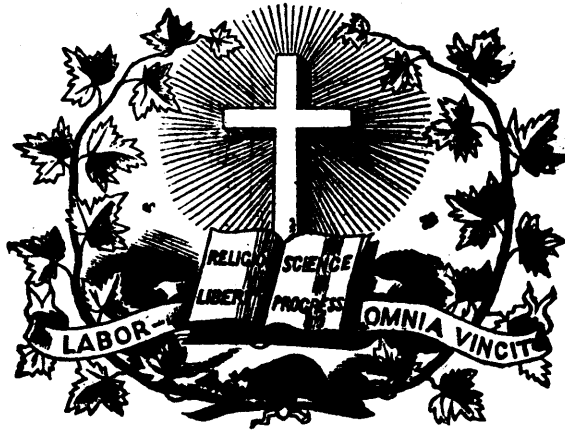


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the physical condition of all classes, assisting in effecting great moral and political revolutions. It is not surprising, then, that they should be regarded as factors, and prominent and powerful factors, in the great problems of humanity. Perhaps the world has run a little mad, and, it so, excusably on this subject, and perhaps scientists are inclined to become unbearably science-proud, but it seems only natural that there should be some who think that room should be found, or made, if necessary, for a fuller study of these branches of human science, especially in our higher institutions of learning, those that claim to cover the ground of a liberal education, that special schools for instruction in these various branches should be built up and fostered by the government, and that some in their enthusiasm should scarcely see anything worth learning, or worth considering, that does not bear directly upon the advancement of the race in a knowledge of the phenomena of the material world.

The earnestness of opinion and purpose is frequently manifested in the temper in which the discussions are conducted. Nothing is more common than to find men of straw set up on both sides, and battered to pieces, instead of antagonistic systems. The advocates of the old system are often almost accused of trying to carry us back to Latin and Greek as our vernacular, whilst those of the new are regarded as having no toleration for anything that does not bear directly upon the solution of the all-absorbing question. What shall I eat? what shall I drink? wherewithal shall I be clothed? Between these great extremes, of those who would retain what is old and tried simply because "it has been approved by the practise of generations," and those who are inclined to reject anything simply because it has an air of long, long ago, about it, the greater number of colleges, indeed practically all of them, are settling down into the always safe middle course, and these branches are recognized equally with the old established branches of study as educational instruments, as capable of utilization in the development of the mental faculties, as well as in their direct practicable application to the affairs of life. Thus whilst one of the strongest opponents of the so called new education admits that the study of physics gives a power over nature, real power as we wield and apply her forces,

Natural Science and Popular Education.

BY PROF. CHAS. F. HIMES, PH. D.

The educational world has been thrown into a ferment of discussion, more particularly in the past decade, by the prominence into which the branches of physical science have thrust themselves by the wonderful discoveries, and, if possible, still more wonderful practical applications of them. It is not strange, therefore, that the attention of the world should, in a measure, be riveted upon the branches of study which permeate with their influence all classes of society, coming in contact, as they do, in a greater or less degree, with every individual, revolutionizing all industrial processes, improving

he also admits, that it gives "intellectual power, as we interpret her secrets, predict her phenomena, enforce her laws, and re-create her universe," in other words, that the study of these branches imparts both knowledge that can be immediately and practically applied, and discipline of the mental faculties, both recognized objects of education.

The question, therefore, as far as colleges are concerned, may be regarded as substantially settled in favor of the advocates of the new education, since, as a result of such views, find in almost all colleges parallel elective course regarded as equivalent, and entitling to the same degree of Bachelor of Arts, according to which in each case the decision between the dead languages and living science is left to the student or his natural guardian. But just at this point another question of equal, perhaps greater importance arises, as to whether these branches are exercising their full influence in a system of education designed for the masses, and assemblages of educators seem most appropriate places to introduce the consideration of the degree to which, and the manner in which the study of natural science may be utilized in a grand system of American popular education, restricting the word popular in this connection to that part of the educational system which acts directly upon the masses, and leaving out of consideration, unless incidentally, any ultimate indirect effect upon the education of the masses, which opportunities afforded for the more thorough education of a few may have.

Upon no subject, perhaps, is there so great expressed unanimity of opinion and feeling among the American people, as upon the desirability, or even necessity, of popular education. That the masses should be educated scarcely any one disputes, but the unanimity begins to disappear when the closer consideration of what is meant by the word education begins, and when the means for its accomplishment are discussed. The simple establishment of some system of popular education does not necessarily imply progress on the part of the people, the advancement of the masses in those traits of intellectual or moral character most essential to their individual happiness and collective prosperity. As far as popular education involves the development, direction, or control of the intellectual and moral faculties, it has been recognized as a good, or a means to an end, by almost all nations; but China of to-day, in spite of her system of education, running back through the ages, is more the China of a thousand years ago than the civilized nations what they were but a few generations ago. The tendencies and objects of popular education are as varied as the ages and peoples, as well as the means employed, and the results are largely embodied in national characteristics. America, as she has no model in the past for her form of government, and her social regulations, and we might add her religious life, has, too, no model according to which she can build up a system of education, her system must be eminently an American system, it must be, and will be, the outgrowth, not only of her peculiar ideas, but of her peculiar wants; it must be the complement of all the peculiar educational agencies at work among the masses, developing and moulding the highest traits of national character.

It would be a grave misstatement, however, to say that we gain nothing by a study of the best systems of education in the world; but such study is simply pernicious in so far as it tends to close our eyes to our peculiar educational surroundings, the peculiar educational influences of our form of government outside of a distinctive educational system. The American masses above those of any other nationally are born to intellectual toil; they have multitudinous incitements to thought

thrust upon them, and upon some of the most important subjects that come within the range of human thought. Every man must act upon his own conclusions, and must suffer the consequences not only of his own errors of judgment, or of his own indifference, but of that of his neighbors, and must incite them to thought, must bring them over to his own way of thinking. No one can remain outside the great current of thought; he will be dragged in, or thrust in at some point, either through his interests, his affections, his prejudices, or perhaps the rude disturbance of his case. We may then, indeed, say that intellectual activity is the characteristic habit, the fashion of Americans. Grave questions which force themselves upon governments, ultimately rest upon the masses here for their settlement, and through the consideration of them the masses are brought to higher moral and intellectual levels. Great interests may clash with great principles, individual selfishness may aggregate into great national injustice and wrong, but slowly and perhaps with much suffering and sacrifice, the masses rise to a higher level, the problem solves itself, and the nation looks back almost with wonder upon its former self. There is always a surprise in the evolution of grand moral principles, of fundamental truths from the apparent chaos of prejudices, of passions, of misconceptions, and even of unmistakable, political rascality and corruption. Now among the grand, peculiar educational agencies at work here are found preeminently the free, untrammelled, and, on the average, ably-conducted public press and the earnest pulpit, in addition to, and in a large measure controlling and regulating all the various elements of political machinery.

Indeed, the public schools of America, though playing an essential part, as it is the initial part, undoubtedly do not play the most prominent part in this grand work. Their great work is simply to supplement all the other educational agencies that are moulding American character. They are required simply to furnish the citizen to all these other influences with acquisitions and in a state of development favorable to the highest and noblest and most rapid effect; they are to turn the intellectual activity of the masses, whether voluntary or constrained, to the best account. How much thought as well as time and labor are needlessly expended in almost every earnest political campaign, because the intellectual processes of the masses are as crude as they are; how much longer it takes and how much more laborious it is to convince an individual, however open to conviction, who finds a difficulty in following and retaining a line of argument. How much less the mental wear and tear to the disciplined mind in reaching correct conclusions on any subject, and how much more passions and prejudices are liable to lie under the control of a well-balanced mind. We Americans do not realize clearly enough that in the working out of the grand problems involved in self government, we are prodigal of intellectual force, we are without a thought of accomplishing the greatest amount of good with the least expenditure of effort. We are prone to be proud of our material growth and unexampled prosperity, although we cannot say how much of this is fortuitous, or may be in spite of ourselves, and to overlook, or to be scarcely conscious of, the sublime spectacle we present of thirty millions of people laboring, thinking, sacrificing, in working out the grand government problems that fall to us as a people.

Now, perhaps, no system of popular education is justly so celebrated as the Prussian, for none is more effective as a means adapted to a certain end, but the masses affected by it are rather instructed than developed; they are more thinking machines than thoughtful citizens; they read well, write well, cipher well, may even draw

well, and have a full knowledge of the Scriptures, &c., but the cast of mind they acquired from these schools may almost be characterized as mechanical; but they are undoubtedly thoroughly loyal subjects. Security of the government and dynasty, is perhaps more the object of these schools than progress of the masses; at least where these two objects even seem to antagonize, the latter must yield, whilst with us the highest possible security is the outgrowth of the highest possible progress. There is no antagonism, but the utmost harmony between these two objects. There, the theory seems to be that the masses must be made the best possible instruments in the hands of thinking rulers to work out the grand purposes of providence; here, we believe that every man is himself a thinking agent in the hands of providence itself. The excess of loyalty to, and real affection for, their hereditary rulers, that characterizes the masses of Germany, is, in a great measure, the strongest evidence of the moulding power of a system of popular education.

I have been led in these introductory remarks further than may appear called for, or even justifiable, but the thorough consideration of the object, and consequent range of popular education in America of to-day, as compared with that of other nations and former times, seems to underlie the whole subject in its details, as one expected to contribute to some grand end; and it would appear that general culture, combined as far as possible with special education, is entitled to more prominence now and here, than ever or anywhere else, as an end of every part of a system of education.

Now, there is a great tendency to associate with the very words Natural Science, in this connection, a low utilitarian object, to regard it simply as a dollar-and-cent branch of study, as a sort of milch cow, as Goethe terms it, of which we are only to calculate how much better she will yield; and I feel that, however favorably the discussion of the introduction of such a branch of study might be received by a popular audience, an assemblage of teachers might see in it a disposition to lower the object of their profession. It seems well, therefore, to plant ourselves at the start upon the general proposition that, however proper it is to consider the value of studies introduced into any system of education in regard to their immediate utility, as Americans, especially, with all the varied duties devolving upon us as citizens, there are other features and tendencies, of all branches, that merit at least equal consideration. Although, therefore, it may be stated as one great and legitimate consideration for the introduction of more thorough instruction in natural science into the primary schools, that every individual might thereby be rendered a more productive citizen, and more capable of economizing the material resources of the country, yet if the admission were made at the same time, that this was all they could be made to accomplish, and that they could only be brought in by excluding or restricting other branches of study that mainly, or even exclusively, contribute to mental discipline, to the rendering of citizens more thoughtful, more cultured, they ought to remain out.

In surveying the whole educational field the most decided out-crop of a feeling favorable to the scientific education of the masses is perhaps indicated in the freedom with which donations of land have been made by the general government for the foundation and support of schools for instruction in agriculture and the mechanic arts. There seems to underlie these appropriations an impression, vague and indefinite, to be sure, that something is due to the scientific education of the people, and that the encouragement of such education by the government is legitimate as well as wise. The very indefiniteness in regard to details, however, seems

to say: Here are resources for educational experiments in this direction, to make farmers better farmers and better citizens, to make mechanics better mechanics; and the variety in the character of the institutions growing out of these appropriations in the different states, whilst it demonstrates the license of indefiniteness in the law, it at the same time indicates rather how unformed the views of educators are upon this question of popular scientific education, than how diverse these views are.

Now, I think it will be generally admitted that in order that a country may retain a position among civilized nations, other things being equal, it must be abreast of the age in its applications of science; and again, that country which contributes most largely to the advancement of abstract science will be in position to do most also toward the utilization of scientific discoveries. It would seem to be a legitimate work for the government, then, to aid and stimulate scientific investigation by the establishment of thoroughly equipped institutions, in which men of the highest ability, impelled by a love of pure science, willing to devote their lives wholly to the discovery of scientific truths may not only find every thing necessary to the most successful pursuit of this object, but may be kept perfectly free from distracting care or anxiety in regard to other matters. We can hardly appreciate fully this latter condition, but Liebig remarked it as the first requisite to highest scientific success, and it is doubtful whether he would have led the world as far as he did had not the petty Duchy of Hesse Darmstadt recognized his genius at an early day, and relieved him from petty cares that might have hampered his investigations.

Coupled with such schools for investigation, others of a high order would naturally spring up for instructing men in the application of science to the various branches of industry, thus enlarging the sphere, multiplying the number, and increasing the efficiency of these applications.

Whilst the establishment of such grand scientific centres would doubtless add indirectly largely toward rendering agriculture and the mechanical arts more productive, it may fairly be considered doubtful whether Congress contemplated such an application of these resources. Another disposition of these liberal donations, which is represented in our own Agriculture College, is in the establishment of schools below the grade of both the others, as science schools, but more as institutions in which a fair modicum of liberal education, almost if not entirely equal to that of the colleges, is given in connection with somewhat fuller instruction in technical science, and with super-added manual labor and military drill. The object of such an institution is clearly to connect technical and liberal education, and it does so about as fully as colleges do liberal and professional education—to afford a farmer, or mechanic, or manufacturer, if you please, a school in which he may have his son liberally educated, and at the same time educated as a farmer, a manufacturer or a mechanic. The amount of physical work required may be regarded as sufficient, as it were, to keep alive a fondness for work, and a disposition to remain farmer or mechanic, so that the youth may not be liable to return to his home, as he might from college, with notions and tendencies incompatible with the noble pursuit of agriculture, &c., and be seduced by the already overstocked professions. Data are as yet wanting, however, to determine how far this dream of some of the advocates of distinct agricultural colleges is to be realized, and according to the tendency of American higher educational institutions, to enlarge the sphere of their instruction, many colleges may already be found competing successfully upon this same field of semi-technical education with such institutions, and perhaps the result

may be that the agricultural college will be gradually driven into the position of a college, with a farm, and so-called agricultural school attached.

This state of the case would not be very far from another plan proposed at one time for the disposition of the fund donated by the general government, and which had many advocates, namely, the distribution of it among the several colleges, of the state for the establishment of agricultural departments in connection with them, thus increasing their efficiency, and at the same time adding their accumulated resources for instruction to the donation of the government. Many arguments were presented favorable to this plan; it was substantially a plan suggested by the eminent chemist Liebig, in a conversation with him a few years before; but there was no doubt that the danger of squandering so large a sum in useless experiments would be far greater in frittering it away by so wide a distribution, whilst massed, it was argued with much force, that a great scientific centre might be built up with it in a state which admittedly so much needed it.

Besides, it would not have been politic in the colleges to obligate themselves to do as much as seemed to be required, with so little to do it with, to centre upon themselves expectation evidently very great but utterly undefined. The plan finally adopted, and at present in operation, of a central agricultural college, certainly seems to come nearer to the realization of a direct influence upon the people, evidently contemplated by congress; if it has failed to accomplish the great results at first anticipated, the failure has been in a great measure due to the character of those expectations, or to the underlying ideas, and not to the able men, who have earnestly labored at the solution of one of the most difficult problems connected with education, assisted by some of the most eminent educators as administrators. As far as a system of popular education is concerned, such an institution will necessarily be too remote from the masses, and too disconnected from the other popular schools to be considered a part of the system. In fact, in this plan, as in others suggested, the benefit to the masses can only be supposed to pass slowly downward from these higher sources by a kind of slow filtration; there are no direct channels of communication from them, through which information and reforming influences may be diffused through the masses. The results of investigation, the improvements in the applications of science are left to slowly work their way down, and ultimately permeate the whole body of the people. The farmer's son liberally educated, and at the same time instructed in those branches that are calculated to render him a more successful farmer, may be regarded as leaven in the community in which he may continue to reside; he may set an example of good farming, and lead his neighbors to imitation by his superior success, joined, perhaps, with a little gratuitous advice and instruction; the community through him, as far as his influence goes, may be moved toward a higher plane of agricultural practice. This is the most favorable view that can be taken of the case; this process of education would be very slow, and it will appear the more so when we reflect that the farmer's son who happens to be sent, or who can be sent, will not necessarily be the best adapted by natural capacity to profit by the course of instruction he receives, nor by public spirit and enterprise to produce the greatest good by it.

Now, as I said before, it is not the fault of the school. There is no doubt that it will ultimately work into the channel of its greatest usefulness, in which it will fill a place that no other institution can fill, especially when more fully supplemented by other agencies. It may

then reveal its proper place and value. There is nothing necessarily discouraging about it. Everything is tentative in America; it is a land of grand experiments; we are carrying them on of all kinds, regardless of expenditure of money, time, and thought—why should our educational experiments be on a restricted scale? Why should they not be made in all directions that hold out a promise of success? and why should invariably successful results be expected any more than in other experiments? The scientific investigator makes thousands of experiments with negative results, and counts himself fortunate if one leads to positive revelation.

But to reach, and elevate and instruct the masses in all that it is profitable for them to know, there is nothing like the direct agency of the common school. Other indirect agencies may be added, especially where there may be doubt about the adaptability of the common school to any particular work, but the common school after all must act as a direct agent in furnishing the child, or the man, to the most favorable influence of other educational agencies. Thus the press, for example, without the education of the common school would be a lever without a fulcrum, and the force exerted by the former is only limited by the character of the latter. If one educated, public-spirited citizen in a community can do much, how much more can one educated teacher accomplish, and how multiplied are their efforts for good when operating on the same line. From the school room there is no tedious system of indefinite filtration to the people, but a continuous, uniform flow of information, of incentives, of good influences, diffusing themselves in all directions, touching every individual, through direct, carefully arranged and adjusted channels; and anything thrown into the source of these irrigating streams will soon be found diffused over the whole field in the richer fruitage which it yields. The question then arises, "Can natural science be thrown in, or is it of such a nature that a knowledge of it cannot be disseminated in this way?" The farmer or mechanic, or any one must pass over matters in reading the most ordinary newspaper that might be of the highest interest and of the highest practical value, unless he have the A B C of scientific knowledge, in order that he may be able to discriminate in the applications afforded by science, and properly interpret the results of his own experiments, he must not be altogether unfamiliar with, and unaccustomed to, the regular methods of scientific investigation. The fuller his information, the better disciplined his mind to the study of these questions, the more effective the argument, the instruction and example even of his more intelligent neighbour, who may have enjoyed the privilege of the farm-school. A farmer, and we select him simply as one of perhaps the most numerous class, comes, in contact with phenomena of the most varied and complex character; he may not be an experimenter, or perhaps ought to be a very conservative one, but he ought to be an observer on a large scale; nothing should escape his observation that can have a bearing on the success of his pursuit. Agriculture, like medicine, can hardly be termed a science, but as that physician becomes the most trustworthy and successful who, to the largest personal practice adds the habits of closest observation and clearest reasoning from observed facts, so with the farmer. They are not only the richer in facts of their own observation, but in their ability to interpret and apply—that is, appropriate the facts furnished by others. Ability to make accurate chemical analysis in itself would contribute nothing to the success of a farmer. I do not know but that it would be an impediment to his success if he attempted to make use of it. It would be as unreasonable to fit up a complete laboratory as a complete black-

smith shop or carpenter shop. But the mental discipline involved in the acquisition of that ability, the habits of mind formed, the caution and accuracy in forming conclusions, would be valuable not only to the farmer, but to anybody, whilst the knowledge of the facts necessarily involved in such acquisition would be invaluable to him. He would know better the limits of the application of chemical analysis to farming, and could form a judgment as to when it might be employed with profit, and might further know how to select his chemist, to make it when advisable. A man might acquire tolerable skill in wood-turning or blacksmithing, but after long cessation of practice, loss of manual skill, and readiness of mind, he would find it more profitable to have his work done, than to attempt it himself.

But whilst it may be admitted that facts taught by natural science are good and valuable in themselves, that for example, information about the air we breathe, the water we drink, the food we eat, the fuel we burn, the various objects we come in contact with, the invisible agents or forces controlling all phenomena, is serviceable to every man; and whilst it may be admitted that the peculiar discipline of mind and heart involved in their study, exercising as it does the reasoning powers as well as the powers of observation and memory, is even more serviceable than the facts, still all this may be counterbalanced by a feeling that the introduction of these branches into primary schools is almost or altogether impossible. Does not its importance, however, justify its more earnest consideration. A royal commission in England, composed of such men as Huxley, Lubbock, Lockyer, and other eminent men of science, concludes its report by saying:

"From a consideration of the evidence, we are of the opinion that instruction in the elements of natural science can be, and eventually ought to be made an essential part of the course of instruction in any elementary school. The instruction to which we refer, though scientific in substance, should in form be void of needless technicality, and should be almost wholly confined to such facts as can be brought under the direct observation of the scholar. It should, in fact, be conveyed by object lessons, so arranged and methodical as to give an intelligent idea of those more prominent phenomena which lie around every child, and which he is apt to pass without notice."

Now, if it is to be regarded as possible in England, how much more so in America. Does not a notion of impossibility rest upon a misconception of what teaching natural science means?

