that of art, until at length the o'ertasked body failed, and he found an early grave—life was taken, but immortality granted. In this catalogue are found the names of authors who, like Milton, and Bunyan, and Dante, in poverty and disgrace, have given utterance to noble thoughts in words that are immortal. Here are martyrs who have gone to the scaffold or the stake clothed by enemies in the garb of shame; but for whose glorious principles and sublime resignation posterity, reversing their former fate, has awarded to them praises and the unfading crown of victory. We find here the names of men eminent in every calling in life; for genius and true fame can claim their favorites from the humblest as well as from the highest vocation. These names the world loves to revere. Generations, past, present, and to come, study their history and do homage to their memory.

Still other names than these have come down to us, having escaped the ravages of time, not crowned with glory, but stamped with an undying infamy. In the histories of some of these we read the records of wasted lives, of souls that singing might have soared like angels, but their own folly has shorn them of their strength and debased them to a level with the brute. On such as these we learn to look "more in sorrow than in anger."

"We would not rail on him. We chiefly mourn  
 That he did foully wrong his own dear soul."

There are others who in their high and daring crimes, done against God and our humanity, have rendered detestable, and inscribed their names eternally upon the black roll of infamy. Among these we find the names of base traitors like Judas and Arnold; of fierce murderers like Cain and Herod; and of beastly tyrants like Nero and Caligula. The records of lives like these we read as warnings, noticing the gradual departures from the way of truth and virtue, and how finally a perverse will has become an evil destiny, bringing with it, often, terrible foreshadowings of retribution.

But with far different feelings do we read the history of those who have gained themselves a worthy fame. We shall follow every step in their pathway with deep interest and reverend love, so long as we value the influence of noble example, and so long as "by patient continuance in well doing" we would seek in the way of virtue for "glory, and honor, and immortality." It is not all a thing of chance or lot, that while one passes away and is forgotten, another secures a place in the world's memory. Nor even in mental endowment, nor in acquired knowledge, as we apprehend, does the great difference chiefly lie, but more in the spirit and temper of mind. "The spirit in which we act is the highest matter," and those whom we love to remember have gained their renown by linking their names with immortal principles or worthy human interests. The spirit of lofty endeavor has been theirs, and a consciousness of that power within, which vaunts not itself in foolish pride, but goes right on to the accomplishment of its great designs. But power like this may be the instrument of evil as well as of good. That it may be made a blessing and not a curse to the world, it must receive at the outset guidance in the right direction. A step here made in the wrong direction may utterly pervert, weaken, and finally destroy a strength almost divine. It is here that a parent's influence is most plainly visible. Examples of this truth are to be found throughout the whole of the world's history. Nearly every man who has greatly blessed or cursed the world has owed his early moral, often intellectual bias, to a father's, or, oftener, to a mother's hand. Many of the noble names that genius and true fame will ever call their own are of those who have been born in the humbler walks of life, and amid the hardships incident to poverty. Under these circumstances their power has first displayed itself. By the might of a strong will and a noble purpose they have worked their way up, step by step, rising superior to all hindrances, and set their names in the long array of the noble and the good who have been the benefactors of our race. In almost every age we have examples of the power of these self-made men. Their power lies in a strong will, a fixed purpose, and a mind thoroughly alive to the solemn reality of life and the stern duties which it imposes. They ever think, and write, and act with a definite and real purpose. One of the noblest examples of this will recur to the mind on mentioning the name of Hugh Miller. By industry and perseverance, led on by the consciousness of that inner power, the poor boy of Cromarty gained for himself his place in the front ranks among the men of science in his time.

To the men possessed of his true inner power, the most precious gift is a spirit to which truth and moral beauty are of more value than all riches or all renown. In this spirit lies their strength. The consciousness of it strengthens them for all times of trial. By it they become the masters, not the slaves of circumstances, and the most untoward events are made subservient to their will.

Hindrances become but incentives to effort, and preludes to victory. And the more serious evils, banishment, imprisonment, sometimes a shameful death, are met with resignation, often with songs of triumph, such as were sung by Paul and Silas in the gloomy dungeon. Such was the spirit of the apostles, when they went forth to proclaim the truths of the Gospel; such that of the early martyrs, who, that they might buy the truth and sell it not, gave even their lives at the stake; such that of Milton, who amid poverty and disgrace, lame and blind, still kept his love of liberty and God, like his own Abdiel.

—“ Faithful found

Among the faithless, faithful only he  
Among innumerable false, unmov'd,  
Unshaken, unsecluded, unterrified,  
His loyalty he kept, his love, his zeal,  
Nor number, nor example, with him wrought  
To swerve from truth, or change his constant mind,  
Though single.”

And such has ever been the spirit of those who have done most by word and deed to benefit the world. Thus their history, full of trials and sufferings, and of ultimate triumph after long endurance, become a precious dowry to all striving, suffering souls. Here they may learn how to bear the ills of life, by learning how great souls who have gone before, have lived and suffered, being often, like our Great Exemplar, made “perfect through sufferings.”

This adherence to principle, then, and not a mere blind desire for fame, has been the guiding motive of those by whom that fame has been most fully earned and obtained. For it is not by self-seeking but by self-denial and sacrifices that anything really great and valuable is obtained. “The truly great rest in the knowledge of their own deserts,” and are not curious to know what the world may be thinking of them. They gain their motives for action from within, not from without, and hence their onward course is as different as possible from that of those who are ever shifting and turning to catch the gale of popular applause. Not so variable is their guiding-star. Only the demagogue and the slave follow such an *ignis fatuus*. And while to the latter it must be said, “unstable as water, thou shalt not excel,” the consistent course of the former has in itself the promise of its own immortality. For to him whose view is ever kept unclouded by the fogs and damps that lie close about the earth, air afforded far reaches into truth in all her manifold relations, with something of the prophetic eye, and “the vision and the faculty divine.” It will matter little to them if wordly fame come soon or late, or even if it come not at all. Life is to them complete, even though their noble deeds may have been marked only by the eye of God. It cannot be in vain. Though it may be full of trials and sufferings, yet these trials may be so borne that they shall prove full of richest blessing to the soul.

Nothing, as we may rest assured, in the realm of mind, or in that of matter, has been formed without a purpose, by a God of Infinite Wisdom. Not a blade of grass grows, not a flower blooms, but has its part to fill in a system of Providence that reaches to the stars. So in the world of mind, “none of us liveth to himself, and no man dieth to himself.” Such, as the natural world would be, did it stretch out in one unbroken plain, without hill or mountain upon its surface, would be the world of mind if no men great in thought or mighty in action had ever lived among us. In strong contrast with the many who surround them, they help to make up that variety which Nature, in all her works, is ever seeking. Upon these mountains the passing vapors become clouds which fall in blessing upon the plains below. And rills which spring from their summits, or along their sides, flow on, increasing as they go, watering the lands through which they run, blessing thus whole nations, until at length a river, broad and deep, it pours its streams into a far-off ocean. Such offices have the great and good of earth to perform in the realm of mind. The noble thoughts which they have thought, the influences which they have set in motion, finding their first effect upon those nearest them, descend slowly, till they reach and move masses of men; a word becomes a source of inspiration, a sentence or two a fountain of life and power to nations. A few men of this sort have been the sources of an influence that shall be felt while the earth stands. Take for an example among many, that trio of Greek philosophers, Socrates, Plato, and Aristotle. Who can estimate the amount of influence which by their deep far-reaching studies in life and thought, they exerted upon the men of their own times. And their influence has been cumulative ever since. By the might of genius, what has existed before but as a dim abstraction, become thenceforth a tangible reality; isolated phenomena take their places in the ranks of a new science, and discoveries are made, as necessary and as cheering as rain upon the thirsty ground.