We may regard science-teaching as only object-teaching expanded, in that we look farther than the object; look beyond the phenomena which address the senses to the laws, principles and processes involved which do not address the senses; and the step may be made so easy, so natural from the seen to the unseen, that the pupil scarcely notices the transition. Are not phenomena, as they address the senses, made the all in all? Are we not too apt to regard giving a course of pretty, perhaps sensational experiments, as teaching natural science; to look upon it as the sensational, sort of *ad captandum*, part of a course of education, even in institutions of higher grade, by which pupils are to be entertained as well as instructed, and perhaps amused; by which the great and startling phenomena of the natural world are to be reproduced to eyes and ears agog.

Are not the experiments frequently allowed to be masters instead of servants; to direct the course of the lecture instead of to come on the scene at bidding to support and illustrate the thought? Individuals that have no toleration for words or sentences not to the point in ordinary discourse, will admire and applaud,

and even demand experiments that are not to the point, that cumber the lecture and distort the line of thought, to which they are attached by the flimsiest excuse. A very successful popular lecturer gave as his recipe, "ten minutes solid science, the balance amusement." Now, it is these purely sensational experiments, which originate the grand display of apparatus, which defeat the end of a lecture, namely, instruction, instead of being aids to it. They have their proper place, to be sure; they may be introduced in moderation as a sort of reward to patient study in following up the humbler, less pretentious experiments, as a sort of summing up of the details they may have taught. Thus in an elementary lecture on steam power, a steam-engine brought upon the stage at first would divide the attention of one-half of a popular audience with any lecturer for the balance of the hour, but it would not detract from the popular estimate of the lecture; whilst on the other hand, the underlying facts might be so plainly exhibited by means of a few flasks, and lamps and tubes, free from unnecessary accessory, and the mechanical contrivances for utilizing the power could be so gradually and clearly unfolded, that if a steam-engine were then to move upon the scene, it would be a matter for intelligent study and worthy curiosity, and not simply of idle wonder. Experiments for beginners cannot be too simple, for they are just as likely to seize upon some inevitable, prominent accessory fact as upon that involved in the demonstration of the principle. A celebrated professor, on catechizing a pupil upon the lecture of a previous day, after much trouble, was only able to elicit one remembered fact, namely, that he had been unskillful or unfortunate enough to break a bottle. Now, nature lies all around, it is an ever-open book, its study is fully in sympathy with our disposition, its facts find in us responsive faculties for their perception and study, and a child may even be so led on into the consideration of them, that its mind will as much demand some simple solution of them as that of Newton demanded the conception of gravitation. It is not the facts as stated from the text-book, especially the definitions and generalizations with which they set out, that are apt to prove attractive or useful. Just as geography for beginners, which starts with the globe and meridians, and parallels, and runs into trigonometry and astronomy would be likely to be a dry and unfruitful study to the pupil. Facts presented directly have the charm of vitality about them; facts formulated in words lose half their attractiveness even to the scientist. A tendency, too, in teaching is often manifested to lead the pupil away from the simplest relations of a phenomenon, from those that are, as it were, nearest to us, to those that are more remote, to run out after what seems more grand and wonderful. Thus, allusion even to the falling of an apple, a phenomenon that has so much of prosy, every-day life in it, and that might present a hundred problems for solution, is very apt to switch us right off from earth, and send us with Newton, careering through the solar system, into the depths of space, whilst points in which the phenomenon comes directly in contact with us are overlooked or ignored. By following the Baconian plan of insinuating knowledge into the mind of the pupil in the manner it was first discovered, starting with the falling of an apple, most of the laws of falling bodies could be given to the youngest pupils, and in such a way, not only that the facts would remain, but that they would experience the highest pleasure in their study and would be willing at any time to start off on a similar tour of discovery. No elaborate or expensive apparatus is required for such instruction.

In this way it could easily be shown how the investigator "guesses and checks his guesses," conjectures and confirms or explodes his conjectures, how induction and

deduction continually accompany each other in the study of science. Thus, linking principles with facts, both facts and principles reach their highest degree of fruitfulness. A proper course of training will thus produce that attitude of mind by which facts are discovered, by which they must be judged and arranged, and also, that by which they must be turned to practical account. It will develop the highest style of practical men, in all occupations, men not simply possessed of skill or mental readiness, resulting from long-continued exercise in any occupation, but "men able to give a reason for their practice," men not tied down in empirical grooves, but such as may venture to improve their method, or at least that may venture to decide upon real or fancied improvements of others. Whilst, however, it is not the multitude of facts acquired that is to be considered, but the mental habits to be developed, habits worth more than facts, as they give command over facts, yet so connected and dependent upon each other are facts, or, perhaps we might better say, so complicated are even the simplest phenomena, that as one fact is laid hold of vigourously, another appears, and then another, and another, until soon there will lie before even the young investigator numberless glittering links of the endless chain of facts that constitutes the material universe. So inter-dependent, too, do the various branches of natural science show themselves soon to be, with their facts and principles inter-osculating in all directions, that purely artificial character of the divisions of the study of nature soon becomes apparent, and the student is encouraged to lay hold of phenomena, unravel their complexity, accumulate their lessons of connected facts, rather than to confine himself to the study of isolated, dislocated facts, pigeon-holed away, as it were, in textbooks, more for convenience of reference than of study.

I regret the brief and hurried manner in which I have felt myself obliged in a very general way to suggest some of the prominent facts in regard to natural science as an educational means in schools of the lowest as well as of the highest grades. Its study could not but contribute to mix thought with all labor, and to render it more productive. It would also have an elevating tendency, and impart fullness, rotundity, to the national character. It would open up new sources of pleasure as well as profit to the masses, so much needed in America, for it is remarkable how our range of vision into the natural world, and consequent enjoyment of it, is restricted or enlarged by our training—just as the cook at the World's Fair on his return could give an account of nothing but cooking stoves and utensils, so of two boys turning the clods, one may see nothing but grain producing soil, the other may be made to see multitudes of things besides, both useful and elevating. We cannot tell how much talent for investigation also might receive its initiative in a primary school; most trivial circumstances often lead to the discovery and direction of genius. But one word as to a suggestion that may be made, that there is no room. This is what the colleges said but a few years ago, but they have somehow or other managed to find it. I would simply suggest, is it not a fair inquiry, whether there are not also in a primary course of instruction, branches that are taught beyond their reasonable claim as disciplinary, or practical branches? Let us take arithmetic, one of the most valuable for discipline and practice, and is it not possible that excessive time and work may in some cases be spent upon arithmetical puzzles and curiosities, that have no practical value in themselves, and the discipline from which might readily be dispensed with? May it not be so in almost all branches? In the museums of Europe we find accumulations of the products of the mechanical skill, and labor, and patience and genius of several

centuries past. What are they? Largely, pieces of useless mechanism. Clocks from that of Strasbourg Cathedral down, which tell upon their dials many things that an almanac will tell better; automata endowed with all powers, except thought, microscopic figures of exquisite character, counted perhaps by the thousands on a single inch of ivory. It is hardly too much to say, that the world would have lost little or nothing had these all perished with the hand that produced them. How different now! We almost take off our hat, or ought to, to the steam engine as it thunders along, not as a representative of physical power or mechanical skill simply, but because of the productive thought it embodies; thought to some purpose; thought that, combined with skill, has not simply produced a curious automaton, but that has almost vitalized dead matter, and added to human drudgery. So with the obedient leviathans ploughing the deep, the delicate spindles humming at their tedious work, the telegraphic pens registering thought, the spectroscopes turned heavenward, and telling us more about the sun, and even comets, than we knew about our own hills a century ago. The question naturally suggests itself, whether even with all our progress in education, there may not be some antiquated branches or methods of teaching in primary schools not exactly consonant with the spirit of the age.

The agent in the introduction of such study, is by force of circumstances, that most concerned in all others. To teach Natural Science in a primary school, of course requires in the teacher information as to the proper method, as well as in other branches. Pennsylvania has done nobly, but I trust has only made a beginning in the education of her teachers. From the Normal Schools there must go out a molding influence, and unless they are in every respect as efficient as they ought to be, that is, as efficient as they can be made, it would perhaps be better the State had never attempted to educate its teachers. The whole question of science study in primary schools seems to resolve itself into that as to its position in the curriculum of Normal Schools, and the thoroughness with which it is taught there.

(*Philadelphia School Journal.*)

Parent and Teacher.

By E. SCHNEIDER.

Every young man, while at school, and when yet under the care and directing influence of parental authority in the family, looks out upon the world with high hopes and with pleasing anticipations. But how often is that laudable ambition, which fires the soul of the generous youth, misunderstood, misdirected and, consequently, disappointed in almost every attempt to produce some thing worthy of remembrance and gratifying to praiseworthy desires. Many a noble boy, who looks forward upon the busy arena of human life with buoyant hopes and with a light heart, treads it afterwards with sorrow, because no kindness cheers him and no efficient hand directs him in his purpose; and because all his plans are therefore brought to naught. How the heart is crushed and how the fallen hopes are dragging him to the very depth of sorrow!

It is the business of a teacher not only to teach the branches of a common school education, but also to do his part towards training the young in the way they should go; to impress upon their tender hearts a proper sense of their accountability to Him who rules over us; to mould and direct those beautiful and innocent little thoughts springing up continually in the youthful minds;

and to hold up to their view the examples of the good and great who lived in bygone days. Then the visions of bliss, which they imagine themselves to see before them, may possibly be realized.

Fathers and mothers, can you feel assured that a knowledge of reading and writing, of geography and grammar, of arithmetic and algebra, is all that is necessary to make your children happy, and to insure them honorable success in life? Is the great object and end of man's existence in this world to get money and become rich? Do you send your boy to school to learn to become "sharp" and get gain? Does wealth of itself produce happiness? Your answer to all these questions, given from experience, is, No! Oh! tell me not, for I know well, how you long to breathe into your son's and daughters to noblest sentiments of your warm and tender parental hearts. You know from experience how chilly is this ocean of life, and how difficult it is to sail across it without sinking to the bottom; that even wealth, with all its glittering appearances, cannot prevent such a sad end, if unaccompanied by correct moral principles. And you know, too, that the vessel in which every man is compelled to sail over these rough waves is built in youth. Will you then, *can* you, look with indifference upon the character of him who trains and educates your child?

The English language contains two lines, which are often quoted by writers when speaking of general influence of education. They are these familiar words:

Tis education forms the common mind;
Just as the twig is bent the tree's inclined.

There is much truth in these words, and yet, I think, they convey to many minds a great error. If the writer thereof meant to say, that mere intellectual culture is sufficient to promote morality and to make men good and worthy citizens, he made a very great mistake. Intellectual culture does undoubtedly form and mold the mind, but it exerts no influence upon the heart, which is after all the fountain and source whence spring all our thoughts, and were lies the motive power of all our deeds. Mental training forms the mind; moral and religion culture govern and influence the heart. Education, without religion and morality, produces but a doubtful blessing.

Nearly two thousand years ago the greatest and wisest teacher that ever trod the earth, entered our world and introduced among men, and exemplified in his life, the best code of morals with which mankind has ever been blessed. On one memorable occasion the following words fell from his sacred lips: "Seek ye first the kingdom of God, and His righteousness, and all these things shall be added unto you." This declaration embodies a principle of moral ethics that underlies our entire social and political existence; and it is, moreover, so broad and comprehensive in its meaning, that it can be applied to all our undertakings, and made the law of conduct in all our social transactions with one another. No other words can express more beautifully than these of our Saviour, that happiness and prosperity are connected with business transactions based on righteousness; that he who values his moral principles above mere earthly gain will meet with more success in the end than he who acts from opposite principles; that he who makes it the first and chief aim of his life to be righteous in all his dealings, lives in accordance with the laws of social life established by heaven itself, and that he will be abundantly rewarded. In all we purpose to do, and in all our business intercourse with one another, this principle is to be our rule of conduct. The worth of any occupation is not to be measured by the amount of earthly gain it may temporarily bring us. Its value must depend

upon the moral basis on which it rests, and on the principles which govern us while engaged in it. If it stands not on such a basis, its foundation lacks firmness, and it will therefore give way from under us, and disappoint us in all our hopes and calculations. They who disregard this principle, and build not on this broad moral basis in their pursuits in life, must fail in their aims, and verify in their own sad experience that there is "a sorrow that worketh death."

If it be true, then, that unless correct moral principles underlie our business transactions; that, unless those who direct and control our extensive commercial affairs, and, that unless those who give tone and force to the thinking of our social life, are governed by a proper sense of their accountability to the Supreme Ruler of the universe, we must suffer seriously in that which ought to secure us true national prosperity and happiness, how important is it then, also, that our system of education be placed on the same moral basis upon which rests our entire social existence.

If all that has just been said be true—and no one in his sane mind will deny it—the question then arises: To whom belongs the duty of furnishing this part of a child's education? When and where should it be given? Should the teachers of our common schools be entrusted with the whole or with any part of so sacred and tender an interest? It must rest with some one. Who are the parties to whom it belongs? These questions will be considered in my next article.

Some remarks on Emulation--How to call it forth.

By WM. MCKAY. (*)

Mr. President and gentlemen:—The subject of to-day's debate is decidedly one of the most important that could occupy the time and attention of the teacher. And I will venture to assert that, no question falling within the teacher's province is less understood. Perhaps my assertion may be questioned by some, and by others ignored; but, sir, I will believe my position is tenable—experience has taught me so, and the wisdom, experience, and practice of both ancient and modern teachers; not only confirm my belief, but place it beyond dispute. Why do I assume or assert that, no question pertaining to the school-room is less understood than that of "How to excite Emulation in the pupils." Well, sir, I think I need not go further, than to place before you the great diversity of character, of talent, of age, of disposition, which every teacher must be prepared to encounter when he enters into his school-room duties. Is any one prepared to say, when he contemplates the school-room with its living mass of diversities: or when he enters on his duties as teacher that, this is only a secondary question—that time and experience will combat the difficulty successfully. Yes, time and experience will soften and smooth many difficulties, and if he be an apt, and intelligent teacher, give him a clear idea of the character and dispositions of his pupils, what he may have to encounter,—to combat,—to overthrow. These may make him master of the situation; he may even be feared and obeyed in the department of discipline. But *fear* and *obedience* are concomitants that have often a contrary effect upon the lazy, the slothful, the dull than that for which they were intended. Again, sir, let us take a slight survey of the teacher himself. Let me ask, are all teachers possessed of those innate qualities requisite to

(*) Read before the French Teachers' Association in connection with the Jacques-Cartier Normal School, Montreal, January 29th, 1875.

command respect, to exercise authority? Concomitants; which must invariably attend incitement to Emulation. Neither you, Sir, nor any sane man would answer this question in the affirmative: No! you know it would be contrary to fact, contrary to reason, and contrary to experience. I have said that a teacher must be possessed of inherent qualities to render him successful, and worthy of the name of teacher. These may be classified categorically as *love, respect, authority, and fear*. The first of these qualities, I believe, will not be questioned in so far as regards the standing relation between pupils and teacher. But the last, namely *fear*, may be questioned with some show of plausibility: by *fear* I do not mean to place the term before you in its literal acceptance. What is meant is simply *fear of displeasing, fear of offending, fear of losing the love and friendship of the teacher*. Perhaps no man either in ancient or modern times, ever exercised such powerful stimulating influence over his pupils as did the "great master of Rugby," the celebrated Dr. Thos. Arnold. Rugby and "Master of Rugby" are passports over the civilized world for education perfected. How came Rugby to occupy such distinction in the educational world? Simply because Dr. Thos. Arnold possessed in a pre-eminent degree, love, respect, authority, and that fear to which I have already drawn your attention. Let me here say that these were reciprocal between both teacher and pupils, in so far as the dignity of the teacher was not compromised in that of the pupil.

I will now cite to you a remark made by one of the pupils of that celebrated institution, in illustration of the foregoing. A remark stamped with the concurrence and approbation of all the pupils of Rugby. He said "what ever peculiarity of character was impressed on the scholars whom it sent forth was derived, not from the genius of the place but from the genius of the master; throughout, whether in the school itself or in its after effects, the one image that we have before us is not Rugby but Arnold." Gentlemen, picture to yourselves the great Doctor with a tear in his eye, relating the following incident to his own family in after years. "Once" he says, "in the school-room, I lost patience with a stupid boy and gave him a sharp rebuke for his idleness." "Sir," said the boy looking up piteously into my face, "why do you scold me? Why do you feel displeased with me? I am doing my best: indeed I am." "Never, said the Doctor, will the look of that piteous face: that plaintive truthful declaration sent direct to my soul be effaced therefrom. No, its image is here still" laying his hand on his heart to suit the action to the word.

The above incident is related in illustration of the greatness and goodness of both head and heart of Arnold. A recent writer on Education, a practical teacher, one who has left his impress on the public education, (Dr. Bernstein) has declared that, 20 0/10 to 25 0/10 of the teachers of every country prove themselves good Administrators; good disciplinarians—perhaps 5 0/10 to 10 0/10 fair emulators and teachers:—And from 2 0/10 to 5 0/10 successful Emulators or men properly qualified for the onerous duties of the teachers. Now these figures are the result of travel, inquiry and observation; and whilst I acknowledge the candour of the man, apart from his native partiality for Prussia:—Yet it is with no small degree of pride and pleasure that, I find this frank, this high tribute, founded upon minute observation and comparison, paid to my native country and fellow countrymen "The Irish System is, in my opinion superior to any other system in Europe". "The Irish teachers though the worst paid class of public servants in Europe, are, as a body, superior to all and every class of public teachers on the Continent". The same authority in a

lengthened and magnificent analysis of the above figures, proves and I believe conclusively too, that the small percentage of good and successful teachers and emulators is to be attributed solely to one mischievous fact—that is, that the teacher's heart and soul are not concentrated in the duties of his calling. No: he exclaims, there is one point of paramount importance to him: far away and beyond in importance the minds, the bodies and the souls of the little creation placed under his charge—that point is, must I acknowledge it, the all powerful L. S. D. Again he says "as a teacher, I am the teacher's friend:—I know, I feel, I am convinced, they receive but paltry remuneration for the duties which state and parents expect from them: And assuredly such will ever be the case while teachers affix a higher value on the L. S. D. than on the human soul and intellect".

Now, Mr. President and Gentlemen: if I occupy your time and attention at great length; the vast importance and magnitude of the subject will plead my justification. The great importance of the subject I enunciated at the very commencement. I have given you some substantial facts which perhaps few if any if you ever heard or read of. Facts which some among you may deem foreign to the subject under consideration, but which I hold as of primary importance. I shall now proceed to lay down a general proposition or two of my own which may perhaps startle many: not on which are the best methods of exciting emulation, but why we have little or no emulation in our schools as a general rule. This charge, I shall bring home to teachers themselves. If from the premises I lay down, and on which I base my argument; a false or equivocal conclusion be adduced, I am open to conviction, deal with me as an illogical and wilful perverter of truth; but if I bring the charge directly home to the teacher; let each and every man who honors the name and profession, exclaim with unanimous accord: Yes we are the cause of "want of emulation", to us it must be attributed, but no longer shall we have it said as reasoning, rational beings, that we forget our duties to ourselves, and above all to those children placed under our fostering care.

Sir, it is a pretty evident fact. I had almost said an incontestable fact that, the man who desires to excel in any mechanical art, (here I shall except the mechanical genius) must acquire his skill, dexterity and excellence from study application, and practice. His mechanical tools must be adequate to his wants, and generally if not invariably select. These he employs unceasingly, his increasing skill, and laudable ambition to gain the summit of his profession nerve him with the most intense emulation. He will never rest, his brain is always employed, his tools get no time to rust, until he lays his oars tranquilly down on the proudest and loftiest summit of mechanical perfection. The same reasoning holds good in every profession. But let me come to the application. How many? or rather shall I say few how of our teachers, our professional teachers, the proudest, the noblest and the loftiest profession on God's earth to-day; if I expect the teachers and expounders of his word and law—Yes: how few, how very few do excel in this noble profession. Why do so few excel in it? I anticipate your answer. They divest themselves of laudible ambition they have few or no tools, (if you permit me the expression for books) and what they have generally of an inferior quality. In them there is no food for promoting emulation. Nothing to say they belong to the proudest and noblest mission on earth; no nothing to spur them onward. When their day's work is over their minds are either allowed to roam at large, or otherwise pour over the poisonous pages of some obscure and illiterate romance writer. Nothing to recall to their minds the

duties of the school-room on the morrow. No, nothing, absolutely nothing.

Will you say to me, sir, that my picture is too highly colored, that in the main my premises are wrong. If you cannot bring this charge home to me, my conclusion follows as naturally as that two and two make four, viz: that teachers are to blame themselves, in most, if not in all instances, for want of emulation in their classes. They don't study, nor read works treating on their profession to give them a laudable ambition or emulation. How, in the name of common sense is the man who has no ambition or emulation for his profession, to communicate or stimulate emulation in his apprentices. I think I need not carry the simile farther.

I shall now call your attention to a few "extracts" which sustain my proposition,—testimony which, I hold, challenges contradiction.

Dr. A. D. Lord of Columbus, Ohio. In speaking of general Libraries for teachers says: "We and the community would look with distrust, if not with contempt, upon the man who would commence the practice of the Law without having in his possession a single treatise on Law. Are we not, then, justified in withholding respect from one who attempts to teach without the opportunity of daily reference to the excellent works which have been prepared to teach teachers? The teacher should have a professional Library and should replenish it yearly, as regularly as he does his wardrobe, and as liberally as his circumstances will allow." (Quoted by Wells in a work intitled "Graded Schools").

Again Wells in the same work says..... "The character of schools must always depend mainly upon the character of the teachers, and the improvement of the schools generally bear a direct relation to the efforts made by the teachers for their own improvement. The teacher who is satisfied with present attainment, and whose ambition in school rises no higher than mere selfish repetition of past efforts, will be sure to furnish an example in which both teacher and school are constantly deteriorating. It is the manifest duty of the teacher to strive every day to make some positive advance upon the labors of the previous day. To this end he must not only be fruitful in expedients and assiduous in studying the character and dispositions of his different pupils, but he must also avail himself of the wisdom and experience of others who are engaged in the same work. The study of educational works embodying the results of the best efforts of successful educators in this and other countries is an indispensable auxiliary to the labors of the teacher who is desirous of advancing to a high standard in his profession."

Now, Mr. President and Gentlemen; I believe I have not only proved: but sustained my proposition by collateral evidence selected from Standard Authorities; I shall now come directly to my subject "Emulation", and give you the experience and sentiments of some of the best Educators living and dead on this greatest of school room questions.

Pestalozzi, quoted by Young says:—"The interest in study is the first thing which a teacher should endeavour to excite, and keep alive. There are scarcely any circumstances in which a want application in children does not proceed from a want of interest; and then are perhaps some under which a want of interest does not originate in the mode of teaching adopted. I would go so far as to lay it down as a rule, that whenever children are inattentive, and apparently take no interest in a lesson, the teacher should always look to himself for the reason. When a quantity of dry matter is before a child, when a child is doomed to listen to lengthy explanations, or to go through exercises which have nothing in themselves to relieve,

and attract the mind, this is a tax upon the spirits which a teacher should make it a point to abstain from impressing. In the same manner, if the child, from the imperfection of his reasoning powers, or his non acquaintance with facts, is unable to enter into the sense, or to follow the chain of ideas in a lesson; when he is made to hear, or to repeat what to him is but, sound without sense,—this is perfectly absurd. And when to all this the fear of punishment is added, besides the tedium in itself is punishment enough, it becomes absolute cruelty."

Young commenting on the above thus proceeds:

"The first thing to be considered then is—how to create an interest in study so as to cause the mind to receive and retain the necessary information. Knowledge may be divided into first, that derived from the involuntary actions of the senses impressed by some outward object or event, which by its novelty or interest makes a distinct and permanent impression on the mind; and secondly, such as is obtained designedly by compelling the attention of the perspective and reasoning powers to some subjects with which we wish to become acquainted. The first merely wants to be directed to become a fruitful source of improvement, but no child will adopt the second without some motive. Two stimulants were much in fashion in the old system, *fear* and *ambition*; fear of the rod, and ambition to be considered clever with a mingling of envy of the more gifted." He sums up this: "But will not *love* do more than *fear*? Will not the desire to acquire knowledge for its own sake, once awakened, do more than the wish to excel others? The answer is not difficult, and the choice once made, minor details will follow. Love and a desire for knowledge, should be the ruling motives kept always before the pupils. Herein lies the true principle of all emulation."

Wilderspin who may justly be considered the founder of the "Infant School System" as at present existing in Great Britain and Ireland, says: "The fundamental principle of education should be to let the child think for himself. If he arrive at erroneous conclusions, assist him in attaining the truth; but let him with such assistance arrive at it by his own exertions." "This," he maintains..... "will give him a vigorous and masculine character, grasping the knowledge thus acquired with the power and right of a conqueror thus placing him on the direct path for love of knowledge; and consequently inspiring him with a laudable emulation." The same authority would also have the teacher..... "encourage the development of peculiar talents in each individual; watch their progress, and remove them from class to class as soon as they are fit. The child who is not advanced in proper time will retrograde, and lose all spirits of emulation."

"De Fallenberg should have every hour occupied, so that the evil shall not find opportunities for development."..... "A mind if not active for good is active for evil. Industry quickens, cheers, and gladdens every moment that it occupies, and is the mother of many virtues when it has grown into a temper of the mind, and the nursing mother of many more. If a mind be inactive, it must not be left to its own stagnation: it should not be listless even in its pleasures. All great seminaries of learning are conducted upon the principle of the "Division of Labor," wherein are occupied a number of masters, and consequently a variety of occupation. Change of room and occupation seems a renewed activity of the mind; its elasticity is restored by the short interval of freedom allowed between the lessons, and by the entering upon a new train of ideas, for the faculties are not fatigued by the occupation, as by being too long employed upon one subject. A

variety of masters has also this good effect; a boy may begin the day under unfavorable circumstances: idleness, dullness, inaptitude, caprice, or some trifling physical ailment, and during his first lesson incur disapprobation; now if he have the same master during the greater part of the morning, both continue under the same impressions. When the master is changed, the faults committed during one lesson are not carried on to the next."....."And thus the stimulus for *competition* and *emulation* is left intact." Rollin speaking generally on the comparison between Private and Public Education, following in the wake of his favorite authority the great Quintilian thus sums up....."the great advantage of schools is *emulation*. A child there improves both by what is said to himself and what is said to others. He will every day see his master approve one thing, and correct another; blame the idleness of this boy, and commend the diligence of that, and he will be the better for it all. The love of glory will serve him as an incentive to take pains. He will be ashamed to give place to his equals, and will take pains to excel the most forward. A good scholar will use his utmost endeavours to be the first in his form, and carry the prize. This gives ardor to young minds; and a noble emulation well managed without any mixture of malice, envy, and pride, is one of the best means to lead them to the exercise of the greatest virtues, and the most arduous undertakings."

"It is requisite, says Fenelon, to pursue all possible means to make things you require of them agreeable to the children. Have you any thing displeasing to propose to them? Let them know, that the pain will soon be followed by pleasure; show them always the usefulness of what you teach them; let them see its advantage in regard to the commerce of the world and the duties of particular stations. This, tell them, is to enable you to do well what you are one day to do; it is to form you judgment, it is to accustom you to reason upon the affairs of life. It is requisite, to show them a solid and agreeable end, which may support them in their labour, and never pretend to oblige them to the performance of a dry, absolute authority."

That part of the works of Rollin from which I have taken the above extracts, is simply the pith of Quintilian, Locke, and Fenelon in treating of the same subject.

In summarizing the above "extracts," I deduce the following fundamental propositions:

1o. Prop. The teacher to become a successful emulator, must acquire the title for himself, by a laudable rivalry among his co-laborers.

2o. He must not only possess a thirst for general knowledge; but a particular thirst for professional knowledge.

3o. A love for communicating knowledge.

4o. Aptness to teach.

5o. He must be capable of securing attention. The teacher who fails to get the attention of his pupils, fails wholly. There is, and there can be no teaching where the attention is not secured.

6o. To hold the attention when once secured: the teacher must always be thoroughly prepared in the lesson: so that the pupils may feel they are learning from him.

7o. The teacher must always have his knowledge perfectly at command, it must be on the tip of his tongue.

8o. The pupils must be each and every one, constantly under the eye, and the eyes must be used quite as much as the tongue.

9o. The teacher must learn to teach without a book. How, I may be asked, is this to be done? My answer is simple and to the point. Make a thorough and constant preparation of your lessons: As did the celebrated Rollin

who declares that, he never entered his class-room without such preparation.

10o. In teaching any subject introduce it in a manner suitable to the comprehension of your pupils; divested of all extrinsic matter. Show its use and importance not only now, but in all future time. The boy is not fitted to the instruction, but the instruction to the boy.

11o. The teacher must identify himself with the plays and pastimes of his pupils. Enter into all these with the spirit and buoyancy of childhood, (yet taking care to preserve his dignity and decorum) by so doing he imperceptibly insinuates himself into the confidence and affections of his pupils, and therein creates an undying regard, which is one of the great secrets of emulation.

12o. The great rule of making the lesson interesting on whatever subject, must never be lost sight of. This it is agreed by educationists and teachers, is the climax of all emulation.

Mr. President and gentlemen,—I feel that I have discharged an important duty hereto-day. If my words, quotations and suggestions, should only set one teacher in every hundred a thinking and reading, then may I say with something approaching self congratulation: my words have been the means of creating emulation, laudable emulation among our teachers and schools.

Origin of the name America.

BY JULES MARCOU.

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The controversy as to the priority of discovery and the honor of bestowing a name on the New World has been so long undecided,—almost three centuries,—that any light thrown upon this intricate problem may help its true solution, if the truth be discoverable at this late day; and with this hope I offer the following contribution.

Americ, *Amerrique*, or *Amerique* is the name in Nicaragua for the high land or mountain range that lies between Juigalpa and Libertad, in the province of Chontales, and which reaches on the one side into the country of the Carcas Indians, and on the other into that of the Ramas Indians. The Rios Mico, Artigua, and Carca, that form the Rio Blewfields; the Rio Grande Matagalpa, and the Rios Rama and Indio, that flow directly into the Atlantic; as well as the Rios Comoapa, Mayales, Acoyapa, Ajocuapa, Oyale, and Terpenaguatapa, flowing into the Lake of Nicaragua, all have their sources in the *Americ* range (1).

The names of places, in the Indian dialects of Central America, often terminate in *ique* or *ic*, which seems to mean "great," "elevated," "prominent," and is always applied to dividing ridges, or to elevated, mountainous countries, but not to volcanic regions: for instance, Nique and Aglasinique in the Isthmus of Darien (Estados Unidos de Colombia); Tucarique and Amerrique in Nicaragua; Amatique, Manabique, Chaparristique, Lepaterique, Llotique and Ajuterique in Honduras; Atenquique (Estados Unidos de Mexico); Tactic and Polochic in Guatemala; Tepic, Acatic, and Mesquitic in the state of Jalisco. The list of Indian local or other names, with the termination of *ique* or *ic*, as Cacique or Cacic, great chief, might be easily lengthened.

It is now well known, through the learned researches of philologists for the last twenty years, that no denomi-

(1) See public documents of the Nicaragua government; and *The Naturalist in Nicaragua*, by Thomas Belt, 8vo. London, 1873.

nations are more securely established than the names of localities—mountains, valleys, lakes, rivers. Even the most absolute conquest, unless it totally exterminate the aboriginal race inhabiting a country, does not destroy entirely the names of localities, or *lieux-dits*, as the French so well express it. These names may be slightly modified, by various spelling, but the primitive sound remains. And even where the aboriginal race entirely disappears, the names of places are often preserved, at least as synonyms; of which there are many examples in Canada, in New England, in the State of New York, and elsewhere throughout the Union.

The question to be decided is, whether the word Americ or Amerrique, designating a part of the *terra firma* discovered by Cristoforo Colombo, on his fourth and last voyage to the New World, was known to the great navigator, and consequently could have been repeated by him or by the companions of his voyage. There is no certainty of this; for the word is not found in the very brief account he has left us. But as the origin of the word Americ has been until now an enigma, in spite of the different interpretations of it that have been given, and as Vespuchy has nothing to do with this name, entirely unknown to him,—the inventor of the word Americi or America being a printer and bookseller in a small town hidden in the Vosges Mountains,—it is perhaps well to review the facts, and to show where lies the greatest probability for a true solution of the origin of this word America, which denominates alone a hemisphere.

In the *Lettera Rarissima* of Cristoforo Colombo giving an abridged description of his fourth voyage, 1502-3, he says that after having passed the Cape Gracias a Dios, on the Mosquito coast, he reached the Rio Grande Matagalpa, which he called the Disaster River, and after remaining anchored there for several days, he stopped some time for repairing his ships and giving rest to the crews, between the small island of La Huerta (the garden Quiribiri) and the continent, opposite the village Cariat or Cariat. Cariat is so like Carcai, or the dwelling-place of the Carcas Indians, who still live in that neighborhood, that it is possible the variation is caused by an error in reading the manuscript letter of Colombo, the *e* having been mistaken for an *i*.

The great object of the desires and researches of Colombo and his company was the finding of gold mines; and of these the inhabitants of Cariat or Carcai had much to relate; they led Colombo to another village called Carambaru, whose inhabitants wore golden mirrors round their necks. These Indians named several places where mines of gold existed, the last named being Veragua, twenty-five leagues distant on the coast.

Colombo and his company were struck by the number of sorcerers (medicine men) among the Cariat or Carcai; and the sailors afterwards thought they had been bewitched by them, as they suffered from the many tempests and mishaps of all sorts they were obliged to endure for the rest of the voyage.

What was the geographical position of Cariat (Carcai), Carambaru, and Veragua? Veragua is known to be in the great Bay of Chiriqui (Costa Rica): Colombo says in his narration, "It is the custom in this territory of Veragua to bury the chief men with all the gold they possess;" and in these last years gold had been found in the tombs of the aborigines of that country. Carambaru was at least twenty-five leagues distant from Veragua (Chiriqui), which brings us a little to the north of the Rio San Juan and Greytown. Cariat (Carcai) must have been a little farther north, in the neighborhood of the mouth of the Rio Blewfields (of which the Rio Carea is one of the affluents), where are several islands, and this

accords with narration of Colombo. The Carcas Indians inhabit all this region, and work to-day in the gold mines of Santo Domingo and Libertad, on the Rio Mico, another affluent of the Blewfields, at the foot of the Americ (or Amerrique) range. Carambaru was probably near the Rio Rama, and in the country of the Ramas Indians. Now the Ramas and Carcas Indians have always resisted all attempts at civilization; most of them, especially the Ramas, are wholly savage, and allow no one to penetrate into their country; they have remained the same as they were when Colombo visited them in 1502.

It is well known with what tenacity the Indians attach themselves to all their surroundings; and the Americ or Amerique range forms the highest chain of mountains in the country of the Carcas and Ramas Indians, the average being three thousand feet; making a dividing line between the waters flowing directly into the Atlantic, and those that empty into the Lake of Nicaragua. According to travelers who have visited certain places in the neighborhood of Libertad, Juigalpa, and Acoyapo, this mountain range is very conspicuous; it is seen from afar, with its precipitous rocks, great white cliffs, and huge, isolated, rocky pinnacles. This ridge divides the country into two parts, distinguished by totally different climates. To the east continual rains have caused impenetrable forests, and to the west of this dividing line the country is arid and unproductive for want of rain. The Americ range prevents the passage of all the moisture from the Atlantic. The direction is from north-west to south-southeast, and the last spur of the range is on the Atlantic coast a little to the north of Greytown; the ramifications being in the country of the unapproachable and savage Ramas Indians.

There is the strongest evidence that this word, denoting the range and the rocks of Amerrique, Amerique, or Americ, is an indigenous word, the terminal *ique* or *ic* being common for the names of locality, in the language of the Lenca Indians of Central America, a part of Mexico; and that this name as been perpetuated without alteration since the discovery of the New World, by the complete isolation of the Indians who live in this part of continent, who call their mountains by the same word to-day as they did in 1502, when Colombo visited them, Amerrique, Amerique, or Americ. These mountains are auriferous; at their foot lie the gold mines of Libertad and Santo Domingo, and further, the gold of the alluvium or the placers is entirely exhausted, which can only be explained through a previous washing by the Indians themselves; at present the gold is to be found only in the veins of quartz rock.

Colombo says the Indians named several localities rich in gold, but he does not give the names in his very curtailed account, contenting himself with citing the name of the province of Ciamba; but it is highly probable that this name Americ or Amerrique was often pronounced by the Indians in answer to the pressing demands of the Europeans of the expedition. The eagerness for gold was such among the first navigators that it formed their chief preoccupation everywhere; and it is almost certain that to their continual questions as to the place where the gold was found that the Indians wore as ornaments, the reply would be, from Americ, this word signifying the most elevated and conspicuous part of the interior, the upper country, the distinguishing feature of the province of Ciamba.

It does not follow that Colombo was ignorant of the word Americ because he has omitted it in the *Lettera Rarissima*, which was addressed by him to his Catholic Majesty, the powerful King of Spain. It is evident, from his mention of several places where gold was to be found, as the Indians had told him without giving their names,

that he did not tell all he knew; and it must be remembered that the *Lettera Rarissima* was written under the most painful circumstances. He was a prisoner in the island of Jamaica, loaded with chains, old, infirm, and overwhelmed by suffering and injustice, and not in a position to make a very full report of his expedition. His account of his fourth voyage is the least clear and precise of all his writings, showing in its confused and melancholy style the sad condition to which he was reduced, and although the name *Americ* is not seen therein, the regions may have been considered by Colombo and his companions as an unexplored *El Dorado*, occupying the interior of the country in the province of *Ciamba*, along the coasts of which they had navigated.

We may suppose that Colombo and his companions on their return to Europe, when relating their adventures, would boast of the rich gold mine they had discovered through the Indians of Nicaragua, and say they lay in the direction of *Americ*. This would make popular the word *Americ*, as the common designation of that part of the Indies in which the richest mines of gold in the New World were situated.

The word *Americ*, a synonym for this golden country, would become known in the sea-ports of the West Indies and then in those of Europe, and would gradually penetrate into the interior of the continent, so that a printer and bookseller in *Saint Dié*, at the foot of the *Vosges*, would have heard the word *Americ* without understanding its true meaning as an indigenous Indian word, but would become acquainted with it in conversations about these famous discoveries, as designating a country in the New Indies very rich in mines of gold.

Hylacomylus (2) of *Saint Dié*, ignorant of any printed account of these voyages but those of *Albericus Vespucius*,—published in Latin in 1505, and in German in 1506,—thought he saw in the Christian name *Albericus* the origin of this, for him, altered and corrupted word, *Americ* or *Amerique*, and renewing the fable of the monkey and the dolphin, who took the *Piræus* for a man, called this country by the only name among those of the navigators that had reached him, and which resembled the word *Americ* or *Amerique*.

In order to accomplish this it was necessary to change considerably the Christian name of *Vespucius*, and from *Albericus*, *Alberico*, *Amerigo*, (3) and *Morigo*,—which are the different ways of spelling the first name of *Vespucio*, or *Vespuchy*, or *Vespucci*,—he made *Americus*! Thus, according to my view, it is owing to a grave mistake of Hylacomylus that the aboriginal name of the New World, *Americ* or *Amerique*, has been Europeanized and connected with son of *Anastasio Vespucio*.

Had this mistake occurred in Spain, Portugal, or the West Indies, evidently it would have been corrected; for *Vespucio* and many of the companions of Colombo were still living. But in the little town of *Saint Dié*, the name of which probably was never known to *Cristoforo Colombo* or *Alberico Vespucio*, distant from any sea-port, this little pamphlet of the bookseller Hylacomylus (4) was

(2) This teacher, bookseller, and printer, of *Saint Dié* (*Vosges*) is so little known that even his name is not exactly known; it is thought to have been *Martin Waldseemüller* or *Waltzemüller*, and that the Latin name of Hylacomylus was adopted by him in accordance with the custom of the time.

(3) It is important to remark that Hylacomylus knew only the names *Albericus* and *Alberico*, which renders the creation by him of the name *America* still more improbable, if he had not heard the indigenous name *America*. The first name of *Vespucio* was only spelt *Amerigo* and *Morigo* in Spanish documents that remained unpublished until many years after the death of Hylacomylus.

(4) Intituled, *Cosmographiæ Introductio cum quibusdam Geometriæ ac Astronomiæ principiis; ad eam Rem necessariis insuper quatuor Americi Vespucii Navigationes*; p. 52 in quarto, 1507.

restricted to a small circle; and in truth it is around this limited area that the error was propagated and prolonged by the publication of a new edition of the pamphlet of Hylacomylus at *Strasburg* in 1509, and by the appearance at *Basle*, in 1522, of the first map upon which was seen *America provincia*.

This map, with the name *America* upon it, reached Spain long after the death of *Cristoforo Colombo*, which took place in 1506; and the companions of his expedition, almost all unlearned men, were also either dead or gone back to the Indies, and no one was there who could correct the mistake, even supposing that the map gave the origin of the word. The name *Americ* had been heard, not as that of a man, but of a country, of an undetermined portion of the terra firma of the New World, and it was accepted without difficulty, no attention being paid to the mistake of the printer and bookseller of *Saint Dié*, whose pamphlet was probably unknown in Spain.

There can be little doubt that the world *Americ* was not only known, but popularized to a certain extent, in the sea-ports of Spain, Portugal, and the Indies, or it would not have been thus at once accepted by universal consent, without discussion. This is all the more probable from the fact that Hylacomylus, beside the marked alteration of the rule which has always been followed in naming countries, by giving the first name instead of the family name of his hero; he should have called the New World *Vespuzia* or *Vespuchia*.

The Christian name of an ordinary man is never used to designate a country, but only that of an emperor, king, queen or prince; thus we say *Straits of Magellan*, *Vancouver's Island*, *Tasmania*, *Van Diemen's Land*, &c., while we have, on the other hand, *Louisiana*, *Carolina*, *Georgia*, *Maryland*, *Filipinas*, *Victoria*, &c. There is no exception to this rule in the case of *Cristoforo Colombo*, for no one has thought of giving the name of *Cristoforia* to a country, and that of *Cristoforo* to a town; while at several epochs many names of *Colombia*, *Columbia*, *Columbus*, and *Colon* have been given. Furthermore, in giving to *Vespucio* the honor of naming the New World, Hylacomylus, using the Christian name contrary to all precedent, should have named it *Albericia* or *Amerigia* or *Amerigonia* or *Morigia*, and not *America*.