Not only are their deeds and thoughts in themselves beneficial, but the example of the great is most worthy of study and imitation. Being dead they yet speak, and call to us from heights “serene and far” to follow in the path of true virtue, if not in that of glory. They are the models, as it were, which he who is forming to himself a noble character, should study with the greatest care, comparing, as is done by the sculptor, one with another, and selecting the most perfect features from every one for his study and imitation. The fame, then, that gives their names to us is more a boon to us than to them. To them it is not a necessity; to us their example is above all price.

But let us beware lest we mistake present reputation and a certain degree of notoriety for a lasting and stainless fame. The men of lofty genius are few in number. But there are in every age men of some energy, with a quick and versatile talent, who glitter and sparkle before us for a time, and then pass away and are forgotten. Our eyes are caught by the dazzle and the glitter, and in following these lesser lights we entirely forget that there are those whose names shine as the stars from age to age, suffering neither decay nor diminution. It is well that even the humblest of those who walk in the ways of science and of truth should receive his due meed of praise; it is well that in literature and life we catch fully the spirit of the age in which we live; but if we value our own highest improvement, let not this hinder us from deep and frequent study of the lives and works of those whose names are inscribed in fair characters upon the loftiest pinnacles of Fame’s Temple.

The view of fame here presented, it is well known, is not the view taken by many. Multitudes confound notoriety with fame, and suppose that all the names which they find upon the page of history are of those who have attained a lasting fame. To such, fame is a mere phantom, only a shadow. But if the views here presented be true, then a true fame is not a phantom, but is this world’s reward of character, built in fair proportions upon a broad and deep foundation of eternal principles. I have found somewhere in my newspaper readings a few lines on Fame, translated, it is said, from the German of Schiller, so beautiful and truthful, and withal so apposite, that I cannot refrain from quoting, in conclusion, two of the stanzas.

“What shall I do, lest life in silence pass?  
And if I do,  
And never prompt the bray of noisy brass,  
What need’st thou rue?  
Remember, aye, the ocean’s depths are mute,  
The shells allow no roar;  
Worth is the ocean—fame is but the bruit  
Along the shore.

What shall I do to be forever known?  
Thy duty ever;  
This did full many, who yet slept unknown—  
Oh! never, never!  
Think’st thou, perchance, that they remain unknown,  
Whom thou know’st not?  
By angel trumps in heaven their praise is blown—  
Divine their lot.”

—Emerson’s Magazine.

## SCIENCE.

### Notes On the Natural History of Canada.

#### Description of two species of Canadian Butterflies.

##### I. CYNTHIA CARDUI (the painted lady.)

*The Imago.*—The colours of the upper side are brown, tawny-orange, black and white distributed as follows:—The fore wing at the base or next the body is brown; a large space of the tip black, with five white spots. Of these latter, the one nearest the body is the largest; it is of an irregular oblong shape, one end touching the front margin of the wing. The other four white spots are near the tip of the wing, and arranged in a short curved row. The outer margin of the wing is also marked with several whitish or yellowish semi-circular spots. Situated on the edge, and parallel with these at the distance of about half a line from the border, is a second row of obscure yellow spots. The greater part of the central portion of the fore-wing is tawny-orange, with some irregular black patches, connected with each other by slender

points of the same colour. The hind wing is principally tawny-orange or reddish, with three rows of black spots in the posterior half. The first row consists of five round spots, the two largest sometimes touching each other; the next, of seven or eight small irregular diamond-shaped spots; while those of the third or marginal row are somewhat larger, and of a triangular shape, projecting out to the edge of the wing. About the center of the wing there is a large irregular spot of black curving across it. The base and front margins are black. The posterior edge is delicately bordered with crescents of yellow. The upper side of the body and the base of the wings are covered with fine long brown hairs.

On the underside the fore-wings are marked nearly the same as on the upperside, but the dark colours are not so strong. The undersides of the hind wings are beautifully dappled with olive-brown, white and grey, the veins being white. Near the posterior margin is a row of five beautiful eye-shaped spots, the two in the center being the smallest. Behind these is a slender chain of elongated light-blue spots, each with a narrow black border, and nearer the edge are two other faint parallel black lines, the outer one consisting of a series of short curves. The underside of the body and legs are yellowish-white, the clubs of the antennae tipped with the same colour.

*The Larva.*—The caterpillar is dark-brown, or nearly black, with greyish scattered hairs, and several rows of tufted spines. There are two very narrow bands of yellow along the back, divided by a line of black. On the lower part of each side there is also a stripe of a yellow colour, but not so conspicuous as those upon the back, on account of its position being nearly on the underside of the body. On each of the 2d, 3d, and 4th segments of the body there are four spines; 5th, 6th, 7th, 8th, 9th, 10th, 11th, seven spines; 12th, four spines; 13th, two spines. All the specimens I have observed are more or less speckled with minute spots of yellow, and sometimes these are so numerous, that the caterpillar has a yellowish instead of a brown or blackish colour.

*The Chrysalis* is about three-fourths of an inch in length, and of a light or dark-grey or ash colour, with three rows of golden tubercles on the dorsal side. There are nine of these in each of the outer rows, and six in the central. The latter are very small. Two of those of the outer rows, one large and a very small one beside it, are situated in the constriction of the back. On the sides of the head are two or three small projections.



CHRYSA LIS OF *C. CARDUI*. Fig. 1, View of the Dorsal side. 2, Ventral side. 3, Left side. 4, Right side.

*Cynthia cardui* was very abundant in the city of Montreal and around the base of the mountain, during September and the beginning of the present month of October. In the small common below the McTavish house, fifty or sixty of these beautiful insects could be counted at once, regaling themselves on the flower of the thistles growing in that locality. In one small yard, in the city, about twenty of the chrysalides were observed attached to the fences and projections of the roof of the shed. There were a few thistles growing in the yard, and these were much frequented by the caterpillars. The larva, chrysalis, and imago could be all well observed at the same time. A caterpillar was taken into the house on the

19th of September, and put in a box covered with a piece of gauze, and placed upright, so as to afford it a chance of suspending itself. It immediately crawled to the top of the box, and, in about half an hour more, commenced to spin a quantity of fine white silk from its mouth. The next morning it was found suspended in the usual position, with the head downwards. It remained in this position two days, apparently becoming smaller and shrivelling up. During the third night it was transformed into a chrysalis, in which condition it remained until the 13th of October, when the butterfly was produced.

Another, which suspended itself to a window-ash, on the 13th of September, has entered into the chrysalis state sometimes between that date and the 16th. On the 11th of October the butterfly appeared. A chrysalis was taken from the fence, on the 17th of September, and brought into the house produced a butterfly on the 2nd of Oct., the time observed being 17 days. How long it had been in the chrysalis state, previously, is not known. At this time of the year, therefore, this species remains in the chrysalis state from three weeks to one month.

This butterfly is one of the most interesting of all the Lepidoptera, on account of its very extensive geographical range, it being common in North America, New South Wales, Java, Africa, Brazil, and Great Britain. Its appearance appears to be somewhat irregular. Thus Westwood states:—"This is one of those species of butterflies remarkable for the irregularity of its appearance; in some years occurring plentifully, even in the neighborhood of London, after which it will disappear for several years. Indeed, instances are on record in which, owing to the vast numbers, migration has become necessary; and in the "Annales des Sciences Naturelles," for 1828, an account is given of an extraordinary swarm which was observed in the preceding May, in one of the cantons of Switzerland, the number of which was so prodigious, that they occupied several hours in passing over the place where they were observed. The precise causes for this phenomenon were not investigated, and the time of the year is remarkable."

In a paper, by Prof. J. P. Kirtland, of Ohio, on the Butterflies of that State, this species is noticed as having been introduced into North America from some foreign country. The author states that in some seasons it becomes extremely numerous, while in others the collector of insects will hardly discover a solitary individual. All the thistle family are eaten by the larva. Even the forbidding Canada thistle I have found in Wisconsin to be stripped of leaves by the larva."

Boisduval and Leconte, who describe it as a species of *Vanessa*, say that it is not so common in America as in Europe. "Cette Vanessa très commune dans toute l'Europe, l'Afrique et les Indes Orientales, est beaucoup plus rare en Amérique, quoique du reste elle se trouve dans presque toute l'étendue de ce continent."

Mr. Emmons has described it in the Natural History of New York, but gives no particulars as to its distribution in that State whether abundant or otherwise. He has also figured a caterpillar which does not at all resemble those we have observed at Montreal.

#### CYNTHIA HUNTERA (Fabricius).

At the same time that *C. cardui* was seen in such abundance below the McTavish house, *C. hunteri* was observed in still greater numbers further up the mountain, and west of the monument. Several specimens were also met with on the top of the mountain. Although a diligent search was made, none of the larvæ or chrysalides were found. It was, however, most interesting to find these two beautiful species of insects on the same day so numerous in two localities which are only three or four hundred yards apart. This is also an English species, and as Westwood's description agrees exactly with our specimens we shall give it entire. He says "it measures 2½ inches in the expanse of the wings, which are of a less tawny-orange colour than those of *C. cardui*; brown at the base, the orange disk much broken in the fore-wings by blackish irregular bars, the apex blackish with a long white costal spot and four dots near the apex, white, between which and the margin is a pale broken rivulet. Beyond the middle of the hind-wings is a slender interrupted brown bar, succeeded by four indistinct eyelets, a black submarginal bar, and two very slender submarginal dark lines. But the great beauty of the insect consists in the underside of the wings, the anterior being elegantly varied with white, brown and black, with two eyes near the apex. The disk of the hind-wings is white, with the veins and many lines and bars of brown; these form a double scallop beyond the middle of the wing, succeeded by a white bar of the same form; the terminal part of the wing being brown and ornamented by two very large eyes,

margined with black; between these and the margin is a bar, and two dark thin marginal lines."

These two species much resemble each other; but can be distinguished without difficulty by the marking of the underside of the hind-wings. *C. cardui* has five ocelli or eye-like spots beneath; while *C. huntera* has only two, but much larger.

As before stated, we have not seen the caterpillar, and the several authors describe it differently. Drury says it is green, with black rings round the body. According to Boisduval and Lecote it is blackish-grey, striped with yellow; while Abbot says it is brown with a yellow lateral line.

It occurs in most of the Southern and Western States, and is said to appear once in five or six years in great abundance, while at other times it is scarce.

As yet we have no published observations upon the natural history of the above two species of insects in any Canadian work. The foreign authors do not give many reliable details. In fact, with regard to all our Lepidoptera it may be stated that not one species is perfectly known. We need not be surprised at this, because even in England, where there are perhaps more enthusiastic collectors and more good observers than in any other part of the world of the same extent, the natural history of the sixty-five species of butterflies found in the country is not complete. Upon this subject Mr. Stanton, editor of the *Entomologist's Annual*, makes the following remarks:—

"A recent writer in the 'New Quarterly Review' has remarked:—'The metamorphoses of the British butterflies, of which there are only about sixty-five, are proportionably less known than those of the small moths! The books which describe our butterflies, it is true,' also give descriptions of their caterpillars and their food; but these cannot be depended upon; they are only copied from other books, and may be traced back from author to author, until they turn out to be the original descriptions of some old French, Dutch, or German entomologist, who looked at objects with a very different eye to that which we use. As such, they remind us rather of the astonishment expressed by Mr. John Robinson's friend on finding he was really alive:—

'Somebody told me that some one said  
That some other person had somewhere read,  
In some newspaper you were somehow dead!'

Our readers are therefore recommended to catechize themselves, by seeing how many of the following questions they can answer, with reference to those butterflies with which they may consider themselves best acquainted:—

1. Where is the egg laid?
2. How soon is it hatched?
3. How long does the larva live before changing its skin?
4. What change takes place in the form and markings of the larva when it changes its skin?
5. Is the larva gregarious or solitary?
6. Is it active or sluggish?
7. Does it feed by night or by day?
8. What is its principal food-plant?
9. On what other plants is it sometimes found?
10. At what period is the larva full fed?
11. What change takes place in the appearance of the larva when full fed?
12. Where does it change to pupa?
13. How is the pupa suspended or attached?
14. What is the form of the pupa?
15. How long does it remain in that state?
16. What are the motions of the perfect insect?
17. To what flowers is it most partial?
18. Does it hibernate or not?

When these questions can be answered with reference to each species of our butterflies, we may then admit that their natural history is known; and it would then become practicable to write a good monograph of the group.—*Canadian Naturalist*.

#### Dr. Smallwood's Observatory at St. Martin, near Montreal.

The following sketch of the general appearances of the building and instruments, from the pen of Dr. Hall, of Montreal, furnishes a very suitable introduction to Dr. Smallwood's account of the Observatory established by him at St. Martin, Isle Jésus.

A small wooden building, distant about twenty yards from the dwelling house of Dr. Smallwood, contains the whole of the appa-

ratus which has for many years furnished such valuable results. A short distance from it, and on a level with the ground, is the snow gauge. Immediately in front of the entrance to the small building is a dial, with an index to point out the course of the clouds. Contiguous to the building again may be seen four erect staffs. The highest of which—80 feet—is intended for the elevation of a lighted lantern, to collect the electricity of the atmosphere, the copper wires from which lead through openings in the roof of the building to a table inside, on which a four-armed insulated conductor is placed. The lantern is made to ascend and descend on a species of railway, in order to obviate all jarring. On another pole is placed the wind-vane, which, by a series of wheels moved by a spindle, rotates a dial inside the building marked with the usual points of the compass. Another staff, about 30 feet high, contains the anemometer, or measurer of the force of the wind, which, by a like arrangement of apparatus, is made to register its changes inside. The last pole, 20 feet in height, contains the rain gauge, the contents of which are conducted by tubing, also into the interior of the building, in which, by a very ingenious contrivance, the commencement and ending of a fall of rain are self-marked.

At the door entrance on the right side is a screened place, exposed to the north, on which the thermometer and wet bulb thermometer are placed, four feet from the surface of the earth. A similar apartment on the left contains the scales with which experiments are conducted throughout the Winter to ascertain the proportional evaporation of ice.

On entering the door, in the centre of the apartment, is a transit instrument *in situ*, for the convenience of using which openings are made in the roof, usually kept closed by traps. This apparatus is not the most perfect of its kind, but is amply adequate for all its uses. On the left is a clock, the works of which, by means of a wheel, are made (while itself keeps proper time,) to move slips of paper along little railways, on which the anemometer by dots registers the velocity of the wind; the rain gauge, the commencement and end of showers; and the wind vane, the continually shifting currents of the wind. This is effected by a pencil, kept applied by a spring to a piece of paper on the dial previously alluded to, and as, by the clock-work, the dial and the two previously mentioned slips of paper move at the rate of one inch per hour, so it is easy to determine, in the most accurate manner, the direction and force of the wind at any hour of the day, or any period of the hour. With the exception of the clock, the whole of this miniature railway-work, with all its apparatus, wheels, &c., &c., is the work of Dr. Smallwood's own hands, and exhibits, on his part, a mechanical talent of the highest order.

At the extreme end of the room is a table, beneath which is an arrangement for a heating apparatus, and on which is the four arm conductor previously alluded to. To the two lateral and front arms hang, respectively, two of Volta's electrometers, and one of Benetti's, while beneath the knob on the anterior, there is a discharging apparatus, with an index playing over a graduated scale, to measure, during thunder storms, the force of the electric fluid, by the length of its spark. On this subject we cannot avoid a reflection on the fate of the unfortunate Richman. In this case such precautions are adopted as will obviate any casualties whatever; great precaution, however, is required in these experiments, and Dr. Smallwood, fully aware of it, has the whole placed in connection with the earth by means of a brass chain and iron rod. As another proof of Dr. Smallwood's ingenuity and mechanical skill, we may notice that the whole of this apparatus, even to the electrometers, is the result of his own handicraft; and the whole arrangements in the little room are a signal proof how much a man may do unaided, and how well he can effect an object when thrown entirely upon his own resources.