The only way to explain this name, reached with such difficulty, is that Hylacomylus had previously heard pronounced the name *Americ* or *Amerique*.

Amerigo Vespuchy (as the name is written by *Cristoforo Colombo* in his letter dated *Seville*, 5 February, 1505) died in 1512, long before the publication at *Basle* of the map in *Mela cum commentatio Vadiani*, without knowing "the dangerous glory that was preparing for him at *Saint Dié*," as *Humboldt* expresses it; he believed until the end of his life that the New World was the coast of *Asia*, and died as he had lived, *piloto mayor de Indias*.

This belief in the Indies, and the nearness to the river *Ganges* of their discoveries, prevented *Colombo*, his contemporaries, and his successors, from giving the countries they found a collective name. The idea originated with men in the interior of the Continent of Europe, unacquainted practically with the navigation of those times, so feverish with the excitement of voyages; and who, repeating the sayings of the sailors, without knowing very well what they were about, applied a name already known to those who had returned from the Indies, but which was without any exact geographical position, to an entire group of newly discovered lands, hardly then recognized as a whole.

The mistake of theoretical geographers of *Saint Dié*, *Strasburg*, and *Basle* could hardly have been corrected, unless by *Colombo*, who was no longer in this world;

and then the discoveries of Cortez, Pizarro, and others, came to change the direction of ideas as to the countries fabulously rich in gold.

Although Nicaragua was conquered in 1522, by Gil Gonzales de Avida, a part of it remained wholly unknown, especially the region extending from the Atlantic to Lake Nicaragua, in which lies the Amerrique range; and the ignorance of this part of America has continued so long, that the Californian emigration even has passed by it across the Isthmus of Nicaragua without any knowledge of or interest in its existence. It may be said that the region of country lying between the Caribbean Sea and the dividing line for the waters that flow into Lake Nicaragua is to this day entirely unknown; the Carcas and Ramas Indians, especially the latter, oppose any entrance into their country, rejecting even the Indians who search for caoutchouc, and who intrepidly pursue their work in countries as yet closed.

The theory I have presented has some great advantages. In the first place, it takes nothing from the glory of Colombo, the name of the continent discovered by him being an indigenous name which, from designating a small and limited country, has been extended to include the whole of the New World, through the mistake of a teacher, printer and bookseller in a little town hidden among the Vosges Mountains.

The accusations of plagiarism from which Alberico Vespuzio has suffered are abolished, and there is no longer any reason to reproach him with having imposed, or having suffered to be imposed, his Christian name on a whole continent; inasmuch as this name was never Americ or Amerique, but Alberico or Amerigo. The name Americ, although aboriginal, makes no confusion between a part and the whole, because the locality where it exists as *lieu dit* is too small, obscure, and insignificant to give rise to any false or double meanings of the term. Finally, this name appears to be admirably chosen, extending as the Americ range does from the centre to the extremities of the continent, radiating as it were, giving one hand to the North and one to the South, looking to the Antilles and to the Pacific, and being even the central point of the immense chain of mountains which extends from the Tierra del Fuego to the borders of Mackerzie River, and forms the backbone of the western hemisphere; in truth, the longest range of mountains upon our globe.

It is well chosen, also, as it probably was heard by the great Admiral Colombo on his fourth voyage, the illustrious discoverer of the New World being the first European who heard and pronounced the word Americ or Amerrique, although we have no material certainty of this. Had the name belonged to a part of either extremity of the continent, it would hardly have been so readily accepted; but it grasped and took the New World as it were round the centre, vaguely, merely signifying a region very rich in gold mines; and it was employed and accepted without a thought of the pilot Alberico Vespuzio; it was a long time after that discussions arose among learned geographers, and that the gross mistake of Hylacomylus was imposed upon the world as truth. In a world, the name Americ is American.

Early Teaching.

BY MARIA H. MIDDLETON.

No one who has carefully observed human nature can doubt that in each individual is born a separate and distinct and inalienable character of his own, modifiable

debasable, but in the beginning and the end recognizably the same.

" Du bist am Ende—was du bist.
Setz' dir Perruecken auf von millionen Locken,
Setz' deinen Fuss auf ellentrohe Socken,
Du bleibst doch immer, was du bist."

Education in its broadest sense means, after all, but the aid which can be given morally, intellectually, and physically to that development which is in the first instance the work of nature. Yet what an art it is! To carry it on successfully what a combination does it require of straight-forward plain-dealing, with conscientious tact, sound judgment, and discretion!

When we look round on the wonderful diversity of character and the wide difference of disposition that becomes visible in children at the earliest age, it seems natural enough that there should be varying opinions and theories as to the best mode of rearing them. But unhappily these theories, reduced to practice, do not vary as we should expect them to do, so as to suit themselves to the improvement of the beings they are intended to act upon, but rather according to the arbitrary whims and convenience of those who hold them; and just as often the love and tenderness which children inspire blind and bias the judgment not prone to err on other subjects. "Nothing is so bad for a child as strictness." So says many a tender mother, and acts on the conviction, regardless that the maxim contains but partial not absolute truth.

That habit of immediate obedience which is a child's only safeguard from many evils can not be too early insisted upon. A baby fifteen months old is sometimes seen to display an obstinacy and defiance quite comical in its intensity, but giving sure warning of the discipline already needed by the unruly spirit. Very early too, as soon as the faculty of reason begins to work, should we try to make plain to the comprehension *why* obedience is a duty; because, after all, what we want is not the subdued spirit of the well-trained ox, but the glad, ready acquiescence of the trustful, reverential human being; not the dogged, discontented yielding to fear of punishment, but the rational, enlightened resting on superior guardianship. The subject seems too trite to admit of argument, all mothers who have followed the old proverb know so well its efficacy; but at the present day the mistake has become so common of believing that a child is the worse for not being allowed its own way, and that strength of will and individuality will be the sacrifice if he is early made to go in the way he should walk in, that an exposure of the fallacy is not uncalled for. Those who do not believe in the permanent influence of early impressions should at least remember that the every day happiness of children is best consulted by giving them a higher will to follow than the dictates of their own wavering and untaught fancies.

Let each person observe in his own limited experience which children are the happiest and healthiest in every sense; those who rule their parents and follow their own caprices? And looking farther, which have grown up into wise and worthy citizens: those whose early days were left in their own hands to fashion as they would?

No. Where the character is by nature strong and decided we need not dread that it will lose its tone from judicious training; if it be deficient in depth, the greater need is there to supply its want by cultivation and guidance. Raw nature is as poor a reliance in moral matters as "raw genius" is well known to be in matters intellectual.

One of the hardest questions that present themselves in the bringing up of children is how best to manage and make available for good that sensitive temperament

which has become so painfully common in these days of indulgent parents, whose weak nerves and overweening tenderness are often the prime cause of the mischief. Who shall pretend to estimate the amount of torture which falls to the lot of a child in whom this disposition, early manifested, has been nourished and exaggerated by injudicious treatment, by undue tenderness, or by undue harshness? Both are equally perilous; for this morbid plant, sensitiveness, is best fostered by extremes, and can be uprooted only by the greatest care and skill. It is not uncommon to see this defect regarded by a fond parent with almost admiring sympathy; and the child learns to pride itself on that excess of feeling which, if not subdued in early years, will become the bane of its life. Nothing is more true than that this lauded sensitiveness is ever a sign of an unhealthy imagination, and that it is sure to degenerate into one of the most subtle forms of self-love. A child can not be too early taught to despise it in himself as a weakness that prevents him from seeing and judging clearly. Do not tell him he is sensitive; that is a "grown-up" word he will take credit to himself for deserving, without understanding all the sad meaning of it. But by slow degrees, by gentle reasoning, by loving remonstrance even, this weakness of character may be braced, and the extreme tenderness for self be turned into delicate consideration for the feelings of others.

Another habit of mind allied to this one, but even more common and more difficult of cure, is an intense self-consciousness from which some children suffer severely, and which, if not checked, becomes a most serious impediment to the strong development of mind and character. The impossibility of losing the thought of self in the present interest either of work or amusement, stunts the energies so effectually that opportunities of improvement and enjoyment pass by half used or unheeded; and the dwarfed being, engrossed in its petty self-contemplation, loses more and more the capacity for extending its sphere healthy mental and moral action. It is impossible for any one who has not felt, or at least carefully watched, the fatal working of this mental disease to judge of the loss of power it entails. This self-consciousness is not simple shyness, for it is often active in solitude; nor distrust of self, for it is compatible with great self-esteem; nor is it self-conceit, for at times it causes agonies of self-reproach; it is not by any means but another word for vanity; but it partakes of the nature all these, showing itself as often in one form as in another. It is always ambitious to excel, yet is in itself a bar to all excellence.

Now how much of all this is the result either of neglect or error in the bringing up of the child? We all agree that there is no charm about childhood so great as the unconscious grace with which it shows itself what it genuinely is, without guile or premeditation; yet how often we thoughtlessly destroy the very attraction that fascinates us by unwise remark and untimely notice! A child learns so easily to think itself pretty, clever, engaging; and so slowly that the "weightier matters of the law" are not comprised in these. "A quick child will always find out the truth about such things." So it will; therefore do not help it to this knowledge, because with its immature judgment it can not weigh things great and small by just measure, and, dwelling on what it is, will forget that it never can be the half of what there is no safety but in its striving to become. And thus is the old advice to administer to children "a little wholesome neglect" still most valuable in regard to certain matters.

When this unfortunate temper of mind has grown with the growth and strengthened with maturing years, it is well-nigh ineradicable even by the sternest self-discipline; nay, often it has become so much a part of the nature

that its possessor remains forever ignorant how much his powers are cramped by it. Where it is constitutional, and not the consequence of the thoughtless folly of friends, it must be combated by awakening and bringing into activity the opposite tendencies. Let the child be drawn away from self-occupation by being led to take an interest in others; let him learn imperceptibly to feel how pleasant it is to think of a great variety of subjects; above all, if he shows a particular fondness or facility for any kind of work, encourage him to exercise it; awaken his enthusiasm, and you save him from himself.

When we turn from faults to be cured or avoided to virtues that must be cultivated and instilled, there can surely be no question. Entire truthfulness is the noblest foundation of character, and from the earliest age it should be insisted on in word and deed, by precept and example, as the one thing most needful; for it is the primary source of moral and mental health, without which whatever else is fair and beautiful will be stained with impurity. Most people allow this, but only half regard it. A child is ordered not to tell stories, is some times punished when he does; while often he detects words of untruth spoken by his elders—"innocent white lies" they are perhaps called. Falsehood is of different kinds, and we will not discuss its varying degrees of heinousness; but even these "white lies," comparatively innocent as they are, will be found, when narrowly looked into, to leave a stain on the conscience and to lower its moral tons; in so far, at least, they are never harmless.

Why is it that anxious parents who strive so earnestly to implant a heartfelt love in their children of all that is good and true, are so slow in calling to their aid the love of all that is beautiful? The connection that has existed from everlasting between these three ideas should never be lost sight of in our teaching. God has joined them together, and it is at his own peril that man disunites them. At what stage is the human mind so apt to catch a glimpse of their eternal harmony as when it is first opening, fresh and pure, for the reception of all wonderful truths? A riper age will better grasp abstract truth, will more keenly appreciate sacred beauty, will more highly prize the nobility of goodness; but only to innocent childhood is it given to accept trustingly, unquestioningly, and with absolute belief the thought that all these form but one great and inseparable whole. Older and stronger eyes see but can not unravel the interlacings of darkness with light; to the little child the "true light" may shine and all the dark lines be mercifully hidden. So let us never forget to teach the children that part of happiness which lies in the recognition of "all things bright and beautiful."

It is a pretty thought of an American authoress, and one worthy of being acted on, that children should be early led to the habit of observing the sky and its wonderful and perpetual change of beauty. And what an exquisite touch does Bulwer give to the description of one of the heroes in his best novel, when he says that Leonard's eyes had in them the look of having gazed much at heaven!

As regards that part of a child's education which is to be obtained from books, it seems very strange that doubt should ever arise as to the best instructor. Is it not self-evident that, where circumstance make it possible, the father and mother are the channels through which knowledge of every kind flows most easily, most beneficially, into the child's understanding? Who, if not they, will regard it with the love and interest needed to impart with patience, with sympathy, with delicate tact what is good for the food and growth of the young mind—that much of knowledge and no more, that sort of knowledge and no other?

And yet we are told that lessons from books are a thing apart, not belonging to the parents' duty, but to the province of the trained teacher. Why? Not because the parent is incapable—that would imply too open a reproach; but because the worry and irritation inseparable from teaching and learning alienates the love of the child. That is the answer. But what a confession it is—a confession that one of the strongest and most effectual means of influence is cut off from the natural guardian and guide! Can it be true? Where loving wisdom and firmness and forbearance actuate the teacher he is never the object of aversion or disgust, but of reverence and affection. Doubly powerful then must be his teaching if it is further aided by the strongest of natural ties between him and his pupil; and it is only when the prime requisite of self-control is wanting in the parent that he need dread for himself the consequence of fulfilling this plainest of duties. Many and inestimable are the advantages derived from schools and colleges and the other modes of the public instruction after the first years of expansion and growth are at an end—advantages most of them not attainable in private tuition; but for those tender first impressions there is nothing to be had equal in benefit to pure and conscientious home-teaching.

After all comes the question, Where are we to find the ripe judgement, the practical wisdom without which, say what we will, teacher, guardian, nay, father and mother, are all incompetent to their charge? Like the other great treasures of heaven and earth, these precious qualities are rare—not possessed in any eminent degree but by those who have striven and suffered for them. In the experience of their lives, in the depths of a prayerful humility must parent and teacher alike seek what they need, or answer to themselves and to their children for the lack.—*Home and School for February.*

The Seven Laws of Teaching.

REV. J. M. GREGORY, LL. D.

If we analyze carefully a full and perfect act of teaching, we shall find that it involves seven distinct elements, or parties and parts—two actors, a teacher and a learner; two spiritual elements, the knowledge to be communicated and the medium of communication; and three active processes, that of the teacher in teaching, that of the pupil in learning, and that of testing and rendering permanent the work done. None of these elements can be subtracted and leave the work entire and complete; and no true account of the philosophy of teaching can be given which do not include them all.

Each of these seven elements has its own great natural condition or law of action, and these, taken together, constitute the Seven Laws of teaching. These laws are so simple and natural that they must suggest themselves almost spontaneously to anyone who will carefully note in turn the several parties and elements already named. Is it not evident that—

1. A teacher must know thoroughly what he would teach.

1. A learner must attend with interest to what he would learn.

3. The medium must be language understood by both teacher and pupil in the same sense.

4. The truth to be taught must be related to truth already known, as we can only reach the unknown through that which is known.

5. The act of teaching is the act of arousing and guiding the self-activities of another mind so as to develop in it a certain thought or feeling.

6. The act of learning is the act of reproducing, fully and accurately in our own understanding, the ideas to be acquired.

7. The test and confirmation of teaching are to be found in repetitions and reviews.

These simple and fundamental principles may be better understood if stated as rules to be observed by the teacher, thus:

1. Know thoroughly and familiarly whatever you would teach.

2. Gain and keep the attention of your pupils, and excite their interest in the subject.

3. Use language which your pupils fully understand, and clearly explain every new word required.

4. Begin with what is already known, and proceed to the unknown by easy and natural steps.

5. Excite the self-activities of the pupils, and read them to discover the truth for themselves.

6. Require pupils to restate, fully, correctly, in their own language, and with their own proofs and illustrations, the truth taught them.

7. Review, review, review, carefully, thoroughly, repeatedly, with fresh consideration and thought.

These laws underlie and control all successful teaching. Nothing need be added to them: nothing can be safely taken away. No one who will thoroughly master and use them need fail as a teacher, provided he will also maintain the good order which is required to give free and undisturbed action to these laws.

They are of universal force and value. They cover all teaching of all subjects and in all grades, since they are the fundamental conditions on which ideas may be made to pass from one mind to another. They are as valid and necessary for the college professor as for the teacher of little children; for the teacher of Bible truth as for the instructor in arithmetic. In proportion as the truth to be communicated is high and difficult in character, so ought these laws to be more carefully observed.

Doubtless there are many successful teachers who never heard of these laws, and who unconsciously follow them, just as there are people who walk safely without any knowledge of mechanics or gravitation, and talk intelligibly without knowing grammar. They have learned them from practice, and obey them from habit. It is none the less true that their success comes from obeying law, and not in spite of law. Some teachers are a "law unto themselves." They catch by intuition the secret of success, do by a sort of instinct what others do by reflection; but a careful observation of their methods would go to prove the truth and value of these principles. To those who are not thus teachers by nature, the knowledge of these laws is of inestimable advantage.

The laws themselves will seem at the first simple facts, so obvious as scarcely to need such formal statement, and so plain that no explanation can make clearer their meaning. But like all fundamental truths, their simplicity is more apparent than real. Each one involves many subordinate principals and rules, and touches, when fully developed, the outermost limits of the whole science of teaching. Indeed, in a careful study of these seven laws we shall find every valuable principle of education, and every practical rule which can be of any value in the teacher's work.

"A teacher must know thoroughly what he would teach."

It seems self-evident that one can not teach without knowledge, but it needs some reflection to show that this knowledge must be thorough and familiar. Knowledge has its degrees. It is of all grades, from the first dim and partial apprehension of a fact or truth, to the full and familiar understanding of such fact or truth in all

its connections—its philosophy, its power, and its beauty. We may know a fact so as to recognize it when another tells it; we may know it so as to be able to recall it for ourselves; we may know it so as to describe it in a general way to a friend; or, finally, we may know it so fully and familiarly that we can clearly explain, prove, and illustrate it, as a truth whose importance we feel, and whose beauty or grandeur inspires us. It is this last form of knowledge which our law demands. Such knowledge is indispensable to him who will teach with the highest success.

Philosophy.—An inquiry into the philosophy of this law will make clearer its necessity and power. It is sufficiently evident that one can not teach to another what he does not know himself, and the shallow thinker will easily conclude that this is all the law means. But there is a profounder philosophy in it than this.

1. A truth which is only partially known never reveals its deeper connections, and its thousand beautiful analogies to other truths. It stands alone, dry and barren. The eye catches no fine resemblances, and the understanding finds no fruitful relations linking it to the great body of truth. The imagination looks in vain for the rich and beautiful simile to transfigure a fact seen only in dim outline, or known only in shapeless and imperfect fragment. The power of illustration—that central power in the teacher's art—comes only with clear and familiar knowledge.

2. But our philosophy goes still deeper. Truth must be clearly understood before it can be vividly felt. It must be fully approved by the intellect before it can be admitted to the familiar friendship of the heart. Only the profounder scholars in any science grow enthusiastic over its glories and grandeurs. It was Hugh Miller, the deep-read geologist, whose trained eye read, and whose eloquent pen recorded "The Testimony of the Rocks." Kepler, the great astronomer, grew wild with delight as the mysteries of the stars unrolled before him. And few can tell with what an all-absorbing interest Agassiz studied the stony remains of the old dead fishes. He must ever be a cold and lifeless teacher who only half knows the lessons he would teach. But he whose soul has caught fire from the great truths he carries, glows with a contagious enthusiasm, and unconsciously infects his pupils with his own deep interest. "Almost thou persuadest me to be a Christian," said the half-kindled Agrippa as Paul told with irrepressible warmth the story so vivid in his remembrance, so fresh in his feeling. It is the very secret of eloquence both in the preacher and teacher—this earnest feeling of truths, grandly and vividly conceived.

3. And as knowledge thus thoroughly and familiarly known rouses into action all the powers of the teacher, and even lends them a higher inspiration and efficiency, so it also enables him to direct and use these powers to the best advantage. Instead of the hurry and worry of one who has to glean from the text book, each moment, the answers needed, he is at home, on familiar ground, and can watch at ease the motions of his class, and direct with certainty the current of their thoughts. He is ready to interpret their first faint apprehendings of the truth, to remove the obstacles from their path, and to aid and inspire their struggling search by the skillful hint which flashes a half-revealing light into the too thick darkness.

4. Finally, ready and evident knowledge exhibited by the teacher awakens a needful confidence in the mind of the pupil. We follow with eager expectation and delight the guide who knows thoroughly the field we wish to explore, but drag without interest after one whom we suspect to be an ignorant pretender. Children always object to being taught by one whom they have found to

be ignorant or unready in their lessons. Nor is this all. Just as the great scholar creates interest in the science which clothes him with so much renown—just as the learning of Tyndall awakens in us a longing to know more of those physical phenomena which he studies with such zeal—so the ripe and radiant knowledge of the well-prepared teacher of the Bible will kindle in his class the active desire to know something more of the book which so absorbs his study.

Such is the philosophy of the thoroughly learned lesson; and such is the wide and generous meaning of this meaning of this first great law of teaching. The law itself simply and clearly defines the true and necessary attitude of the first of the two parties ever present in every act of teaching. It exhibits the teacher as standing over against his class, laden with knowledge, kindling with a genuine enthusiasm born of the truth, eager to instruct and ready to comprehend his little disciples, and to lead them into fields as familiar as they are delightful. It is the teacher's one great natural law, and out of this must grow all practical rules for his preparation and his work.

RULES.—Among the rules which come from the law, the following are among the most important:

1. Prepare each lesson by fresh study. Last year's knowledge has necessarily faded somewhat. Only fresh conceptions warm and inspire us.

2. Study the lesson till its truths and facts take shape in easy and familiar language. The final proof and product of clear thought is clear speech.

3. Find in the lesson its analogies and likenesses. In these lie the illustrations by which it can be made to reveal itself clearly to others.

4. Find the natural order and connection of the different facts and truths of the lesson. A jumbled mass of materials do not make a building, nor does a jumble of disjointed facts make up the divine doctrines.

5. Seek for the relations of the lesson to other lessons already learned, and to the life and duty of the learners. The vital force of truth lies in its relations. It is the passage of the electric fire along the distant connected wires which makes the telegraphic apparatus important.

6. Use freely all aids to gain the truth, but never pause till the truth gained has been thoroughly digested in your own mind, and its full meaning and importance have arisen upon you as a vision seen by your own eyes.

Violations.—The violations of this first great law of teaching are too frequent and too familiar to need description. The very ignorance of his pupils often encourages the teacher to neglect the preparation of his lesson. He thinks that at any rate he will know much more of the lesson than the children will, and counts perhaps that he will find enough to say about it, or that at worst his ignorance and mistakes will pass unnoticed.

Some go further even than this, and assume that it is the children's work, not theirs, to study the lesson; and that with the aid of the book in hand they shall be able to ascertain easily enough if the children have done their duty. Others look carelessly or hastily through the lesson, and conclude that although they have not mastered its meaning fully, they have at least gathered enough to occupy the hour; that any more knowledge would be useless for that occasion, and that they can, if needful, eke out the little they know with random talk or some story. Others still, lacking time or heart for the labor of preparation, carelessly dismiss all thought of teaching anything, and content themselves with such exercises as they can find to fill up the hour, hoping that as the school is a good thing, at any rate, the children will get some good from their mere attendance. Thus a majority, perhaps, of teachers go to their work either

wholly without the requisite knowledge, or only partly prepared, and the grand fruits we look for from this great army of workers seem long coming, if not beyond hope. Let this first great fundamental law be fully obeyed, or even as fully as the circumstances of our teachers permit, and we should import into our schools an attractive power that would at once more than double their usefulness, and give an irresistible charm to their exercises.—*National S. S. Teacher.*

(To be continued.)

The Art of Thinking and the Habit of Observation.

We have frequently directed the attention of parents and instructors to the importance of teaching children to think, and we now quote, from the *Philadelphia Ledger*, some apposite remarks on the subject.

"In very early life, the perceptive faculties are the principal channels through which we can reach the mind. Closely connected with this subject is the cultivation of the thinking powers. The two are indeed so intimately blended that neither can be effectually improved without some increased development of the other. In learning to see and hear with delicate accuracy, we insensibly strengthen our powers of thought, and accustom them to work more effectively. Still the operation of thinking deserves a far more systematic training than it usually obtains.

"When we are striving for success or excellence in any special pursuit, we think to some purpose. Our will concentrates our thoughts to the point in question, dismisses summarily all irrelevant subjects, presents the matter in its various bearings, with some degree of logical sequence, and rarely allows the mind to drift away from it until some definite result has been obtained. There is a considerable portion of every one's time in which nothing but thinking can be done. There is time spent in care, where even reading is injurious; and there are times of waiting, resting, and enforced inaction, when the mind has undisturbed opportunity for effective operation. Then, too, there are many employments so mechanical as to claim no portion of the mind's aid. When we have learned to do anything "without thinking about it," the thoughts necessarily run in other channels. Much manual labor is of this description. A distinguished prisoner of war, of large mental resources, being allowed to choose his employment while in confinement, selected one so simple as to require neither skill nor thought, assigning as a reason that, though his hands would be occupied by compulsion, his mind at least would continue his own and remain in freedom. We all have some of such work, and many have much. Now, if we had learned to employ this time in clear and consecutive thought—if our will could control our reflections, directing them in definite channels, and aiming to reach some well defined conclusions—we can hardly compute how great an effect would be produced in strengthening our mental powers, in maturing our judgment, in bringing us to the knowledge and appreciation of truth, and thus of increasing our solid happiness and our permanent value to the community.

"The best exercise of every faculty is the chief road to true enjoyment, and no one who has once tasted the pleasures of thinking to a purpose will ever willingly allow his mind to dissipate in wandering thoughts and day dreams. Neither is such discipline so difficult as some imagine. If begun in early life, by awakening the childish interest in what is seen and heard, alluring the mind to reflection by question and answer, and accom-

panying the thoughts to dwell for short periods, but intently, upon familiar subjects, it will become pleasant exercise, and gradually grow into the habitual tenor of the mind. What we truly will to do is already half accomplished; and the watch thus placed over the thoughts will, of itself, reduce to order and regularity much that is now chaos and confusion. It is by no means necessary that the subjects thus mentally discussed should be remote or abstract. On the contrary, let them be matters familiar to our minds and agreeable to our tastes. Let the memory please us with pictures of the past, and the imagination revel in beauty of scene or heroism of deed. Let the business man revolve the scheme which he longs to execute, and the philosopher meditate on the principles of life. But whatever be the subject, let the thoughts pursue it with a consistent progress that shall eventuate in some real benefit to the mind."

Similar in nature and importance is the habit of rapid and accurate observation, the great value of which was the subject of an address to the Dairymen's Association, delivered by Hon. Horatio Seymour. In the course of his remarks, he said:

"It seems singular that some men pass through life without observing things which come before their eyes almost daily. An intelligent farmer once told me that he would not recognize any of the horses belonging to his neighbors, excepting those noticeable from some peculiarity of color. A Chicago merchant, who daily drove his own horse eight or ten miles, told us he had never noticed any difference in the movement of horses: did not notice the difference between trotting and pacing. A college president is said to have made the question "in which way do the seeds lie in an apple?" a test of the habit of observation among his students. Our tests with this question would indicate that more than one half of the average men and women either don't know, or will answer incorrectly. We once received a well written essay on the value of observing closely, yet there was not a capital letter or a punctuation mark in the half dozen pages. Many such instances could be given, were it necessary.

"This matter is not one of slight importance. The carefully observant man will see things which will be of pecuniary importance to him, while his ill trained neighbor may lose by not seeing. The farmer with habits of observation will notice slight symptoms of illness in his animals or plants; will readily see the effect of this or that practice: will much more quickly discover countless little things which, if neglected, may result in serious loss.

"As in the case of habits generally, much can be done in childhood, and it certainly should be the duty of parents and other teachers to help children to learn to observe carefully, quickly, accurately. It is told by some one that in his childhood he practiced running past a shop window and then stopping to describe as many articles as he could recall, and in this way he acquired wonderful quickness of observation. There are hosts of points to which a farmer's boy should have his attention called at an early age. Suggestions as to the mode of growth of plants, the form of a leaf, growth of a fruit, or the pointing out of peculiarities of different classes of animals, may do him great good in developing this habit, and also have a marked effect in interesting him in his calling.

"This habit of observation should not be confined to the things we see alone, but should extend to the things we hear, and those we read as well. In this latter matter, there is great lack. Many read to little profit because they have not trained themselves to observe carefully."
—*Scientific American.*

E D U C A T I O N A L .

McGill University.

The following report is published by permission of His Excellency the Governor General :

To His Excellency the Right Honourable the Earl of Dufferin, Viscount and Baron Clandeboye, &c., K. P., K. C. B., Governor-General of the Dominion of Canada, &c., &c., &c.

May it Please Your Excellency :

The Governors, Principal and Fellows of McGill University, Montreal, beg leave to present to your Excellency, as Visitor on behalf of the Crown, the following report on the condition and progress of the University and its Affiliated Institutions, for the year ending Dec. 31, 1874, beginning as usual with the Statistics of the Educational year.

The number of students in McGill College, in the present session, is as follows :

Students in Law.....	54
Students in Medicine.....	129
Students in Arts.....	121
	304

or, deducing five students entered in more than one faculty, in all, 299.

The students in Morrin College, Quebec, are 9 in the undergraduate course and 79 occasional.

The teachers-in-training in the McGill Normal School are 118.

The pupils in the Model School of the Normal School are 340.

Of the students and teachers-in-training, about 250 are persons not resident in Montreal, but attracted to it by the educational advantages offered by the University and its Affiliated Colleges.

At the meetings of Convocation in March and May last, the following degrees were conferred :

Doctor of Laws (in course).....	1
Doctors of Civil Law (in course).....	2
Doctors of Medicine.....	31
Masters of Arts.....	6
Bachelors of Civil Law.....	15
Bachelors of Arts.....	16
Bachelors of Applied Science.....	6
	77

At the close of the session of the McGill Normal School, the following diplomas were granted by the Hon. the Minister of Public Instruction :

For Academies.....	6
For Model Schools.....	25
For Elementary Schools.....	39
	70

This raises the total number of diplomas granted to teachers trained in the McGill Normal School, since its institution in 1867, to 866; and it is impossible to estimate the amount of benefit to the cause of elementary education in the Province of Quebec which has resulted from its operation. It would, indeed, have been impossible to secure the progress which has taken place in the schools of the Protestant population of this Province, either in the cities or in the country, without the supply of trained teachers which the Normal School has furnished. It is to be observed, also, that, owing to the necessity for the existence of three Normal Schools in this Province, the sum appropriated to the support of the McGill Normal School has been small in comparison with the requirements of such an institution, and its building accommodation has been defective; while the difficulties under which the Protestant minority in this Province have laboured in the matter of education, have tended to reduce the remuneration of teachers. Yet, in the face of these disadvantages, the McGill School has kept up a standard of training equal to that of any similar institution elsewhere, and has enabled the Protestant Commissioners of the City of Montreal, and other Boards which have employed its teachers, to establish elementary schools of the highest character, and which must have a marked effect on the mental and moral elevation of the community.

Since the date of our last Report, the Faculty of Law has sustained a severe loss in the removal by death of Prof. P. R. Lafrenaye, D. C. L., who has for many years occupied the chair of Legal History, and who, not only in his capacity as Professor, but as Secretary of the Faculty and as its Representative in the Corporation of the University, has been distinguished by his able and assiduous labours in the cause of Legal Education. It is only just to his memory to mention the punctuality and care with which he discharged every official duty, and the obligations under which the University, and the Faculty of Law in particular, lie to him in this respect. Owing to the illness of Prof. Lafrenaye, the duties of his chair had been for some time, and still are, discharged by Edmund Lareau, Esq., B. C. L., as Lecturer.

In the Medical Faculty, Dr. Drake having been under the necessity of asking relief from his duties as Professor of the Institutes of Medicine, the Governors were fortunate in being able to secure the services of Dr. Osler as lecturer. Dr. Osler is a graduate of this University, and as a student was distinguished for his proficiency in physiological and microscopical investigations. He has since pursued these studies with much distinction in London and Vienna.

In the Faculty of Arts the staff remains unchanged. Dr. Harrington, who has for several years discharged as lecturer the duties in the School of Mining Engineering formerly performed by Dr. Sterry Hunt, and has also delivered the lectures on Chemistry to students in Arts, has been raised to the rank of Professor. The number of students in Arts continues slowly, though steadily, to increase, and it is a matter for congratulation that the increase in the present year is largely of regular students in the undergraduate course. The Department of Practical and Applied Science numbers thirty-three students, the greater part being in the course of Civil Engineering. This is a gratifying proof that this course meets a want felt in the Dominion, and there can be no doubt that the number desiring such instruction would be greater, were there more stringency in the requirements exacted of candidates for employment in the Government Works and Surveys. The Department of Applied Science rests, to some extent, on annual contributions from friends of the University, and as its importance and success are now established, we are making efforts to secure for it a more permanent endowment.

The importance of the study of Modern History, and especially of that of Great Britain, and the desirableness of providing for its more extended culture in connection with the course of study in Arts, have long been subjects of solicitude to the Corporation of the University. The historical collection presented by Mr. Peter Redpath has placed the more valuable books of reference within reach of students. Short courses of lectures have been delivered by Professor Goldwin Smith, who has also, in compliance with the request of the Corporation, delivered a lecture on study of history as the annual University lecture of the present session. The gold and silver medals which the University owes to the liberality of Your Excellency, have been assigned for competition in historical essays, the first subject announced being the "Growth of the English power in America, between the period of the first settlement and the conquest of Quebec in 1759." The judges appointed are the Dean of the Faculty of Arts and the Rev. Dr. Cornish, with whom Professor Goldwin Smith has kindly consented to be associated. No further development can at present be secured for the work of education on this subject, unless a special endowment for a chair or lectureship can be secured.

The arrangements mentioned in the last report with reference to the Meteorological Observatory, have now been in operation for a year, with very satisfactory results, under Mr. C. H. McLeod, B. Ap. Sci., as Superintendent. In addition to the observations required by Prof. Kingston, as Superintendent of the Government observatories, Mr. McLeod has been enabled, with the aid of an assistant, Mr. J. S. McLennan, B. A., to carry on six additional observations, making nine in all daily. The continuance of these observations will eventually give more satisfactory data for the accurate registration of our local meteorological phenomena than we have hitherto possessed. With the aid of Prof. Kingston we have also been enabled to establish an Anemometer on the summit of Mount Royal, connected with the observatory by electric telegraph, so that the most commanding possible position has been secured to register the winds of the St. Lawrence Valley. Classes have also been established for the instruction of senior students in meteorological observations, and certificates are given to those

who have attained a satisfactory proficiency. In the past session five certificates of this kind were granted. In the present session six students are in attendance. It is much to be desired that the work of the observatory should be further extended, more especially in the direction of Astronomical and Magnetical Observations, both in connection with the importance of Montreal as a central point, geographically and commercially, and for the benefit of the students in Applied Science; but this cannot at present be attempted without increased means.

Some desire having been expressed by schools in Montreal for the continuation and improvement of the examinations for pupils of the higher schools, instituted some years ago by the University, a committee was appointed to revise the regulations relating to such examinations, and it is not improbable that we may be able to re-establish them in time for the close of the present session of the schools. It is certainly much to be desired that here, as in England, some such test of proficiency should be open to the pupils of our higher schools.

We have much pleasure in reporting the donation to the University, on the part of Henry Chapman, Esq., of the sum of \$700 for the endowment of the Henry Chapman gold medal and prizes in connection therewith. The University owes to Mr. Chapman the first of its gold medals, established by him in 1856. Since that time a copy in gold, struck from dies executed by Mr. Leonard Wyon of London, has been annually given by Mr. Chapman; and he now adds to his former well timed act of liberality by securing the permanence of the medal, under an endowment invested for its maintenance.

Considerable additions have been made to the library by the College Book Club, and other donors; and by recent purchases the Philosophical Apparatus in Optics and Electricity has been brought quite up to the present requirements of these subjects. Some small additions have been made to the Chemical Apparatus, and a collection of Mechanical Models has been procured for the Department of Applied Science. The Museum has increased slowly, principally by donations, some of which, however, have been of considerable interest and value. Among these may be mentioned a large and valuable collection of 500 species of shells of the Central Pacific, collected and named by Mr. A. Garrit, from Dr. William Robertson, of Papete, Tahiti; a collection of 200 named Tropical Ferns, from G. Barnston, Esq., and Fossils from Barbadoes, from His Excellency Governor Rawson. The arrangement and mounting of Dr. Carpenter's magnificent collection of shells has been proceeding steadily, and it now forms one of the most attractive parts of the Museum, and, under the care of Dr. Carpenter, has been rendered useful in the determination of various collections made abroad, and in other ways for the advancement of Science.

I have the honour to be,
Your Excellency's humble servant,
C. D. DAY, LL. D.,
Chancellor McGill University.

Prussian Normal Schools.

A writer in the *Athlantic Monthly* gives the following interesting account of Prussian Normal School education:—

In Prussia, sooner than elsewhere, it was understood that to have good good teachers, it is necessary to organize special institutions for their professional education. With us it is too often taken for granted that a reformed programme means a reformed system of education. In Prussia, when an improvement is attempted either in the matter or form of instruction in the schools, the reform begins with the normal schools. Hence, to understand Prussian education it is necessary to study the history of the development of the Prussian normal schools. Professor Stowe and Mr. Mann described the Prussian system of training teachers as it existed forty years ago, when the aim was less to train the future schoolmaster for the technical work of teaching children of from eight to fourteen to read, write, and cipher, than to give him a complete mental culture. There was too much theoretical lecturing, and not enough practical teaching of the elementary branches and training in the art of school keeping. The results of this system proved unsatisfactory, and a sounder educational theory at length proscribed both its aim and its method. The reaction against it, however, being greatly intensified by political considerations, was carried too far. The scientific furniture of the old school was discarded,

little attention was paid to general culture, and the forming and development of the understanding were to much ignored. The reactionary *Regulative* of 1854 did not allow the teaching of systematic pedagogy even in a popular form, prescribing in its place "the art of school management," and limiting the matters taught in the lessons very nearly to the standard of the course in the elementary school. The teaching of method as a separate branch was no longer permitted, and as a part of school management it was to be introduced only so far as necessary to explain the connection between the various parts of elementary teaching, and the relation in which each part stands to the objects of the school and to the education it is designed to give. Physics, the favorite branch of the old teachers, was turned out of doors, and *Heimathskunde*, or observation of the phenomena of our neighborhood, was substituted for it, while general history was supplanted by "history of our fatherland." In teaching German the "so called classical literature" of Germany was absolutely prohibited, even for private reading, and in its place a select library, chiefly compilations of modern writers, was ordered for the normal school. Learning by rote was largely substituted for the formal exercise of the understanding, and "instead of knowledge the object proposed to the student was the acquisition of the technical facilities which the children were to learn from him." It is easy to imagine the sort of schoolmaster formed by this system of training. He had too little culture and knowledge, and hence too little independence. With limited power of comprehending principles, he was necessarily confined to a mechanical routine. In technical skill, within a narrow range, no doubt he excelled, but in educating power, in the capacity to form character, and to inspire his pupils with a worthy ambition, he was sadly deficient. The reform evidently went too far, and overshot the mark. But in the history of Prussian education we do not find a repetition of unsuccessful experiments, and out of all this experience wisdom has been learned. The new reform, as presented in the *Regulative* of the Minister of Instruction, seems to have avoided both the former extremes, and to have hit the golden mean. The new programme is characterized by a wise moderation. It is proportionate in all its parts. It makes due provision for both general culture and technical skill. In theory and practice it is equally balanced. One advantage is as little as possible sacrificed to another.

Every normal school is to have organically connected with it two practice schools, one graded and the other ungraded. The course of instruction continues three years, the pupils of each year constituting a class. It is the object of the lowest class to bring under uniform training and work students whose previous preparation has been different. They are to be taught to arrange and supplement their knowledge, and to reproduce it independently. In this grade, the students have no connection with the practice schools. In the second class the students receive such extension of their knowledge as they will require in their subsequent work as teachers. In the practice schools, they listen to the exercises of the teachers, in which, at intervals, they render assistance, and make trials independently in teaching. In the first class, where the course is concluded, the pupils are especially instructed with reference to their future self-culture. Besides, they undertake, under the guidance and oversight of the principal and instructors of the practice schools, continuous instruction in the same. In this practice they are to be occupied not less than six nor more than ten hours a week, and the programme must be so arranged that no pupil will leave the training seminary without having had an opportunity to practice the teaching of all the essential branches proscribed for the common schools. In the Prussian seminaries for teachers the practicing school is the point round which the whole of the instruction turns. And herein they are vastly superior to our American normal schools, which are rarely provided with any practicing school at all. Hence our normal schools are too theoretical. Like the Prussian normal schools of forty years ago, they are aiming too exclusively at general culture, and not enough at practical skill. They send out pupils largely imbued with good principles, but lamentably deficient in the technical skill they need in the school-room. Under the head of "Pedagogy," in the new scheme, the following are the requirements:—

"Lowest class two hours a week. The students are instructed in the essential points with regard to the history of education and instruction, by means of sketches of the most prominent men, of the most agitated periods, of the most interesting and successful improvements in the sphere of the common school.

"Middle class, two hours. In general, on the subjects of education and instruction (Instruction. Form of Instruction. Education by Instruction), including what is necessary in logic and psychology.

"Upper class, three hours. In particular, on the mode of teaching (Method). Office of the school. Administration of the school. More extended duties of the teacher and his self-improvement. The students are made acquainted with the general relations regarding common-school instruction current in the department for which they are being directly prepared."

Within the limits of this judicious outline the director of each normal school is to arrange a particular programme of instruction in his branch of the institution, which must be submitted for approval to the Minister of Instruction. And so of all the other required subjects of instruction, namely, religion, German, history, arithmetic, geometry, algebra, natural history, physics, chemistry, geography, drawing, writing, gymnastics, music; the French, English, or Latin language; gardening, and silk-culture. The information which the students receive in all these branches is to be in its form a sample of that which they will later have to impart as teachers. The courses on German and music are especially elaborate and comprehensive. To the former are given five hours a week during the first two years, and two during the third; and to the latter the same in the lower classes, and three hours in the highest. The reason why so much time is devoted to music is that the seminary has to form not only the teacher of singing for the school, but the organist and the precentor of the church. The course in this branch therefore comprises not only singing and harmony, but instruction on the violin, piano, and organ.