On the right wall of the apartment are suspended the barometers, of which there are three. 1. A standard of Newman's; 2. Another of Negretti's, but of different construction, and 3. One of Dr. Smallwood's own construction. The means of the three observations is the measure adopted for the observation.

The only other instrument deserving of notice is the one to determine the terrestrial radiation; and this also has been made by Dr. Smallwood. It consists of a mirror of speculum metal, (composed of copper, zinc, and tin,) of six inches in diameter, and wrought into the form of a parabolic surface, in the focus of which, at the distance of eight feet, a self-registering spirit thermometer is placed. The construction of this was a labor requiring great nicety in execution, and involving the sacrifice of much time; but perseverance even here conquered the difficulties, and we witnessed a mirror whose reflecting power would not have disgraced Lord Ross' telescope. In fact, placed in a telescope, it has, we are in-

formed, proved itself capable of resolving these singular stellar curiosities—the double stars.

Dr. Smallwood certainly deserves great credit for his perseverance of a favorite study, under the most unpromising circumstances; but in nothing is he so remarkable as in that peculiar ingenuity which has led him to overcome difficulties in the prosecution of scientific inquiry, which, to most minds, would have been utterly discouraging.

The Natural History Society of Montreal have petitioned the legislature for a grant of money to enable them to publish Dr. Smallwood's tables of observations for the last twelve years. This is a measure, on which no difference of opinion can be anticipated, and must meet with the support of every man who has the welfare of science in Canada at heart.

#### DESCRIPTION OF THE OBSERVATORY BY DR. SMALLWOOD.

The observatory is placed in the magnetic meridian, is constructed of wood, and has an opening in the roof, furnished with sliding shutters for taking observations by means of the Transit Instrument, of the passage of a Star across the meridian for the purpose of obtaining correct time.

It is also connected by the Montreal telegraph with the principal places in the United States; the wires being laid into the Observatory. It has also a seven-inch achromatic telescope, 11 feet focus. The object glass, by Fraunhofer, of Munich, is mounted equatorially and possesses right ascension and declination circles; and observations are taken on the heavenly bodies as often as there are favourable nights.

Observations for the purpose of Meteorology, are taken by the usual instruments, at 6 and 7 a.m., 2, 9 and 10 p.m. daily, besides extra hours, on any unusual occurrence. Constant tri-daily observations are also taken on the amount and kind of atmospheric electricity, also on the amount of Ozone, and likewise particular attention is directed to the phenomena of thunder storms—all of which observations are regularly recorded. Besides these daily observations, record is kept of the temperature of springs and rivers, and the opening and the closing thereof, by ice; also on the foliage and flowering of plants and trees, and the periodic appearance of animals, birds, fishes and insects, besides the usual observations on auroras, haloes, meteors, zodiacal light, and any remarkable atmospheric disturbances.

Many of the instruments are self-registering and, to some, the photographic process may be applied, being constructed for that purpose.

The Observatory is furnished with four barometers. 1. A Newmann standard, 0.60 of an inch bore; the brass scale extends from the cistern to the top of the tube, and is adapted for registration by the photographic process. 2. A Negretti and Zambra's tube, 0.30 of an inch bore; another of a small bore, and also an Aneroid. The cisterns are all placed at the same height (118 feet.) above the level of the sea and are read at each observation.

Thermometers of Sixes, Rutherford, Negretti, &c., the readings

of which are corrected, with the standard instruments of the new observatory, and most of the scales are engraved on the stem of the tubes. Care is taken to verify them twice a year, they are placed four feet from the ground, and have occupied the same position for some years, being placed free from radiation, and carefully shaded from the sun and rain.

The *Psychrometer*, consists of the dry and wet bulb thermometer; the scales of which are coincident, and have been carefully read together. There is also a Saussure's hygrometer. In Winter the wet muslin is supplanted by a thin covering of ice which require frequent renewal.

For solar radiation a maximum Rutherford's thermometer is used, with the bulb kept blackened with Indian ink; the tube is shaded by a piece of glass blackened also with Indian ink, which prevents the index from adhering to either the tube or the mercury, as is often the case when not shaded.

*Terrestrial radiation* is indicated by a spirit thermometer of Rutherford, which is placed in the focus of a parabolic mirror, 6 inches in diameter and of 100 inches focus.

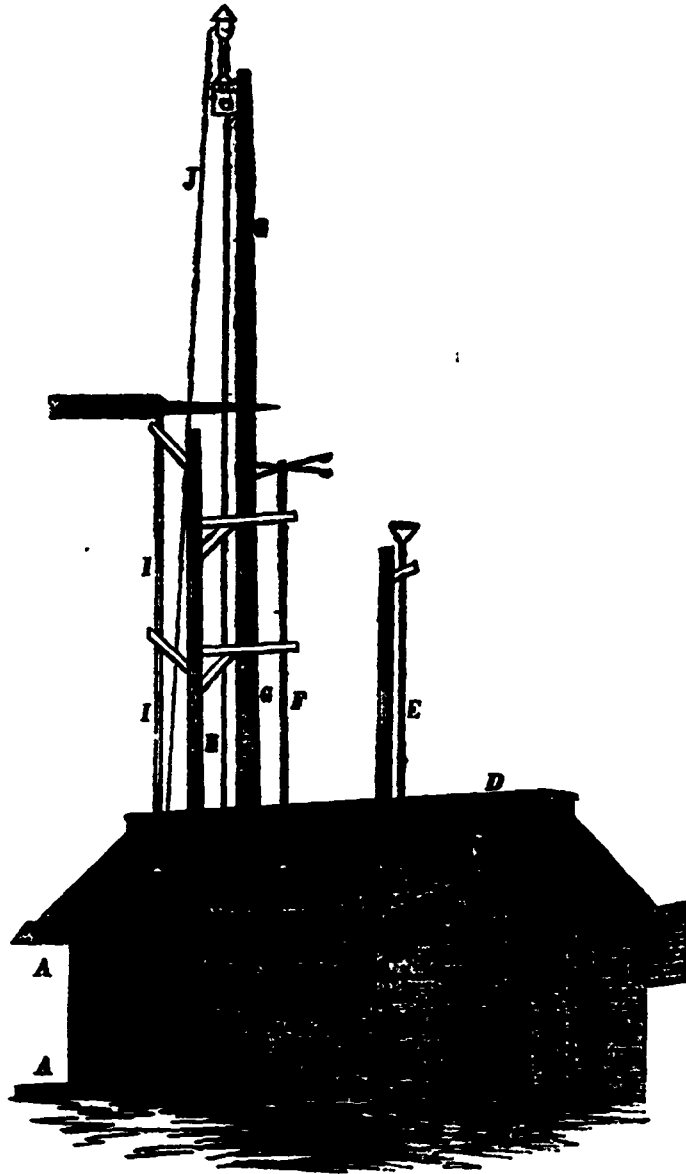
*Dryometer* or dew measurer.—One is of copper, like a funnel, the inside of which has been exposed to the flame of a lamp and has been coated with lamp black; the other is a shallow tin dish painted black and ten inches in diameter.

*Rain-gauge*.—The reservoir is thirteen inches in diameter, and is placed 20 feet above the soil. It is self-registering, and is attached to the anemometer and shows the beginning and ending of the rain and the amount of precipitation, in inches, on the surface.

The *Snow-gauge* presents 200 square inches of surface, and is placed in an open space. The surface of the snow requires to be lightly levelled, before taking the depth, which is recorded in inches. A tin tube, 3 inches in diameter and 10 inches long, is used for obtaining snow for the purpose of reducing the amount to the relative amount of water. The tin tube fits in another vessel of tin of the same diameter, and the snow is easily reduced and measured.

The *Evaporator* exposes a surface of 100 inches, and is carefully shaded from sun and rain. It is made of zinc and a glass scale, graduated in inches and 10ths, is well secured in front of it, a strip of the metal being removed, the glass scale supplies its place, so that the amount evaporated can be easily read off. Its place is supplied in water by a pair of scales, upon one of which is placed a disc of ice, and the amount of evaporation from the surface is estimated by being very accurately weighed.

The *Ozonometers* are Schonbein's and Mollat's. The solution consists of one drachm of starch, boiled in one ounce of distilled water, to which is added, when cold, 10 grains of the Iodide of Potassium—this is spread on sized paper, which is found to answer better than bibulous or unsized paper, for the solution is more equally distributed over the surface, whereas on bibulous paper it is very difficult to spread the solution equally. It is cut into slips



of about 3 inches long and 5 inches wide—having been previously dried in the dark it is also requisite, to keep it dry and free from light. When required, one of these slips is placed 5 feet from the ground and shaded from the sun and rain,—another of these slips, of ozone paper, is elevated and exposed at an altitude of 80 feet, for the purpose of comparison. It is also well to place slips of this prepared paper in the vicinity of any vegetables, which may be affected with disease; for instance, during the prevalence of the potatoe rot.

A *Microscope* and apparatus for the examination of snow crystals and also obtaining copies by the chromotype process, is also provided.

**The Electrical Apparatus.**—This consists of three parts: a hoisting, a collecting and a receiving apparatus.

The hoisting apparatus consists of a pole or mast 80 feet. It is in two pieces, but is spliced and bound with iron hoops, and squared or dressed on one face for about six inches. It is dressed in a straight line to receive cross pieces of a two-inch plank, 8 inches wide and 12 inches long, which are firmly nailed to the mast or pole about three feet apart; this serves as a ladder to climb the pole in case of necessity. Each of these cross pieces is rebated to receive pieces of inch board 4 inches wide, and placed edgewise in the rebate, extending from the top to the bottom of the pole, and forms a sort of vertical railway: these pieces are also grooved or rebated to receive a slide, which runs in these grooves and carries the receiving apparatus. From the top of the sliding piece passes a rope over a pulley fixed at the top of the mast, and from it to a roller and windlass, by which means the collecting lantern is raised or lowered for trimming the lamps. It has also been used for the purpose of placing the ozonometer at that height (80 feet). The lower part of the mast or pole is fixed into a cross piece of heavy timber, and is supported by four stays. These cross timbers are loaded with stones, and are thus rendered sufficiently firm.

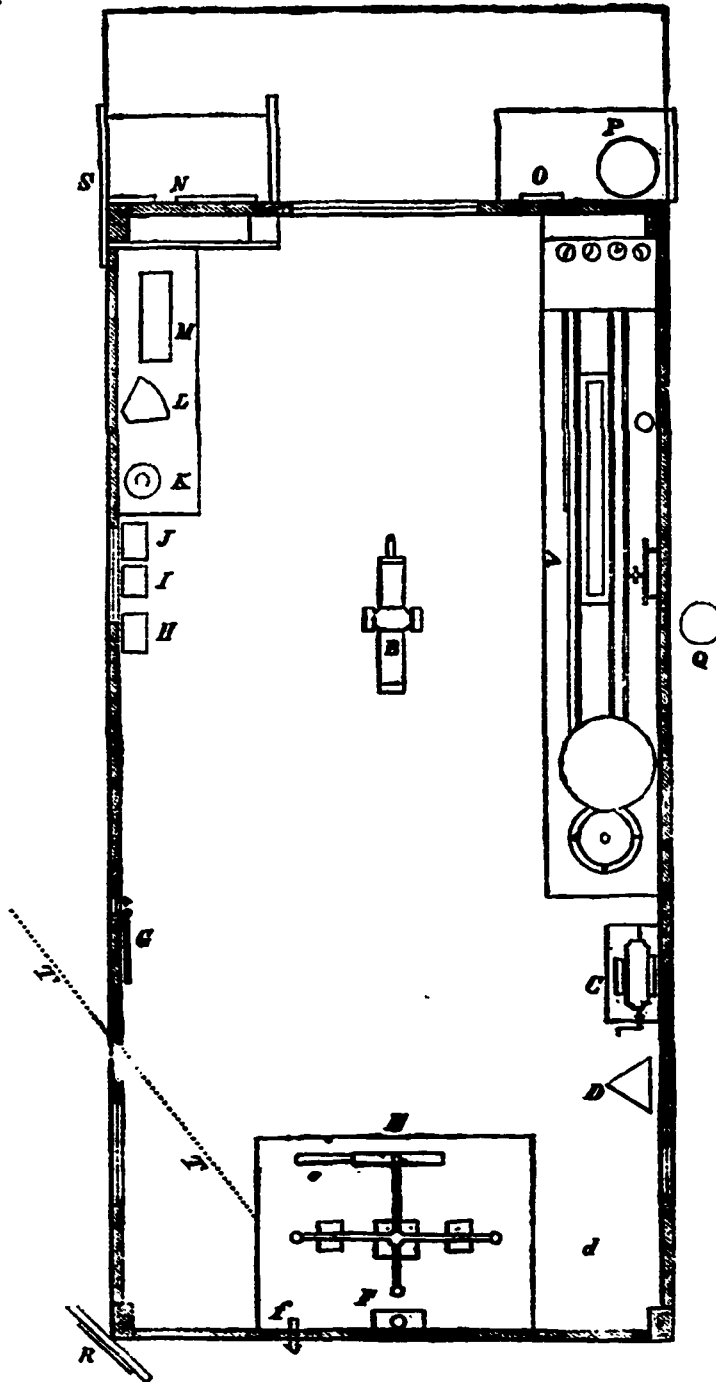
The collecting apparatus consists of a copper lantern 3 inches in diameter, 5 inches high. (See top of mast G, fig. 1.) The bottom is moveable and the lamp is placed in it by the means of

exposed to the heat of a second lamp, which is placed in that box. It is trimmed at the same time as that in the collecting lantern, and keeps warm and dry the glass pillar, by that means securing a more perfect insulation. From this upright rod and collecting apparatus descends a thick copper wire, which serves to convey the accumulated electricity to the receiver, which is placed in the observatory.

The receiver consists of a cross of brass tube (gas tubes), each about 2 feet long, and is screwed into a large tube fitting upon a glass cone, which is hollow, forming a system of hollow pipes for the passage of the heat internally, and keeping up a certain amount of dryness and consequent insulation. The glass cone is fixed upon a table over an opening made in it, fitting to the hollow part of the cone. Immediately under this table is placed a small stove of sheet-iron, about 8 inches in diameter, made double, the space of about 1 inch being left between the two chambers; and this plan has been found to effect a good insulation by keeping the whole of the apparatus warm and dry. Charcoal is used as fuel, and is, I think, preferable to a lamp. A coating of suet or tallow is applied to the glass cones or pillars. Care must be taken not to rub or polish the collecting apparatus, as it seems to deteriorate its power of collecting and retaining atmospheric electricity; and I have found that its collecting powers increase with its age. Suspended from these cross-arms hang the *electrometers*.

1. *Bennet's electrometer* of gold leaves; this scarcely needs a description. 2. *Volta's electrometers*, No. 1, consisting of two straws, two French inches long: a very fine copper wire passes through these straws, which are suspended from the cross-arms. This electrometer is furnished with an ivory scale, the old French inch being divided into twenty-four parts, each being 10; this forms the standard scale for the amount of tension. 3. *Volta's electrometer*, No. 2 is similar to the No. 1, but the straws are five times the weight of No. 1, so that one degree of Volta's No. 2 is equal to five of No. 1. *Hewly's electrometer* is a straw suspended and furnished with a small pith ball: each of the degrees of Hewly's is equal to 1000 of No. 1 of Volta's. These electrometers are all suspended from the cross-arms. A *discharging apparatus*, furnished with a long glass handle, measures the length of the spark, and serves also as a conductor to carry the electricity collected to the earth, and is also connected by a chain and iron rod passing outside of the observatory for about twenty yards, and buried under ground.