All educational interests centre in the teacher, and the test of every system of education is found in its provisions for securing competent teachers. Here is the weak point in the systems in our several States. Nowhere is there anything like adequate provision either for educating professionally a supply of teachers or for duly testing their qualifications. In this general lack of the necessary means of securing skillful teachers, is found the chief cause of the unsatisfactory results of our schools, especially those outside the cities and larger villages. In our efforts to supply this deficiency we shall do well to avail ourselves of the results of the experience of that country which has always been foremost in this matter, and especially of the results embodied in this new scheme.

How to Study History.

By THOS. WENTWORTH HIGGINSON.

It has always seemed to me very creditable to the brains of children that they habitually rebel against the study of History, as presented to them. Why should any boy or girl sincerely wish to know in which Olympiad the victory of Corcebus took place, or whether Ottoman was or was not the son of Ortozul. There still remain among us many institutions where historic teaching means only a list of names, or a complex chart, or "River of Time." A graduate of a Boston grammar school once told me that she was required in her school days, to put on paper every date that occurred in the portion of "Worcester's History," studied by the class. On a large sheet she made five columns of these dates; she then learned them by heart so thoroughly that she could repeat them backwards, and at the age of twenty-two she had forgotten every one.

Warned by experience, when she herself became a teacher, she adopted a wholly different plan. Taking the successive periods, she gave her pupils in each case a few outlines and a few dates from the manual. Then she gave a few questions, of which they were to learn the answers for themselves, in such books as they could find, in the school library or elsewhere. They were to bring to her all the light they could obtain; she was to add whatever she had. From time to time, wider examinations summed up the whole. This method often led to prolonged study of particular points. Thus, the Reformation occupied one paragraph in the manual they used; but to that one paragraph her class devoted six lessons. The pupils eagerly discussed every point of the Reformation, talking it over, Protestants and Catholics, together, with perfect freedom, --and at the end of the time they passed a written examination that amazed her.

Nor did the benefit end here. Her pupils found their love of books rapidly develop, when the charm of a special investigation was offered to them; and one young girl told her, several years later, that her whole intellectual activity dated from this course of lessons; and that whereas she had before been content with an exclusive diet of Mrs. Southworth, she had ever since demanded better food.

I am aware that I am suggesting nothing new to teachers of experience. I am aware also of the obstacles to any course that demands original research on the part of pupils. But, after all, it is only this flavor of original research, on however small a scale, that makes History take any real root in the mind; and a single period or event, explored in this way, fixes the very facts more vividly in the mind than if they had been learned by heart from a neat little compendium table, all conveniently arranged beforehand by somebody else. Of course History can no more be learned without names and dates than a body can exist without a skeleton. But the driest anatomist does not seriously maintain that the skeleton is the body, and that flesh and blood have no business to exist. Yet the anatomical teacher of History does believe this, and grows indignant when you ask that his department should consist of anything but bones. For myself, I believe in the bones--in their place. No pupil should be permitted to take merely the picturesque and romantic part of any period, without a perfectly connected framework of dates for its vertebral skeleton. But a very few dates will answer for this, and the fewer they are the more likely they will be to remain in the mind. It is better to learn only twenty of these, and carry them through life, than to be able to repeat five columns backwards, when you are sixteen, and to have forgotten them all when you are twenty-two.--*New England Journal of Education.*

In the report of the Minister of Public Instruction, Province of Quebec, for the year ending June 30th, 1874, we find the following statistics of expenditure and revenue: Common Schools, \$145,000; Superior Education, including High Schools of Quebec and Montreal, and compensation to Roman Catholic institutions for grant to High Schools, \$78,410; Jacques Cartier Normal School, \$14,433.33; McGill Normal School, \$4,033.34; Journals of Education, \$2,400; Teachers' pensions, \$5,187; prize books, \$2,500; School Inspectors' salaries, \$21,169.07; Schools in poor municipalities, \$8,000; School of science and art, Montreal, \$3,000. Total expenditure, \$308,166.07. Of the above expenditure the following are the balances deposited at credit of the Treasurer of the Province of Quebec on June 30th, 1874; Common Schools, \$1,629.27; Superior Education (School of arts and science, Catholic fund,) \$2,182.13; ditto, (School of arts and science, Protestant fund), \$237.70; Teachers' pension fund, \$23; poor municipalities, \$647. The following is the revenue for the year: Jacques Cartier Normal School, pupils' fees, &c., \$1,310; McGill Normal School, do, \$1,956.36; Laval Normal School, do, \$3,946.26; Journals of Education, subscriptions, \$683.35; Teachers' subscriptions to pension fund, \$405.91; Miscellaneous, \$128.16; cheques cancelled and deposited with Treasurer, \$104. Total Revenue, \$8,530.04.

Military Education in Schools.

A day or two ago a most important proposition was brought before the House of Commons by the member for Grenville, Dr. Brouse. A proposition which though not accepted by them, was promised due consideration at the hands of the Government. It has been said that at Eton and Harrow were fought England's great battles both by sea and land; for there was received that mental and muscular training which enabled those who were to be the commanders of the future, success fully, to put their own strength and that of their followers against bodies not only far superior in numbers, but having to all appearances the advantage in physique. The mover of the resolution discussed the subject as well from the hygienic as from the military point of view; and it seems to us that the amount of evidence which he produced in support of the sanitary part of his proposal was incontestable, however opinions may differ as to the advisability of our raising amongst our school boys, a military force. Although there have been brilliant exceptions, the rule is, that the accompaniment of a sound mind must be a sound body, and hence if our

boys must excel in learning and in the arts it is our duty to give them that physical exercise which will not only give them soundness of constitution, but a zest and an appetite for graver matters. In many instances the most distinguished scholars whether at Oxford or Cambridge have been those who upon the Isis and the Cam have known best how to contend for those laurels which are esteemed as highly as any which were accustomed to be obtained upon the plains of Olympia, or as any which could be achieved in contests more illustrious, or having more influence upon the life and well-being of nations. It has been demonstrated frequently, and experience has shown, that all work and no play makes Jack a dull boy. Now, if these essential recreations be directed in such a way as will develop muscle, and prepare the coming man for any contingencies which may arise in the lifetime of his country, when skilled force has to contend with skilled force, there is then the question, is it advisable that these amusements shall at the same time take a practical turn, such as the one indicated by the member for Grenville. Some of the opponents of the proposal, and their opinions are, doubtless, entitled to great weight, hold that it would be injudicious to place arms in the hands of inexperienced youths, as the number of accidents which cannot be avoided would, doubtless, be considerably increased. But on the other hand, it would seem that by giving the boys the manual exercise simply, they would obtain a familiar acquaintance with their weapon, an acquaintance which in the future would enable them to use it to the best possible advantage, when they were allowed to have full control over it. Moreover, under proper restrictions, surely it could not be contended that there would be more accidents than under the present system, where to our adult volunteers is served out ammunition for practice purposes. The boys knowing by experience the capacity of their firearm would not be very likely to use it for purposes other than legitimate. Besides their weapon is not in their actual possession at the times when ebullitions of passion are the most likely to take place, and any feeling of hatred, would in all probability have subsided, before it could be taken hold of. It was urged by the mover of the motion that this military training would accustom the youth to obedience and to discipline; while on the other hand it was contended that our boys need not be taught obedience, so much as self-reliance. It does not seem to us that the cultivation of both these spirits is incompatible, inasmuch as the occasions on which these qualities are required are not altogether the same. Nationally speaking, a self-reliant spirit, well disciplined, is that which will best succeed; while individually self-reliance without something of system, is not the strongest of supports upon which to lean. One honorable member said that he would sooner teach his child to drink or to thieve than give him military training. But as we have seen, the exercise is in itself beneficial; while in answer to those who say that in our age the tactics of war are a piece of superfluous instruction, we can but say that it appears to us that our age is not the one when arbitration will be the method adopted to settle national difficulties. As the Minister of Militia said the subject should have consideration, we commend it in all its aspects to his most serious attention.—*Montreal Herald*.

Drawing in Schools.

We print herewith a short article on drawing, by a practical teacher. We hope it will be supplemented by other articles on the first principles of this art. It is plain that too little attention has been given to this study among educators. There are two organs, the eye and the ear. By elocutionary exercises, and by music, the ear is trained to distinguish shades of sound; and no one finds fault with the attention given in this direction. But who will deny that of the two the eye is the more precious organ of the senses? Drawing is specially adapted to the training of this little organ of light. The educated eye will enjoy as much in the gallery of sculpture or paintings as the ear of the well-trained musician in the presence of Thomas' orchestra. So the pencil may well take the place of the piano in the case of a large portion of pupils.

Photography is not high art. It is the mechanical copying of nature, or the transferring process. Besides, not every one can have at hand the camera, nor carry one about in the pocket.

But a pencil or crayon can easily be transported, and their use by the hand, directed by a well-trained eye, constitutes true art. Let us look into this matter a little, fellow teachers and school officers, and give the eye the attention it deserves.....

We might enlarge on the discipline derived from the study of drawing; also the refining effect produced on character and manner, if time and space permitted.

The subject of drawing in schools merits more attention than has been heretofore accorded to it. Unfortunately, the general impression seems to be that it is merely an accomplishment to be mastered by a favored few, or by those specially gifted by nature with a talent for it. That it can be learned by the majority of pupils as easily as writing, will hardly be credited, and yet, after giving the matter a fair trial in a school of average ability, we found the number of those whose could not draw well, as far as the subject had been pursued for a given time, was no greater than of those who could not write well after a much longer trial. Drawing aids in writing by training the eye and quickening the powers of observation. That the eye needs this can be proved by a simple expedient. Take any company of a half dozen or more, and ask them to give the measurement of various objects in the room, estimating distances wholly by the eye; the result will be truly surprising. Boys need just the education acquired by this study. That skilled labor commands the highest prices is patent, and in mechanical pursuits the trained hand and eye are of great value. The man who can illustrate his idea with his pencil, invariably rises in his occupation. The carpenter who draws well, becomes foreman; and the machinist, in many cases, the successful inventor. The farmer also with this aid can describe the insect which destroys his crops, or plot his ground.

If one of two men is describing to the other some parcel of land, block of buildings, or a given locality, how much more easily and effectively could he do this with a few strokes of the pencil than by talking several minutes?

Children have a great deal of ingenuity and power of combination, which in its crude state manifests itself in picturing wonderful ladies, impossible horses, &c. The delight with which they receive any hints which lead them to use this power in a more satisfactory manner, ought to convince the most skeptical of its utility.

The low estimate of its importance is in part due to the want of knowledge of its principles and practice; hence the attitude of many is that of opposition. Let its advantages become thoroughly appreciated, then we shall see our schools taking the position on this subject so much to be desired.—*American Journal of Education*.

J.

Spelling Match in Music Hall.

SCHOOL BOYS AND THE PRESS CONTEND—AN AMUSING SCENE.

The Boston *Traveller* thus describes the late contest:

Music Hall was filled to overflowing, last evening, with an intelligent company assembled to witness an old-time spelling match, arranged for the amusement of a Boston audience by Mr. B. W. Williams, of the American Literary Bureau. For last night's match fifty boys were selected from the English High, the Brimmer and the Rice Grammar schools, and the opposing side of equal number was made up of proof-readers and compositors, mainly from the daily papers, and three or four reporters. The boys apparently ranged in age from 12 to 16 years, while the printers were ranged between the typo of 20 and the gray-haired type sticker of more than 50. Directly in front of the organ a stand was placed for the accommodation of Professor Moses T. Brown, who was to pronounce the words, and just behind him were stationed the judges, Mr. Lucius A. Wheelock, Master of the Rice School, Mr. Wm. H. Baldwin, of the Y. M. C. Union, and Mr. Moses H. Sargent, Treasurer of the Congregational Publishing Society. The two sides occupied seats at opposite sides of the platform, facing each other. A richly bound copy of Worcester's masterpiece and Webster's unabridged, the prizes for the successful contestants, were conspicuously displayed on a table in the centre of the platform.

The exercise began shortly before 8 o'clock, the words being spelled in the regular order of the spellers as they sat, and

alternating from one side to the other. The first three words given out were "attorney," "orthography" and "pendulum," all of which were spelled correctly, but the fourth, "courtesy," proved fatal to a high school boy, who introduced an "e" in the last syllable. "Catastrophe" was then spelled correctly, and "millennium," propounded to a compositor and former reporter and proof reader, who was vanquished on the first syllable, and retired from the field in hot haste. On the third round two proof-readers on city papers lost their seats in succession. Things went smoothly for a while, with no noticeable occurrence except that one speller was saved from losing his seat by the audience laughing at the misspelling of a syllable, and allowing him to correct himself before it was too late.

A journalist made a "hit" with a "ferrule," remarking, in answer to the applause, that he "had felt it before." The word "slue" slew one of the boy spellers; and such words as "cataclysm," "filigree," "opedeldoc," "duel" and others troubled both sides. Quite a dispute arose about the spelling of "repellent," a journalist spelling it with an "a," which he contended was the correct orthography of the word signifying a late style of ladies' garment, but the word not being found in the dictionary he was desired to retire. The word "ecstasy" was the occasion of the retirement of a proof-reader, though it appeared to be due to misunderstanding between him and the pronouncer, and not a fair test of his ability. One of the best spellers, on the side of the newspaper men, was Mr. Backham, a compositor, who occupied the position of "end man," and spelled the first word that was given out. He sat with his broad brimmed hat in his hand, and spelled the words propounded to him in a deliberate way.

When shortly after nine the ranks had been reduced to fifteen or more on the boys' side, to about half the number on the other side, this gentleman was given the word "syzygy," when he was obliged to give up, saying that he had never heard the word before. Hereupon a great clamor arose that the word was a technical one, such words being "ruled out," and the word was withdrawn. The very next word which he received, however, was "phocine," which he also confessed he had never met, and in spite of the cry of "technical," he was obliged to give up his seat. The excitement was now almost at its height. Three members of the press went down in succession on "sanatory," "saccharine," and "cachinnation"; and only Mr. Charles Kimball, the proof reader on the *Transcript*, was left to oppose the three lads from schools. In a few minutes two of these three were floored. The lot of playing "second fiddle" fell to the *Transcript* representative, who spelt "conferible" with two r's. Master Frank M. Eisbree, of the first class in the English High School, was, therefore, awarded the chief prize amid the heartiest applause. The assemblage then adjourned, having certainly passed a very enjoyable evening. The receipts will net a very handsome sum for the cause of missions.

A second spelling match will be given in Music Hall Saturday afternoon. The matinee contest will be between young and old, male and female. Several prizes will be given to the best spellers.

Rewards for the dull.—We go on year after year in our systems of education under the impression that because "it always was so," it always ought to be so. We have had to excite the dull and the indolent by rewards and punishments, and holding them up before all alike have given the prizes of success to the bright and strong, when the dull who did well deserved more praise than the brilliant who bore off the palm. And in the daily lessons of the school, in the wretched night work to which children are condemned by the combined mistakes of teachers and parents, the brain of the young is inordinately taxed at a period of life when there is the greatest danger of doing lasting injury to the nervous system.

It is a very grave error of teachers and parents that young people do not study while they are reciting, and some teachers and parents give it as a reason why their children should study out of school, that they are reciting half the time in school, and therefore do not study but six hours a day if they take three of them at home. But under a teacher fit to be in a school, the scholar's mind is more stimulated to learn during a recitation than while he is at his desk and book. The boy before a blackboard works harder than he does while preparing for his recitation.

My plea then is, that rewards may be given in school to those who have made the greatest progress, not to those only who have come out ahead. I plead for the slow, the weak, the neglected, and ask that they may be helped by encouragement, and that they may not be stimulated to hurt themselves. The waste of brain power in

youth is so great that thousands who, in school and college, are considered geniuses, amount to little in after life. They burn out in the morning. Some who are moderate scholars become men of the greatest power. They developed strength when the work was to be done.

Great students sometimes waste themselves in work. One man made a dictionary on which \$60,000 were expended, and it was sold for waste paper. Artists have put their lives into their work, and died unknown to fame or fortune. Moderate work would have won both. How many poets have perished as did Kirke White! But it is the steady, patient labor that builds the pyramid. The rivals of Domenichino called him "the great ox," but not one of them is now known by name, while his great work is priceless and immortal. Fabius Maximus was called "the little sheep" in derision when he was young, but the meekness and placidity of his temper proved to be the quality which made him the saviour of his country.—*N. Y. Observer.*

SCIENCE.

The Transit of Venus.

INTERESTING ACCOUNT BY PROF. HALL—SUCCESS AT ALL THE NORTHERN STATIONS—SPECULATIONS AS TO THE SUN'S DISTANCE FROM THE EARTH.

Observations in Siberia.—Professor A. Hall, chief of the party that went to Siberia to observe the transit of Venus, returned to San Francisco on the 3th ult., by the *Altona*, and tells the story of his trip, as follows, to the *Chronicle*:—The professor has been for a long time in the service of the Government as Professor of the Naval School, and connected with the Naval Observatory at Washington. His party consisted of seven persons: O. B. Wheeler, of Detroit, Assistant Astronomer; D. R. Clark, of Indianapolis, Chief Photographer; Messrs. Tappan, Rockwell, and Lacy, Assistant Photographers; Mr. Gardner, Machinist. They left San Francisco on the 8th of July in the Pacific Mail Company's steamship *Alaska*, and reached Yokohama on the 23rd of August, after a very pleasant passage. Prof. Watson's party, destined for Peking, went out by the same vessel. From Yokohama to Nagasaki they were taken by the steamship *Golden Age*, and thence to Vladivostock in the United States sloop-of-war *Kearsarge*, Capt. D. B. Harmony, detailed especially for the purpose. The entire voyage was fortunate, the party just escaping the typhoon that swept over Nagasaki with such fury just before their arrival. They reached their destination Sept 8. Vladivostock is the Russian naval port of Eastern Siberia. It is about 700 miles from Nagasaki, and some seventy miles north of the northern line of Corea. It was selected as a station for the reason that it was to be occupied by the Russians, that the different methods of the two nations of observing the transit might be closely compared.

The Russian parties on the coast were stationed as follows: One at Vladivostock, with an equatorial telescope for observing the contacts, and a micrometer for observing the distance of Venus from the sun's limb during the transit; one at Possietto, sixty miles south, provided with an equatorial telescope and a photographic apparatus; a third at Port Nahodka, only provided with an equatorial telescope for observing the contacts; a fourth at Lake Hanka, a small body of water a little inland, having a heliometer for measuring the distance of Venus, in transitu, from both the sun's limbs; fifth, and last, at Hakodadi, provided with means of observing the contacts. The distribution of the Russian parties and the minute division of their labors had advantages. Although not many miles apart one might have clear weather, while the work of the others was embarrassed or entirely interrupted by clouds, and, having but one or two special things to observe, they would observe that one thing better than if their attention was distracted by many simultaneous duties.

The Russian parties were all provided with very good instruments, and the iron houses brought out from Europe for the purpose by way of the Isthmus of Suez. They were circular, and about ten feet in diameter, much more comfortable than those provided for Prof. Hall's party, the Russians being thoroughly posted respecting the climate and their own needs. The Russian observers were good, well-trained men. Dr. Glassenapp, in charge of the party stationed at Lake Hanka, is

an excellent astronomer. All had special training at the Pulkowa Observatory under Struve, the chief astronomer of Russia.

The reception of the American party at Vladivostock was most cordial. The town is rough and rude, both as regards its construction and its population. It contains not far from 5,000 inhabitants, mostly soldiers and sailors. It is a remote Russian outpost, nearly 1,000 miles intervening between it and the settlements in the interior of Siberia. The female portion of the population were exiled from Russia for crime, and are the most depraved of their sex. The religious temples consist of one Greek church and a Chinese joss-house, people of the latter nation constituting an important element of the city's humanity. The country in the vicinity seems suited to agricultural purposes, but little has yet been done in the way of its development. The rainy season is in June and July, the weather corresponding somewhat with the foggy peculiarities of the coast of California. When the party arrived at Vladivostock and for some time after the skies were clear, and the atmosphere temperate and delightful. Game abounds along the Siberian coast, splendid pheasant and deer being abundant, and tigers as large as the great man eaters of India quite numerous. Capt. Harmony procured a tiger's skin that measured fifteen feet from the nose to the tip of the tail. Vladivostock is the centre of a district ruled by a Russian Governor, who has as his principal executive a chief of Police.

Upon the arrival of the Kearsage Prof. Hall landed and made known his business to the Chief of Police. He was kindly received. Permission was at once given to land baggage and instruments and every facility afforded for carrying out the design of the expedition. A permit was granted to purchase the lumber with which to erect the necessary buildings, the red tape being considered essential, but not made offensively prominent. The treatment of the Danish Telegraph Company, which owns the line of cable connecting Vladivostock with Nagasaki, was extremely cordial. They gave the use of their lines free of charge for communication between Prof. Davidson and Prof. Hall, the manager at the former place entering heartily in the work.