Various forms of *Distinguishers* are used to distinguish the kinds of electricity. The *Volta's electrometers* may be rendered self-



a small copper pin passing in a slit, which is a very easy method of fixing it. This lantern is placed on top of a copper rod  $\frac{3}{4}$  inch thick and 4 feet long: the bottom of the lantern having a piece of copper tube fixed to it, a very little larger than the rod, and is thus easily removed and replaced. To the lower end of the copper rod is soldered an inverted copper funnel, a *parapluie*, for protecting the glass insulating pillar upon which it is fixed by means of a short tube firmly soldered to the underside of the *parapluie*. This glass pillar passes into and is fixed firmly in a wooden box, and is freely



registering, with great facility, by the photographic process. By placing a piece of the photographic paper behind the straws, and throwing the light of a good lens upon them, the expansion is easily depicted, and serves well for a night register. There is also a Peltier's electrometer, another form of electrometer, consisting of two gold leaves suspended to a rod of copper two feet long; the upper end being furnished with a wire box, in which is kept burning some rotten wood (touch-wood).

The *anemometer* consists of a *direction shaft* and a *velocity shaft*: to the top of the direction shaft is placed the vane, which is eighteen feet in length. The shaft is made of three pieces, to insure lightness and more easy motion; each piece is connected by means of small iron-toothed wheels. The two shafts are six feet apart, and work on cross-arms from a mast firmly fixed in the ground. The vane passes some six or eight feet above the velocity shaft, and does not in any way interfere with the other movements. The lower extremity of these shafts are all furnished with steel points, which work on an iron plate or a piece of flint, and pass through the roof of the Observatory: the openings being protected by tin parapluies fixed to the shaft, and revolving with them. Near the lower extremity is placed a toothed-wheel, eight inches in diameter, connected to another wheel of the same diameter, which carries upon its axis a wooden disc, thirteen inches in diameter, upon which is clamped a paper-register (old newspapers answer very well) washed over with whiting and flour paste. Upon the surface of this register is traced by a pencil the direction of the wind. This register is renewed every twelve hours.

The *velocity shaft* is in two pieces, connected by means of the toothed-wheels and steel pivots, as in the direction shaft; and, practically, the friction is *nil*. At the top of the velocity shaft are fixed three hemispherical tin or copper caps, ten inches in diameter, similar in construction to those of the Rev. Dr. Robinson, of Armagh, and are firmly rivetted to three iron arms of  $\frac{1}{2}$  inch iron. These caps revolve always in the same direction, and one revolution is found to be just one-third of the linear velocity of the wind. I have no reason to doubt Dr. Robinson's formula for this calculation. At the lower extremity of the velocity shaft is fixed a one-toothed wheel, 2 $\frac{1}{2}$  inches in diameter; this moves a second, or ten-toothed wheel, which also gives movement to a third wheel. This marks a hundred revolutions of the caps, which are so calculated that each one hundred revolutions are equal to one mile linear; and whenever one hundred revolutions have been accomplished, a small lever is elevated by means of an inclined plane, fixed upon the edge of the last wheel, and which gives motion to the lever. The other extremity of the lever is furnished with a fine steel point, which dots off, upon a paper-register, the miles as they pass. This register is of paper, one and a quarter inch wide, and is removed every twelve hours.

Between the two shafts, at the lower extremities, are placed two runners of wood, *rebated*, to receive a slide or train, which carries the register. To the underside of this slide is fixed a rack, and it is moved by a pinion, the movement of which is communicated by clock,—the cord of the weight being passed over a wheel and pulley,—and advances one inch per hour, and the lever before described dots off the miles as the register advances under the steel point. In this manner it shows the increase and decrease of the velocity, and also the moment of its change. Attached to this moveable train is a rod of wood, carrying a pencil, which passes over the disc connected with the direction shaft, and there traces, as it advances, the direction of the wind, the moment of its changes, and the point from which it veered. The extreme height of the vane is forty feet, but this might be increased if required. The clock is wound up every twelve hours, which brings back the train to its starting point.

There are also a polariscope, prisms, and glasses of different colors, for experimenting on the different rays of light, in connexion with the germination of seeds, and the art of photography. The Observatory possesses a quadrant and artificial horizon, which serves for measuring the diameter of haloes, and altitudes of auroral arches, &c.; also a dial for the indication of the direction and course of the clouds; and other minor instruments.

#### EXPLANATION OF EXTERNAL VIEW OF THE OBSERVATORY.

- A. Thermometer for solar radiation.
- B. Screen of Venetian blinds.
- C. Thermometer.
- D. Opening in ridge of the roof, closed with shutters, to allow use of transit instruments.
- E. Rain gauge with conducting pipe through the roof.
- F. Velocity shaft of the anemometer.

- G. Mast for elevating apparatus for collecting electricity.
- H. Cord for hoisting the collecting apparatus.
- I. Copper wire for conducting the electricity into the building.
- J. Direction shaft of the anemometer.

#### EXPLANATION OF THE PLAN OF THE OBSERVATORY.

- A. Anemometer.
- B. Small transit for correcting time.
- C. Electrical machine for charging the Distinguisher.
- D. Peltier's electrometer.
- E. Space occupied by Diastrometer, Polariscope, &c.
- F. Electrometer. G. Discharger.
- F. Distinguisher.
- I. Small stove—sometimes used in damp weather.
- G. Thermometer placed in the prismatic spectrum for investigations on light.
- H. Nigretti & Zambra's barometers and cisterns, 118 feet above the level of the sea.
- I. Small-tube barometer.
- J. Newman's barometer.
- K. Aneroid barometer.
- L. Quadrant and artificial horizon.
- M. Microscope and apparatus for ascertaining the forms of snow crystals.
- N. Thermometer, psychrometer, &c., 4 feet high. A space is left between the two walls to insure insulation and prevent radiation.
- O. Ozonometer.
- P. Evaporator—removed in winter and replaced by scales for showing the amount of evaporation from the surface of ice.
- Q. Post sunk in the ground, and 40 feet high, to carry the arms of support for the Anemometer.
- R. Solar radiator.
- S. Venetian blinds.
- T. Iron rod beneath the surface of the ground connected with the discharger to insure safety.—*Canadian Naturalist*.

## OFFICIAL NOTICES.



### Proclamation.

PROVINCE OF  
CANADA.

EDMUND HEAD.

VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith, &c., &c., &c.

To all to whom these presents shall come—Greeting:

Whereas on the Twenty-fifth day of August last, and on the First and Eighth days of September last, the Model School House, in the School Municipality of St. Thomas, in the county of Montmagny, was discovered to be on fire, and there is reason to believe that on each of the said days an attempt to destroy the said building by fire was made by some evil disposed person or persons: Now Know Ye that a Reward of One Hundred Dollars will be paid to any person or persons, who will give such information as will lead to the discovery, apprehension and conviction of the above offender or offenders.

In Testimony Whereof, We have caused these Our Letters to be under the Great Seal of Our said Province to be hereunto affixed: Witness, Our Right Trusty and Well-Beloved the Right Honorable Sir Edmund Walker Head, Baronet, one of Our Most Honorable Privy Council, Governor General of British North America, and Captain General and Governor in Chief in and over Our Provinces of Canada, Nova Scotia, New Brunswick and the Island of Prince Edward, and Vice Admiral of the same, &c., &c., &c. At Our Government House, in Our City of Toronto, in Our said Province of Canada, this Fifth day of November, in the year of Our Lord, one thousand eight hundred and fifty-eight, and in the Twenty-second year of Our Reign.

By Command,

CHARLES ALLEN,  
Secretary.

#### ERECTION OF SCHOOL MUNICIPALITIES.

His Excellency, the Governor General has been pleased to annex to the Municipality of St. Paul in the county of Joliette, (for school purposes) the lands belonging to Aimé Teller dit Lafortune, Toussaint Laporte, Médard Gauthier dit Landreville, and Venant Piché, which, by an

ecclesiastical decree had been dismembered from the parish of L'Assomption, and joined to that of St. Paul.

His excellency, the Governor General has been pleased, by order in Council, dated 29 October last, to re-establish the School Municipalities of North and South Stukely, and to give them the same boundaries, and place them in the same position, as held by them previous to the order in Council of the 4th June last.

#### APPOINTMENTS.

His Excellency, the Governor General, has been pleased to approve of the following appointments :

##### LAVAL NORMAL SCHOOL.

The Revd. Octave Biron, to be Regent of the study in the place and stead of Revd. Damase Matte, resigned.

##### BOARD OF EXAMINERS FOR THE DISTRICT OF GASPE.

Messrs. Edouard Guilmet, Silas Cross and John Fauvel, to be members of the Board of Examiners for the district of Gaspé, in place and stead of Messrs. Gingras, Short and S. Milne, who have left the district.

##### SCHOOL COMMISSIONERS.

County of Maskinongé.—St. Justin : Messrs. Charles Boucher, M. D. Jean-Baptiste Grenier, Joseph Morin, Alexis Piet, Amable Clément, David Gagnon and Augustin Vermette.

County of Missisquoi.—St. Romuald de Farnham : Mr. Augustin Guertin.

County of Beauce.—Forsyth : Mr. Etienne Dalairé.

County of Bonaventure.—Ristigouche : Messrs. F. Dumontier and Noël Louizotte.

##### SITUATION AS TEACHER WANTED.

Mr. Jos. Labelle, who has obtained a diploma authorising him to teach in Model Schools, is desirous of obtaining a situation in an institution of this class. Address : No. 152, Sanguinet Street, Montreal.

## MONTHLY SUMMARY.

#### EDUCATIONAL INTELLIGENCE.

— Charles Watson, a Scotch school-teacher, finding his health injured by the confined air of the school-room, has invented an original mode of ventilation. It is entirely simple, and is based on the fact that if two tubes of unequal length be admitted into a room, the cool air will enter the shortest, and the warm air be expelled through the longest. Watson's application avoid the unpleasant and dangerous draught created by most modes of ventilation.—(*Illinois Teacher*.)

— The following result of a lesson in arithmetic will teach teachers to reflect a little before they put questions to clever boys. *Teacher*.—Suppose I were to shoot at a tree with five birds in it and kill three, how many would be left?—*John*.—Three, sir.—*Teacher*.—Two could be left, you *ignoramus*.—No there would n't; the three shot would be left and the other two would be fled away.—*Id.*

— A meeting of teachers to establish a teacher's institute, was recently held at Frost village, district of Bedford in the Eastern townships. The Revd. Dr. Nichol's of Bishop's College presided and lectured on the occasion. Resolutions were adopted urging a better classification of the academies and schools, and the appointment of local boards of examiners in each county.

— We copy from the *Revue de l'Instruction Publique* of Paris the following statement of the educational institutions supported by the government of Prussia :—6 universities, 3 catholic academies, 122 gymnasia, 40 progymnasia, 1 academy of architecture, 87 schools of arts and manufactures, 143 girls academies, 51 male normal schools, 7 female normal schools, 7 academies of rural and forest economy, 17 commercial schools, 24 polytechnic schools, 25 schools of agriculture, 1100 primary superior schools and 3100 elementary schools, giving a total of 32632 institutions.

— Teachers can afford to live as long as any body else; at least this is what we infer from the following which we copy from a Quebec paper. "Mr. Pierre Descombes died on Monday morning (14th November), at his residence, St. Roch's suburb, at the age of 112 years. Mr. Descombes came to this country from France, when he was about 50 years of age, and took up his abode on the Island of Orléans, near Quebec, where he resided until last year, when he removed to St. Roch. During forty years of his residence on the island he had filled the situation of schoolmaster.

We believe that up to the hour of his death he had retained full possession of all his faculties. He was born at Bordeaux, parish of Ste. Croix, in the year 1746."

— Mr. Rouland, the minister of Public Instruction of France, has renewed the obligation which existed for the aspirants to the medical degrees of being provided with the degree of *Bachelier ès lettres* as well as with that of *Bachelier ès sciences*.

— The minister of public instruction in Prussia has decided that henceforth Terence and Plautus shall not be used as class-books in the public schools of that country.

— The *Echo du Pas de Calais* states that the mistresses of the ladies' schools at Arras, have just come to an understanding to prohibit their pupils from wearing crinoline.

— The Russian government has decreed that twenty military schools shall be established for teaching surveying, topography, engraving, gymnastics, also that the sons of poor nobles and functionaries shall be educated in them gratuitously, subject to the condition of their undertaking to serve the state gratuitously for a certain number of years.

— The whole amount of the vote for public education in Great Britain for the year 1858 was in round numbers £663000, of which sum £157000 might be considered as being expended under the head of building and for schools, and £40000 in defraying the cost of inspection.

— The Michigan state normal school reports 478 students. At the commencement exercises of the New York city normal school 115 young ladies graduated.

— On the 4th of October, the highly interesting ceremony of placing the coping-stone on the turret of the Toronto University building, took place in that city. The ceremony was performed by His Excellency, Sir Edmund Head, Governor General. It was followed by a dejeuner in the large hall destined for the library of the institution. Speeches were made by H. E.; J. Langton, Esq., M. A., Vice-Chancellor; Dr. McCaul, Dr. Ryerson, Lord Radstock, and several other gentlemen present.

#### LITERARY INTELLIGENCE.

— Mde. Ida Pfeiffer, the great traveller, is at a hospital in Hamburg, receiving treatment for chronic ague, contracted at Madagascar. Alexandre Dumas is in St. Petesburg engaged in the translation of a Russian historical romance entitled "*Palace of ice*"

— Mr. F. X. Garneau of Quebec, is preparing a third edition of his excellent History of Canada, in three volumes. The first volume it is expected, will be published shortly.

— The library of Howard university is the largest in the United States. It contains 112,000 volumes. The Indiana state library contains 20,000 volumes. The largest state library is that of the state of New York in Albany.

#### SCIENTIFIC INTELLIGENCE.

— *Adventure in the Mammoth Cave, Kentucky.—The Maelstrom explored.*—The hero of the exploit thus reported in the *Louisville Journal* of September 11th is William C. Prentice, the son of George D. Prentice.—"At the supposed end of what has always been considered the longest avenue of the Mammoth Cave, nine miles from its entrance, there is a pit, dark and deep and terrible, known as the Maelstrom. Tens of thousands have gazed into it with awe whilst Bengal-lights were thrown down it to make its fearful depths visible, but none ever had the daring to explore it. The celebrated guide Stephen, who was deemed insensible to fear, was offered six hundred dollars by the proprietors of the cave if he would descend to the bottom of it, but he shrank from the peril. A few years ago a Tennessee professor, a learned and bold man, resolved to do what no one before him had dared to do: and making his arrangements with great care and precaution, he had himself lowered down by a strong rope a hundred feet, but at that point his courage failed him, and he called aloud to be drawn out. No human power could ever have induced him to repeat the appalling experiment. A couple of weeks ago, however, a young gentleman of Louisville, whose nerves never trembled at mortal peril, being at the Mammoth Cave with professor Wright, of our city, and others, determined, no matter what the dangers and difficulties might be, to explore the depths of the Maelstrom. Mr. Proctor, the enterprising proprietor of the cave, sent to Nashville and procured a long rope of great strength, expressly for the purpose. The ropes and some necessary timbers were borne by the guides and others to the point of proposed exploration. The arrangements being soon completed, the rope, with a heavy fragment of rock affixed to it, was let down and swung to and fro to dislodge any loose rocks that would be likely to fall at the touch. Several were thus dislodged, and the long-continued reverberation, rising up like distant thunder from below, proclaimed the depth of the horrid chasm. Then the young hero of the occasion, with several hats drawn over his head to protect it as far as possible against any masses falling from above, and with a light in his hand and the rope fastened around his body, took his place over the awful pit and directed the half-dozen men who held the end of the rope to let him down into the Cimmerian gloom. We have heard, from his own lips, an account of his descent. Occasionally masses of earth and rock went whizzing past, but none struck him. Thirty or forty feet from the top he saw a ledge, from which