The site selected for the erection of the buildings was a mile south of the town, on an elevation that gave a clear horizon to the telescope. The instruments to be used consisted of an equatorial telescope for observing the contacts and measuring the chords of the cusps; transit instrument for determining time and the latitude and longitude; the photographic apparatus which consisted of a telescope of about forty feet focal length, with other essential paraphernalia of photography. The American parties alone used the telescope in photographing. Other nations photographed by negative through the lens of the camera. This telescope was placed so that it should lie exactly level or horizontal and also exactly in the plane of the meridian, the lens being about 6 inches in diameter. The lens was mounted on an iron pier sunk about five feet into the ground. Back of this lens was placed a glass mirror which reflected the sunlight through the lens into the photographic house situated forty feet south of it. In the north side of this photographic house was made an opening through which the light passed, and on the top of a second iron pier was placed a sensitive plate on which the photographs of the sun were made. In sinking the piers the ground was found to be clay mixed with sharp gravel, which made a sound foundation, not afterward affected in any way by the severe cold weather. The matter of protecting the chemicals used in the photographing was found very difficult in so cold a climate. To effect this it was found necessary to build all around the photographing house another house just six inches larger on all sides, the interspaces being filled in with sawdust. The roof was covered with a tarpaulin well planted. It was also warmed by a Russian stove [brick]. On the south side of the photographing house and warmed by the same stove, was still another building in which were placed the clock and the chronograph for recording the signals, with a telegraph wire passing from it to the transit house, which was 100 feet north.

All this was done, and everything was ready to observe the transit by the middle of October, if Venus had seen fit to anticipate. The first work was to determine the local time and the latitude. About the 1st of November the exchange of time signals was commenced with Prof. Davidson at Nagasaki, for the purpose of determining the longitude between that place and Vladivostock, the latter point having been connected in

longitude with Europe by the Russian Astronomers. It may be here said that since the transit Prof. Davidson has connected Nagasaki with Tokio, the capital of Japan, and therefore Tokio is now connected in longitude with Europe. The longitude work was finished about the 10th of November.

About this date the regular drill in photography for the purpose of preparing the operators for their important work was commenced, and thenceforward continued until the time of the transit. It consisted in taking, each clear day, a few photographs of the sun at various altitudes, to test the working of the chemicals and plates, and to determine the force of the sun's light at various heights above the horizon. It was found necessary in this practice to move the slide which cut off the light very slowly as the sun was quite near the horizon, and the photographs, generally, not good. The extreme cold was a barrier to success, which had to be contended against at no other station. The interior of the photographing house had to be kept very warm while outside it was extremely cold. A north west wind prevailed, and although the station was in the country, the air bore much fine dust. The difference of temperature inside and out was 30°, so that if the slide moved even slowly the image on the negative was seriously disturbed by the variation, and it was a matter of extreme difficulty to get them of sufficient sharpness of outline for measurement. The drill continued for four weeks, three hours a day, all of the party becoming more and more interested as the critical time for observation approached. The party were all in excellent health, except Mr. Rockwell, who was so much indisposed as to be unable to participate in the work. For the six days just preceeding the transit the weather was superb. The sun shone with that glorious brilliancy unknown except in Winter and in high northern latitudes. The wind, which had been from the north-west and bitter cold, died out gradually, and the atmosphere became warmer. At Vladivostock the first contact or beginning of the transit was at 10 A. M. At 8 o'clock a light haze spread over the sky, which thickened until 10, and it was impossible to determine the first contact as well as could be desired. There were four critical moments of observation; that point of time when Venus first touched the sun's edge; the moment when it passed entirely across the sun's edge and was within its disk; the moment when it had passed across and touched the sun's opposite edge in passing off; and the exact time when it cleared the sun's disk.

The men were all at their posts ready for work when the critical moment came. Prof. Hall was at the large equatorial telescope to observe the exact moment of contact; Mr. Wheeler was at the smaller 3-inch equatorial telescope with like intent. The chief was about sixty feet from his principal assistant and 100 feet from the photographers. Mr. Gardner was either assisting Prof. Hall or adjusting the mirror which reflected the light into the photographing-house. Though there was measurable success in observing the moment of first contact, the haze was so thick as to render it impossible to take the photographs at the moment.

The observation of the moment of second contact was attended with like results. The time was noted with sufficient accuracy, and some photographs were taken that were tolerably satisfactory. The duration of the transit was four hours and forty five minutes, during which period the haze dispersed three times, allowing the photographers to get some excellent pictures. The haze was a little dense at the moment of third contact, and its time was pretty accurately noted. At the moment of final contact, or when it left the sun's disk, the sun was near the horizon and much obscured, and Venus entirely invisible. Prof. Hall remained at his telescope only at the moments of contact, assisting the photographers the remainder of the time. There were thirteen photographs taken, and the exact time of each was noted, in order to show its precise distance from the centre of the sun's face. This is the important thing to know. The negatives will all have to be sent to Washington to have that point accurately settled. Some of the photographs are well defined; others are faint, and, as yet, of uncertain value.

Prof. Hall, thinks that the American method of observation is much preferable to those of foreign nations. It is peculiar in the use of the photographic telescope and the plumb line, thereby rendering more certain the relative distance of Venus from the sun's centre and its angle of position. The distance of the photographic lens from the surface of the sensitive plate is also accurately measured, which gives the means of determining with great accurateness the angular value of any distance.

Our apparatus is inferior in some respects to that of foreign nations. The French use silvered glass for mirrors, while the Americans use simple glass. With the former kind from fifty to 100 pictures might have been taken at Vladivostock instead of thirteen, the reflective power of light being from ten to twenty per cent, greater, much more satisfactory results being possible in hazy weather. The apparatus used by the American parties for moving the heliostat can be much improved. All the machinery used by the French parties of observation was of the finest finish and nicest adjustment, which it is obvious, would greatly facilitate operations, requiring quickness of movement and delicacy of touch.

Of the work at Peking, Prof. Hall, had heard a little from an attaché of the French party of observation at that point. The weather was partially cloudy, and the results not altogether satisfactory. At Nagasaki the weather was clear, and some photographs were taken. At Yokohama two contacts were observed, and sixty pictures taken, among which were seven or eight daguerreotypes. The French party at Cobi, in the north of Japan, had clear weather and was quite successful. The Mexican party at Yokohama observed all the contacts and took a good many pictures. Of all the pictures taken those of the Americans are likely to be of the greatest benefit to science. The Russian parties on the coast had weather very much like that at Vladivostock, and obtained only partial results. They took some photographs and observed some of the contacts. At none of their stations were all their observations entirely complete and satisfactory. The Russian parties inland, whose line of stations extended from Vladivostock to the Caspian sea, had clear weather and obtained excellent results, especially at Nertschinsk, where they had a heliometer, an instrument by which the objective is cut in two, making two images.

It is quite certain that sufficient data have been obtained from the northern stations for calculating the solar parallax. If the southern expeditions have met with similar success the desirable result is assured. It seems scarcely possible to Prof. Hall that the calculation from the imperfect data already secured is sufficient to determine the sun's distance from the earth with accuracy. He thinks that 92,000,000 is nearly correct, and no subsequent calculation is likely to reduce those figures. Two years must elapse before the results of the observation can be completed and compared, those of one nation with one another, and with the results of foreign nations. The result of each nation's work will enter as a factor into the general work, as its assigned value. The sun's diameter is 32 minutes of arc, and our photographs are 4 inches in diameter 1,100,000 of an inch on the photograph will correspond to about 0.05 second of arc; and if the photographs can be measured to this degree of exactness, the application of photography will be a great advance in such observations.

The Professor left Vladivostock on the 12 of December, and Japan on the 9th, having a pleasant voyage to this port. The buildings at Vladivostock, were sold standing. He hopes by the time of the next transit in 1882, to have all apparatus essential to observation complete and perfect.

The application of science to agriculture.—In the course of a speech of considerable length at a recent meeting of an eastern agricultural society, Mr. J. J. Mechi, who presided, said he wanted to impress upon his brother farmers the desirability of preparing their land for steam power, and availing themselves of it. It was not want of money, for there were plenty of farmers in the neighbourhood, holding 400 and 500 acres, who were silly enough to send their corn and other stuff to him to be ground and cart it back again. Although they were making him a large profit he always told them how foolish they were and he believed it was because they did not like the trouble that they did not avail themselves of steam on their own farms. He therefore wished to impress upon the rising generation more particularly the benefits of the use of steam as a motive power in the cultivation of the land. No better thing could be done by a farmer with a large holding than to send his son for a month or two where steam machinery was made and used, and when once the young man saw the economy and efficiency of steam as a motive power, there is no doubt he would adopt the use of it, provided his landlord permitted him by adapting the fields to it. If he asked any farmer present whether he had been to his landlord, and expressed a desire to adopt the use of steam power, requested him to square his fields, and so on,

for him, he did not believe one of them would answer in the affirmative. Had any of them been thus to their landlords? No response. Well, if they believed in it, and did not bring their power to bear, landlords were justified in saying, as they often did, "We hear no complaints from our tenants about their fields not being adapted to steam." If the farmers of England were with proper pressure to put the matter before their landlords, the latter as sensible men would be open to conviction, and he believed the whole thing might be worked out with the joint action of the two. Their business as farmers was to keep the foreigner out of the market by the cheaper production of food—they should be able to produce the largest possible quantity at such a price as to give them a large profit. Mr. Mechi then mentioned that the fixed steam engine on his farm had been in use there for twenty-eight years—it only cost him £150 when new, and £50 for fixing; it was still a good one, and the number of horses it represented had perished over an over again in that twenty-eight years. He believed that agriculture was about to become scientific. Science had not been acceptable generally in agriculture—book farming was not believed in as the right thing—but he thought a great change was coming over the agricultural mind on this question, and he mentioned, as an indication of this, that the London Farmers' Club, which included many of the most eminent agriculturists of the kingdom, had done great honour to themselves, and good to the cause of progress in agriculture, by electing for their chairman for the current year Professor Voelcker, the great chemical analyst. (Hear, hear.) This was a great step in advance, and an indication of which way the thing was moving. But this was only a confirmation of the motto adopted by the Royal Agricultural Society for thirty-two years—"Practice with Science." (Applause.) He thought, therefore, he was justified in saying that thinking minds had long been convinced that in agriculture, as in other things, it was necessary to know the why and the wherefore—to know, for instance, how it was that a crop of barley yielded much better after a long fallow than after a crop of roots. Mr. Mechi dwelt upon the scientific branch of this question, and then proceeded to remark upon the growing interest that was being manifested in steam cultivation, mentioning that the ploughs hired by him this year were applied for by a number of farmers, many of whom had to be disappointed on account of the numerous engagements. He believed that in another year they should see more steam ploughs at work in the neighbourhood, especially where the fields were in a condition to receive them, and this would be greatly to the advantage and profit of the farmer.

Burns and Freezings.—Whatever is good for one is just as good for the other. Cold water or snow will remove the first fire or cold, then essence of peppermint, or a strong solution of alum water will harden the skin and draw out the pain. Great care must be taken with burns or freezes, not to break or rack up the skin; and never put on drawing poultices, it makes a big sore. A cloth with a little mutton tallow or some soft oil spread upon it, will keep out the air and heal it where the skin is torn up.

Origin of the Art of Navigation.—At a meeting of the Anthropological Institute of London, on Dec. 22, Col Lane Fox read a paper on early modes of navigation, in which he described the various contrivances employed by savage races for transit on the water. Commencing with the simple trunk canoe, the author traced the development of the art of boat and ship-building through the stages of stitched plank canoes, bark canoes, rafts, outrigger canoes, the variation of hull, sail, and gave the distribution of their many forms and modifications. It was argued that the rude bark float of the Australians, the Tasmanian, and the Ethiopian, the catamaran of the Papaun, the dug-out canoe of the New Zealander, and the built-up canoe of the Samoan, were survivals representing successive stages in the development of the art of ship-building, not lapses to ruder methods of construction as the result of degradation; that each stage supplies us with examples of what at one time was the perfection of the art countless ages ago. Some of the more primitive kinds spread over nearly the whole world, whilst others had a more limited area of distribution. Taken together they enabled us to trace back the history of ship-building from the time of the earliest sculptures to the commencement of the art.

Elevation of Boulders by Ice.—In northern regions, where the tide rises six or eight feet, boulders, or rock of considerable size, are often raised from the sea bed to the surface of the ice produced thereon. Of this Dr. J. Rae gives the following explanation: "When the ice is forming in early winter it rests, when the tide is out, on any boulders that may be at or near low-water mark. At first, while the ice is weak, the boulders break through it; but when the ice becomes two or three feet thick, it freezes firmly to the boulder, and when the tide rises, is strong enough to lift the boulder with it. Thus fastened to the ice, the stone continues to rise and fall with the rise and fall of each tide, until, as the winter advances, it becomes completely enclosed in the ice. In the spring, by the double effect of thaw and evaporation, the upper surface of the ice, to the extent of three or more, is removed, and thus the boulders, which, in autumn, were lying at the bottom of the sea, are now on the ice, while it is still strong and thick enough to travel with its load before favorable winds and currents to a great distance."

—We call the attention of the Canadian authorities and others to the fact that the British Museum is all but destitute of books and documents relating to Canada. This is to be regretted, and we trust that our great national library will be supplied by Canadians themselves with the best books that have hitherto appeared, and may continue to appear for the future, relating to their country. No better use can be made of a public document than to place it there, where the public are supplied with every facility for consulting it.—*Canadian News.*

The Palestine explorations.—Lieutenant Conder, R. E., the officer in charge of the Survey Expedition, reports important discoveries of ruins, which he proposes to identify with some of the lost Biblical cities and sites in the hill country of Judah. Among these are Chozeba (1 Chron. iv, 22), now called Kirbet Kueizibeh; Maarah (Joshua xv, 5-), the position of which appears marked by the name which at a certain point, is now borne by the valley at whose head it stood—the Wady el Moghair, or Valley of the Cave; Arab (Joshua xv, 52), which was one of a group round Hebron—a ruin has been found on a site which appears to fulfil the scanty requirements of the information we possess called Kirbet el Arabiyeh, in which the old name is preserved with a modern signification. Zanoah (Joshua xv, 56, and 1 Chron. iv, 18) which lay apparently between Juttah and Cain, is identified with Kirbet Sanut, a ruin lying very near the ancient Cain. Lieutenant Conder finds also close by the spot where the "forest of Harith" has been always placed a ruin bearing the name Kherras in which the essential letters of Harith are still found; he also points out that the "forest" of the authorized version appears in the Septuagint and Josephus as the "city." Again, with regard to the "wood of Ziph," whether Jonathan went to meet David, Lieutenant Conder thinks that there could never have been any wood in this district, now absolutely treeless, and has discovered a ruin called Kirbet Khoreisa, and which the Hebrew Choresch, translated as the "wood," seems to be preserved close to the undoubted site of Ziph. Here again it is remarkable that the Septuagint substitutes for "wood of Ziph," the "new place." He thinks, too, that he has found the "rock of Maod," to which David "went down" in a place now called the "Valley of Rocks;" the hill Hachilan, where one of the most dramatic episodes in the life of David took place and the Cliff of Ziz, for which he proposes a site very far from that indicated by previous explorers. He has been also engaged in a search for the limits of the Levitical towns, hoping to find some inscription or monument similar to that which forwarded the researches of M. Ganneau on the site of Geyer. He has not found any Hebrew inscription, but appears to have discovered boundary stones which may prove to be the ancient Levitical landmarks. On all these point further information may be expected. No new facts have arrived concerning the so called Moabite pottery and inscriptions sold by Mr. Shapera at Jerusalem. In the last number of the "Academy," Mr. Neubauer unhesitatingly pronounces the inscriptions—of which there are now some hundreds—to be all forgeries, a conclusion at which he arrived more than a year ago, from internal evidence, and quite apart from the fact already proved by M. Clermont Ganneau. Lieut. Conder is about to make a survey of Mr. Henry Maudsley's recent discoveries at Mount Zion, for the Committee of the Palestine Exploration Fund.

MISCELLANY.

Light for the sick.—Miss Nightingale in her "Notes on Nursing" points out the great importance of admitting sunlight freely to all rooms occupied by the sick. As this is a point often entirely overlooked in the construction of hospitals and in the selection of the sick-room in private houses we call special attention to her remarks:—

It is the unqualified result of all my experience with the sick, that second only to their need of fresh air is their need of light; that, after a close room, what hurts them most is a dark room. And that it is not only light but direct sunlight they want. I had rather have the power of carrying my patient about after the sun, according to the aspect of the rooms, if circumstances permit, than let him linger in a room when the sun is off. This is by no means the case. The sun is not only a painter, but a sculptor. You admit that he does the photograph. Without going into any scientific exposition we must admit that light has quite as real and tangible effects upon the human body. But this is not all. Who has not observed the purifying effect of light, and especially of direct sunlight, upon the air of a room? Here is an observation within every-body's experience. Go into a room where the shutters are always shut (in a sick room or a bedroom there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air, *i. e.* unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. The cheerfulness of a room, the usefulness of light in treating disease is all-important.

A very high authority in hospital construction has said that people do not enough consider the difference between wards and dormitories in planning their buildings. But I go farther, and say, that healthy people never remember the difference between bed-rooms and sick-rooms, in making arrangements for the sick. To a sleeper in health it does not signify what the view is from his bed. He ought never to be in it excepting when asleep and at night. Aspect does not very much signify either (provided the sun reach his bed-room some time in every day, to purify the air), because he ought never to be in his bed-room except during the hours when there is no sun. But the case is exactly reversed with the sick, even should they be as many hours out of their beds as you are in yours, which probably they are not. Therefore, that they should be able, without raising themselves or turning in bed, to see out of a window from their beds, to see sky and sun light at least, if you can show them nothing else, I assert to be, if not of the very first importance for recovery, at least something very near it; you should therefore look to the position of the beds of your sick one of the very first things. If they can see out of two windows instead of one, so much the better. Again, the morning sun and the mid-day sun—the hours when they are quite certain not to be up, are of more importance to them, if a choice must be made, than the afternoon sun. Perhaps you can take them out of bed in the afternoon and set them by the window, where they can see the sun. But the best rule is, if possible, to give them direct sunlight from the moment he rises till the moments he sets.

Another great difference between the bed-room and the sick-room is, that the sleeper has a very large balance of fresh air to begin with, when he begins the night, if his room has been opened all day as it ought to be; the sickman has not, because all day he has been breathing the air in the same room, and dirtying it by the emanations from himself. Far more care is therefore necessary to keep up a constant change of air in the sick-room.

It is hardly necessary to add that there are acute cases (particularly a few ophthalmic cases, and diseases where the eye is morbidly sensitive), where a subdued light is necessary. But a dark north room is inadmissible even for these. You can always moderate the light by blinds and curtains.

Heavy, thick, dark window or bed curtains should, however, hardly ever be used for any kind of sick in this country. A light white curtain at the head of the bed is, in general, all that is necessary, and a green blind to the window, to be drawn down only when necessary.

One of the greatest observers of human things (not physiological), says in another language, "Where there is sun there is thought." All physiology goes to confirm this. Where is the shady side of deep valleys, there is cretinism. Where are cellars and the unshaded sides of narrow streets, there is the degeneracy and weakness of the human race—mind and body equally degenerating. Put the pale withering plant and human being into the sun, and if not too far gone, each will recover health and spirit.

It is a curious thing to observe how almost all patients lie with their faces turned to the light, exactly as plants always make their way towards the light; a patient will even complain that it gives him pain "lying on that side." "Then why do you lie on that side?"

He does not know,—but we do. It is because it is the side towards the window. Walk through the wards of an hospital, remember the bedsides of private patients you have seen, and count how many sick you ever saw lying with their faces towards the wall.

Men we don't want to meet.—The man who grunts and gups as he gobbles up his soup, and at every other mouthful seems threatened with a choking fit.

The man who, having by an accident been thrown once in your company, makes bold to bawl your name out, and to shake your hand profusely when you pass him in the street.

The man who, pleading old school-fellowship, which you have quite forgotten, never meets you without trying to extort a five pound note.

The man who volunteers his criticism on your new play or picture and points out its worst faults in presence of your wife.

The man who artfully provokes you to play a game of billiards with him, and though he feigns to be a novice, produces his own chalk.

The man who can't sit at your table on any set occasion without getting on his legs to propose some stupid toast.

The man who, thinking you are musical, bores you with his notions of the music of the future, of which you know as little as the music of the spheres.

The man who wears a white hat in winter, and smokes a pipe when walking, and accosts you as "old fellow" just as you are hoping to make a good impression on some well-dressed lady friend.

The man who, with a look of urgent business, when you are in a hurry, takes you by the button-hole to tell you a bad joke.

The man who, sitting just behind you at the opera, destroys half your enjoyment by humming all the airs.

The man who makes remarks on your personal adornment, asks you where you buy your waistcoats, and what you paid for your dress boots.

The man who lards his talk with little scraps of French and German after his return from a Continental tour.

The man who spoils your pleasure in seeing a new play by applauding in wrong places and muttering in stage whispers his comments on the plot.