as he judged by appearances, two or three avenues led off in different directions. About a hundred feet from the top a cataract from the side of the pit went rushing down the abyss, and, as he descended by the side of the falling water and in the midst of the spray, he felt some apprehension that his light would be extinguished, but his care prevented this. He was landed at the bottom of the pit, a hundred and ninety feet from the top. He found it almost perfectly circular, about eighteen feet in diameter, with a small opening at one point, leading to a fine chamber of no great extent. He found on the floor beautiful specimens of black siliceous of immense size, vastly larger than were ever discovered in any other part of the Mammoth Cave, and also a multitude of exquisite formation, as pure and white as virgin snow. Making himself heard, with great effort, by his friends, he at length asked them to pull him partly up, intending to stop on the way and explore a cave that he had observed opening about forty feet above the bottom of the pit. Reaching the mouth of the cave, he swung himself with much exertion into it, and holding the end of the rope in his hand, he incautiously let it go, and it swung out apparently beyond his reach. The situation was a fearful one, and his friends above could do nothing for him. Soon, however, he made a hook of the end of his lamp, and, by extending himself as far over the verge as possible without falling, he succeeded in securing the end of the rope. Fastening it to a rock, he followed the avenue 150 or 200 yards to a point where he found it blocked by an impassable avalanche of rock and earth. Returning to the mouth of this avenue, he beheld an exactly similar mouth of another on the opposite side of the pit; but, not being able to swing himself into it, he refastened the rope around his body, suspended himself again over the abyss, and shouted to his friends to raise him to the top. The pull was an exceedingly severe one, and the rope, being ill adjusted round his body, gave him the most excruciating pain. But soon his pain was forgotten in a new and dreadful peril. When he was ninety feet from the mouth of the pit, and one hundred from the bottom, swaying and swinging in mid-air, he heard rapid and excited words of horror and alarm above, and soon learned that the rope by which he was upheld had taken fire from the friction of the timber over which it passed. Several moments of awful suspense to those above, and still more awful to him below, ensued. To them and him a fatal and instant catastrophe seemed inevitable. But the fire was extinguished with a bottle of water belonging to himself, and then the party above, though almost exhausted by their labours, succeeded in drawing him to the top. He was as calm and self-possessed as upon his entrance into the pit; but all his companions, overcome by fatigue, sank down upon the ground, and his friend Professor Wright, from over-exertion and excitement, fainted and remained for a time insensible. The young adventurer left his name carved in the depth of the Maelstrom—the name of the first and only person that ever gazed upon its mysteries. —*New York Evening Post.*

—Mr. W. C. Bond, Director of the Harvard College Observatory, publishes the following statements and predictions relative to the Comet, whose appearance is so splendid a feature in the nocturnal heavens at this time:

"Donati's Comet increases rapidly in size and brilliancy. It will be nearest the earth on the 9th instant, at which time its brilliancy will be nearly three times as great as on the 23rd of September, and its distance from us about fifty two millions of miles.

"According to Mr. Hall's computation, the tail of this Comet, on the 23rd ultimo, extended to the length of fifteen millions of miles. The nucleus will be nearest the earth's orbit on the 20th.

"Some confusion seems to prevail in regard to there being two comets, similar in appearance, now visible to the naked eye, but such is not the case. Donati's, which is seen in the northwest after sunset, is the same which has been seen in the northeast before sunrise in the morning. This is owing to the considerable northern declination of the comet, with a right ascension differing but little from that of the sun. I mention this because I have had several letters from different parts of the country, making the inquiry whether there are two comets now to be seen by the naked eye.

"Eucke's Comet is barely visible to the naked eye; Tuttle's Third Comet of 1858, can now be seen only with the assistance of a telescope." As Donati's comet, which has been so brilliant, is withdrawing from us, this new visitor from the wondrous, far away regions of space will be watched with interest. It can now be seen in the constellation Pegasus. This constellation is in range of a line drawn from the two pointers in the Great Dipper, through the North Star, and is the about as far from that body as Arcturus.

Professor Kingdon, of the Provincial Observatory, Toronto, in a published letter, thus refers to Donati's Comet: "The propriety of calling this comet after Donati is founded on the principle of nomenclature that that name is best which embodies fact, and does not imply a theory which may be afterwards overthrown. Thus, as long as the identity of this comet with any formerly seen, remains a matter of mere conjecture, it will continue to be called after Dr. Donati, who (during its present visit to the sun) first discovered it at Florence on the 26th July 1858.

"It was then seen about 70 degrees east from the sun, and with a declination about 14 degrees further north, and was found to be moving westwards, or towards its perihelion. After passing that point it reappeared early in September.

"When the comet was first seen by Donati, it was by many supposed to be the expected comet of Charles V., whose arrival at its perihelion was predicted by Hind, on the 2nd of August, 1858, within a limit of two years. The fact of the arrival of Donati's so near the time predicted for Charles V.'s comet was certainly a presumption in favor of the two being identical, but unfortunately there is this fatal objection to the opinion that the two comets are moving in opposite directions; that of Donati being retrograde, while that of Charles V. was direct.

"The identity of a comet with one seen at a former epoch is inferred from the general resemblance of what are termed the elements of the orbits. These elements are certain numbers which define the position, form and magnitude of the orbit and the epoch at which the body passes its perihelion, and also supply the means of determining the periodic time or the time that elapses between two consecutive perihelion passages. The elements of any comet that has formerly been seen ought then to inform us when it will arrive again, and to enable us to determine, when it does arrive, whether it is in fact the same or some other comet that has not been seen before.

"The elements either of a planet or a comet are not directly observed, but are calculated from at least three but usually from several observed geocentric positions of the body with the corresponding times. Some positions of the body are better adapted than others for determining these elements correctly, and for a planet these can generally be employed; but as the visibility of a comet is usually of short duration, it is not generally possible to use any choice in the selection of the best positions, and hence another difficulty with which astronomers have to contend. Much more might be written on this subject, but I think I have said enough to show, in some measure, how great the difficulties are that attend the researches of astronomers on the question of new comets, and that it is no discredit to their skill, or to the science of astronomy, that they cannot arrive at conclusions without the possession of the facts from which only such conclusions can be legitimately derived."

—(*Upper Canada Journal of Education*)

## ADVERTISEMENT.

### CLASSICAL & MATHEMATICAL MASTERS WANTED.

THE COUNCIL OF PUBLIC INSTRUCTION for Upper Canada, is prepared to entertain applications from Candidates for TWO vacant MASTERSHIPS in the MODEL GRAMMAR SCHOOL, viz., a CLASSICAL and a MATHEMATICAL Mastership. The salary of each Master to be £350 (or \$1,100) per annum, and the appointments to take effect from the 1st of January, 1859.

Applications, with testimonials, to be addressed to the Rev. Dr. Brewster, Chief Superintendent of Education for Upper Canada, not later than the 15th of December next.

Education Office, Toronto, 15th October, 1858.

## FOR SALE,

(The proceeds to be appropriated to the use and benefit of the *Journals of Education*, Lower Canada.)

### A MEMOIR ON THE GIN-SENG PLANT,

by the REV. FATHER LAFITAU, Missionary at Sault St. Louis; a new edition, by the Rev. H. Verreau, Principal of the Jacques-Cartier Normal School, preceded by a biographical notice of the Reverend Father, with a portrait, a fac-simile of his signature, and a wood cut representing the plant.

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