And, to finish with, the man who, when you draw back slightly to appreciate a picture, coolly comes and stands in front of you, and then receding also, treads upon your toes.—*Punch*.

Stick to old friends.—Never give up old friends for new ones. Make new ones, too, if you like; and when you have learned that you can trust them, love them if you will, but remember the old ones still. Do not forget that they have been tried and found true, that they have been merry with you in time of pleasure, and when sorrow came to you they sorrowed also. No matter if they have gone down in the social scale and you up; no matter if poverty and misfortune have come to them while prosperity and plenty have fallen to you—are they any the less true for that? Are not their hearts as warm as tender if they do beat beneath homespun instead of velvet? Yes, friends, they are as true, and tender, and loving; and don't forget old friends.

Interfering with nature.—All children love play. Few love the school; at least few love it for its own sake. Many love to go to school because they meet their companions and enjoy their society. Few love the studies and the exercises of the school. Why this difference? Why do all young persons love play? Why do they love to run and jump and climb, and thus fatigue their bodies, when they might be resting in the shade, or seated cosily by the fireside?

Because play is natural to them. Nature has made the voluntary exercise of the muscles pleasant. Exercise is a source of pleasure and a condition of growth. If it had not been made a source of pleasure, the condition of growth would not be met. If exercise were left to the reason or conscience of the child, or even to the reason and authority of the parent, it would seldom be taken at the proper time or in a proper manner. The condition of growth would be neglected. The body would not be developed. As nature did not leave the taking of food, another condition of growth, to reason and conscience, but implanted the desire for food, and added the penalty of hunger, so she has rendered the love of exercise natural and instinctive to the young. The business of the parent is to supervise, and, in some measure, direct their activity without checking its spontaneity.

What has nature done with respect to mental exercise? Has she made the exercise necessary to the development of the bodily powers pleasant, and the exercise necessary to the development of the mental powers unpleasant? Is this the reason why children love play and hate study?

Analogy suggests that she would make mental as well as bodily exercise pleasant. Has she not done so?

We believe she has, and that the reason of the aversion to study and mental exercise, so often manifested, is found in the injudicious

method of so-called teaching. If there were as much interference with the spontaneous bodily activities of children, as there is with their mental activities; if we attempted to direct their plays in the same unnatural manner that we attempt to direct their studies, play would soon become distasteful. If we insisted on their engaging in plays in which they took no interest, the hearty shout and the rushing footsteps would soon be unheard; but we do insist that the child shall engage at the outset in mental exercise in which he cannot feel an interest; we occasion at the outset a distaste which is associated with all mental labor.

The mind was made to know. The child spontaneously sets to acquire knowledge. He breaks his watch to know what is inside of it. He comes near drowning himself to learn how deep the water of the pond is. He runs away from his nurse in search of flowers. By following the instincts of nature in developing body and mind he gives great annoyance to nurses and teachers.

His teachers undertake to expel nature. Nature tells the child to use his senses in acquiring knowledge of the wonders by which he is surrounded. The teacher tells him he must learn from books. He must go to school to learn. The process of learning consists perhaps in sitting still for a large part of the time, and occasionally viewing the forms and repeating the names of the letters of the alphabet. Investigating the method by which birds build their nests, and by which the squirrel digs his hole, was interesting. Those researches were perhaps charged to the account of idleness, which the urchin is urged to eschew, and to devote himself to the acquisition of knowledge by learning the alphabet by rote, and by committing to memory definitions which he cannot by any possibility understand.

Take the text-books which till recently, at least, have been put into the hands of the young, and nothing can be conceived of better adapted to disgust them with study. Abstract definitions and statements of general truths were always placed first, and were to be learned first—words and words only, since the human mind cannot cognize the general except through the particular. That children do not love study in this form, does not prove that normal and mental exercise is not pleasant—does not prove that nature has not made mental exercise as pleasant as bodily exercise. We hail the Kindergarten methods as a step in the right direction.—*S. S. Times*.

Making home happy.—The subject of making home attractive and providing innocent amusement for the young caused a lively discussion at a meeting of Moravian congregations recently held at Gnadenthen, Ohio. It is an important subject, but one that is too little attended to, and is too little understood by those who are disposed to give it consideration. Children crave variety in amusement and associations as well as in occupation. Old things tire, new ones delight. The mysterious regularity with which out-door sports succeed each other through the different seasons is governed by a law of the childish nature and mind which it is well to regard in the provision of in-door entertainment. The desire for variety may be restrained within proper limits, but it can be disregarded entirely only at the risk of ruining the disposition of the child, and of impairing his capacity for future activity.

If entertainment adapted to the childish wants is not provided at home, it will be sought abroad. The child at home is under proper control and good influences, and is safe. The child abroad is—where? under what influences? in what peril? No one knows, but he is certainly in danger. He meets abroad not those who have pleasant homes and are well trained, for they are at home, but those whose homes are forbidding, whose training has been imperfect, or who are unruly. Such associates cannot improve him; they are certain to taint his morals; they may ruin him. He may, to be sure, be forced to stay at home by a painful and cruel restraint, but under such treatment he will grow morose, inopish, and weak in morals. To fail to surround home with attractions which will make it lovable, more pleasant than any other place, is a sure way to prevent the proper development of children, even when it does not result in committing them to vice.

The means of accomplishing this object are as numerous and various as the dispositions and circumstances of families. A fundamental condition is the prevalence of regularity and system in the performance of home duties. These duties should be well defined, and the faithful discharge of them rigorously exacted. The best ordered households are, as a rule, the most pleasant; the children who are under the most constant, even discipline are the happiest.

The dispositions and tastes of the children must be consulted. When this is well done they may be made to find in occupation nearly all the amusement they need. Every child has some craft or art to which he is especially inclined. It may be drawing, or music, some little mechanical art, or natural history, or something active. Whatever it is, he has shown the way in which he will be most successfully dealt with. His taste should be cultivated; he should be given the means of enjoying it as fully as circumstances

will permit. It is in the practice of particularly liked arts—the pursuit of hobbies, they are called in older life—that our much worked business men, divines, lawyers and doctors find their most wholesome relaxation. Where there are several children, each allowed to indulge his special taste, a goodly variety of resources for diversion grows up of itself, and with it is developed also within the family no little of the variety of society which the children will need, for they will find no end of entertainment in consulting and advising each other about their special pursuits. If the parent has a hobby, he could introduce and contribute another element to the general stock.

We come now to the provision of special amusements. Where the home has been built up on the principles we have sketched, very little care need to be taken of them; they will have provided themselves. Still they are an element that should not be overlooked, and in some unfortunate families they may form the only resort. People of means may buy expensive gifts and toys and games; others will have to depend upon their resources for contrivance. After all, the simplest games are the best. The games provided should be such as all can join in, old as well as young, if they wish, and the fear of noise should not prevent those which require some activity being preferred. Some very stupid, tiresome contrivances are offered to the public under the names of games. They are not adapted to the object sought, and should be put away. Likewise all games should be avoided which are alike, or which will remind one of those sports of the world whereby the unwary are led down to wickedness and ruin.—*Methodist.*

Seven conditions.—A recent work on the Franco-German war quotes some lines which appear beneath a series of old designs to be found in almost every house on both banks of the Rhine. They are known as the "Seven Conditions," which are represented by typical figures:

- "The first is the Emperor who says, 'I levy tribute;'
- "Next comes the Nobleman, who says, 'I have a free estate;'
- "The Priest says, 'I take tithes;'
- "The Jew (medieval type of the trader) says, 'I live by my profits;'
- "The Soldier says, 'I pay for nothing;'
- "The Beggar says, 'I have nothing;'
- "The Peasant says, 'God help me, for these six other men have all to be supported by me.'"

How to promote peace in a family.—1. Remember, that our will is likely to be crossed every day; so prepare for it.

2. Everybody in the house has an evil nature as well as ourselves, and, therefore, we are not to expect too much.
3. To learn the different temper and disposition of each individual.
4. To look on each member of the family as one for whom we should have a care.
5. When any good happens to any one to rejoice at it.
6. When inclined to give an angry answer, to "overcome evil with good."
7. If from sickness, pain or infirmity we feel irritable, to keep a strict watch over ourselves.
8. To observe when others are suffering, and drop a word of kindness and sympathy suited to them.
9. To watch the little opportunities of pleasing, and to put little annoyances out of the way.
10. To take a cheerful view of everything, even of the weather, and encourage hope.
11. To speak kindly to the servants—to praise them for little things when you can.
12. In all little pleasures which may occur, to put yourself last.
13. To try for "the soft answer that turneth away wrath."

Learn to sing Ballads.—If you have a voice, whether remarkable for strength or sweetness, or neither, strive to cultivate it. A woman who can not sing is as a flower without perfume, a butterfly without wings. I do not mean you must sing scales and trills by the hour; those notions have left me long ago. Learn operatic wonders, if you like, only be sure to learn them correctly; but they are easily forgotten, rest assured.

Learn a *hundred or more* beautiful little ballads. Not the kind that take a town by storm and die out in one season, but real songs that never grow old, whose tunes are melody and whose words are poetry. You will find in happiness, when your lover bends over you eager to whisper a secret you are ready to hear, that your joy and your love, your modesty and your pride blend more sweetly when you sing "*Annie Laurie*" or "*Within a mile of Edinboro' Town*" than in executing the most wonderful gymnastics with your vocal organs.

In sorrow, some such song, with all the sweet memories of the past clinging about its tender notes, will call forth tears to ease an aching heart.

Then there comes to every *blessed* woman a time when a weary little head lies on her bosom, little eyelids are drooping, twilight is drawing about her—too early for a lamp, too early for any but little folks to sleep; then it is that all the accomplishments of her girlhood are as nothing compared to one simple song that lulls a tired baby to sleep. There is something soothing to the child in the mother's voice at any time, and it instinctively loves the melody of a song; so, girls, while you can, think of the mine of wealth you can lay up for the children that will come by and by with their smiles and their kisses to brighten the way.—(From *February "Home and School," Louisville, Ky.*)

Politeness.—Politeness, a due and proper regard that is for the feelings, wishes, and pleasures of other people, is the thing that, perhaps, of all others renders life the easiest and the pleasantest; it is the oil that enables all the wheels of the complex machinery of social life to work satisfactorily. What a pity it is that that should be disregarded as it so frequently is in domestic life, the place where of all others its softening influence is the most required. The constant intercourse of home life causes unsuitable tempers and dispositions to jar each other in a manner hardly possible in general society—how unwise then it is to relinquish the one quality which acts as a species of buffer between antagonistic temperaments. Besides, it is a cardinal mistake to regard politeness, as so many unfortunately do, as a species of "company manner," to be assumed or relinquished simultaneously with our best clothes; it is, properly considered, a most valuable quality, involving self-control, some self-fulness, and a certain regard for the feelings of others. We wish we could regard it as by any means a common virtue in the home circle, but far it is very far indeed from being so; neither men nor women are blameless in this respect, but owing to their gentler and softer natures women are less frequent offenders than the lords of creation. Still they frequently allow themselves a license in saying unpleasant things to their own immediate belongings, that they would never take in the hearing of a stranger. They argue, "It is hard if you can't save what you think to your own husband, or sister, or other relative." Granted—but the very same thing, if necessary, may be said in different ways—why not select the one which will neither wound the feelings nor rouse the temper of the listener? Many of the bitterest and most irreparable disagreements in married life have arisen, not from any want of absolute affection, but from a carelessness on one side or the other, frequently on both, as to the manner in which subjects on which there may be a difference of opinion are remarked upon. It is almost impossible that two people can, even though they be husband and wife, think alike on every subject, the probabilities are that on many their opinions will be widely different. Why, however, should they not be as politely tolerant of each other's views in private as conventionality would force them to be in public? Why should the wife's expression of opinion be received with, "Mary, don't be a fool," or the husband's with, "Really, John, you are quite too silly"? We have already said the men are the worst offenders, perhaps because they care less for, and consequently think less of, the small courtesies of life than do women. Still this reflection hardly consoles a woman when she first finds her husband punctilious in helping every other woman over the raised stile, where he leaves her to climb a five-barred gate unassisted; nor is she free from a certain feeling of mortification when she finds he considers it too much trouble to dress for dinner with her alone, or to vouchsafe an answer to a question should he have the newspaper in his hand.—*Scottish American.*

Obituary.

CANON KINGSLEY:

The subject of this notice, was the son of the late Rev. C. Kingsley, who for some years held the Rectorship of Chelsea, a portion of London which has identified itself in the public mind with the names, also, of Thomas Carlyle and Sir Charles Dilke. He was the representative of an old Cheshire family which, in the stirring times of the seventeenth century, attached itself, first to the cause of Cromwell and the Parliamentarians, and after to that of Charles II. At the time of his death, his parents resided at Home, in Devonshire, and it was there that he passed his boyhood. His education was intrusted to a private tutor after he left his father's immediate care, and he passed afterward to King's College, London, and thence to Magdalen College, Cambridge, where he distinguished himself by obtaining a scholarship and several prizes. He ultimately took his

degree in 1842, with a first-class classics, and a second in mathematics. He at first intended to go to the Bar, but after a short study with that view, he turned his attention to the Church, and was ordained. In 1844 he was presented to the living of Eversley in Hampshire, where he had previously been Curate, and to which his affections as well as his duties have always remained attached. There, in his moorland districts, he was first brought into sympathy with the poor, and his frequent relations with the working classes subsequently may be attributed largely to that sympathy so acquired. He was afterward appointed to a canonry in Chester Cathedral, and also was made one of the Chaplains in Ordinary to the Queen and the Prince of Wales, and Professor of Modern History in the University of Cambridge. But it is by his works that he will be chiefly remembered. His recent visit to this country largely increased the number of his friends here, but a kindly feeling toward him on the part of the American people was long before experienced, on account of his earnest exertions in behalf of the labouring poor. His sympathies in their behalf may have been aroused very early in life, but they were certainly stimulated at Eversley, and again by the writings of Horace Mayhew in the London newspapers. As a Churchman, he belonged to the Broad Church Party, of which Dean Stanley is a prominent light; and, as a novelist and a poet, he may be judged according to the estimate of his respective judges, but as a friend to the poor and the oppressed his claims to admiration cannot be gainsaid. Of his books, the best known is, perhaps, "Alton Locke," which was written especially to advance his favorite cause. But throughout his whole life the impulse was at work. His literary labours produced besides, "Twenty-five Village Sermons," "The Saints' Tragedy," a drama in verse; "The Message of the Church to Laboring Men"; "Yeast, a Problem"; "Phaeton, or Loose Thoughts for Loose Thinkers"; "Hypathia," "Alexandria and Her Schools," "Westward Ho!"; "Glaucus," "The Heroes," "Two Years Ago," "The Water Babies," "Andromeda and Other Poems," besides a large number of poems, sermons, lectures and essays, and many contributions to the serials, especially *Frazer's Magazine*.

Mr. Kingsley was married in 1844, the same year that he received holy orders, to a daughter of Pascoe Grenfell, who was for many years member of Parliament for Truro and Great Marlow. His death at the yearly age of fifty-five will be regretted everywhere, for his works and labors are known wherever the English language is spoken, but it will be especially deplored in England, where he won universal respect, and more particularly by the poor, who have lost an earnest faithful, and powerful friend.—*N. Y. Times*.

POETRY.

Montero's Flight.

(From *Blackwood's Magazine*.)

We were fighting for Don Carlos—the cause of God and Spain.
As in days of Don Pelayo, the mountain 'gainst the plain.
The Republic sat triumphant on Don Pelayo's throne;
And, brave among the bravest, old La Concha led them on.
We held our proud position on Monte Muro's height;
And all around Abarzuza their movements were in sight.
He climbed the village steeple, and bade the assault begin,
And they rushed up like a tempest, our vantage post to win;
Cavalry and footmen, up the rugged mountain track,
They kept their steady progress, and not a man looked back.
Then we poured from our intrenchments, like a rain-swelled
[river course;
And they stood against the torrent, like the dam that stems its
[force.
That living dam was yielding, their strength was giving way,—
Then he hurried down, exclaiming, "I die or win to day!
My horse, my horse, Montero!" and drew his trusty brand,—
His foot was in the stirrup, but the sword fell from his hand.
A shot of ours had struck him right on his gallant breast;
It struck as strikes the lightning an old oak's honoured crest.
He fell; his bright eye darkened, as the sun's light in eclipse.
With "Death from the Guerillas!" and "God's mercy!" on his
[lips.

But time was none for thinking; our advance was near the force,
And quick as light, Montero placed the old man on his horse:
And leaping up behind him, and clasping him round tight
Plunged spurs up to the rowels and darted off in flight.
Oh! glorious more than vict'ry that flight, when as a shield,
The gallant young Montero bore his chieftain from the field!
His back a mark for bullets, but none were shot, I ween;
Or, if shot, they were averted by our Lady, Heaven's Queen.

But men are men, and press on, like hounds upon the chase;
And on we spurred, and ever o'ertook him in the race;
But the three or four that followed him turn'd round; we stood
[at bay;

And along the broken path still Montero held his way.
Now and then he stumbled, but, firm with word and rein.
He cheered up the brown charger, and all was speed again.
He knew, the good steed knew it, the race was for the life
Of the dear and noble master, sore wounded in the strife.
("No quarter," was the watchword, "Give quarter," had been
[his;

Few men were we, and desp'rate, but we never thought of this!")
They drew rein in Abarzuza, and from the panting horse
Tenderly they lower'd him—was it life still, or a corse?
He breath'd but a few seconds, he press'd Montero's hand;
And every eye was moisten'd, for our hearts were all unmanned.
A priest quick did his office, his sins were all forgiven;
St. Manuel pass him quickly through purgat'ry to heaven!
Slowly we retreated; but while this was going on,
Their rout had been accomplished, and the bloody day was won.
But the glory not with us, but Montero must remain,
And we grudge it not our foemen—they, too, are sons of Spain;
Nor never since the Cid's days, Ruy Diaz of Bivar,
Did knight or squire win honour by a nobler deed of war!
We are brothers, we are brothers; oh! when will discord cease!
St. Michael, give us vict'ry! St. Mary, give us peace!

The Song of Steam.

The following fine poem, by George W. Cutter, of Covington, Ky, *Blackwood* has pronounced "the best lyric of the century."

Harness me down with your iron bands,
Be sure of your curb and rein,
For I scorn the strength of your puny hands
As a tempest scorns a chain.
How I laughed as I lay concealed from sight
For many a countless hour,
At the childish boasts of human might,
And the pride of human power.

When I saw an army upon the land,
A navy upon the seas
Creeping along, a snail-like band,
Or waiting a way ward breeze;
When I saw the peasant reel
With the toil that he faintly bore,
As he turned at the tardy wheel,
Or toiled at the weary oar:
When I measured the panting courser's speed,
The flight of the carrier dove,
As they bore a law a king decreed,
Or the lines of impatient love,
I could but think how the world would feel
As these were outstripped afar,
When I should be bound to the rushing keel
Or chained to the flying car!

Ha! ha! ha! They found me at last,
They invited me forth at length,
And I rushed to my throne with a thunder blast,
And laughed in my iron strength!
Oh! then ye saw a wondrous change
On the earth and ocean wide,
Where now my fiery armies range,
Nor wait for wind nor tide.

Hurrah! hurrah! the waters o'er,
The mountain steep decline;
Time—space—have yielded to my power—
The world! the world is mine!
The rivers the sun hath earliest blest,
Or those where his beams decline;
The giant streams of the queenly West,
Or the Orient floods divine.

The ocean pales where'er I sweep
 To hear my strength rejoice,
 And monsters of the briny deep
 Cower trembling at my voice.
 I carry the wealth and ore of earth,
 The thought of the God-like mind ;
 The wind lags after my going forth,
 The lightning is left behind.

In the darksome depths of the fathomless mine
 My tireless arms doth play,
 Where the rocks ne'er saw the sun's decline
 Or the dawn of the glorious day ;
 I bring earth's glittering jewels up
 From the hidden caves below,
 And I make the fountain's granite cup
 With a crystal gush o'erflow.

I blow the bellows, I forge the steel
 In all the shops of trade ;
 I hammer the ore and turn the wheel
 Where my arms of strength are made ;
 I manage the furnace, the mill, the mint—
 I carry, I spin, I weave,
 And all my doings I put in print
 On every Saturday eve.

I've no muscles to weary, no breath to decay,
 No bones to be "laid on the shelf,"
 And soon I intend you may "go and play,"
 While I manage the world myself.
 But harness me down with your iron bands,
 Be sure of your curb and rein,
 For I scorn the strength of your puny hands
 As the tempest scorns a chain.

Books received.

We have received from the Publishers (S. T. Gordon & Son, 13 East, 14th Street, New York,) the popular new school book, "Silver Threads of Song," compiled by the well known popular song writer, H. Millard. It contains 208 pages of the very choicest of the popular songs of the day, together with a large number written, expressly for the use of schools, by Mr. Millard, words by Mr. George Cooper. In it will be found music for every variety of school exercise—duets, trios, and quartettes, &c. The first 24 pages treat of the elements of music, which are presented in an easy and pleasing form. A *Fairy Operette*, suitable for children, on the familiar subject of *LITTLE RED RIDING HOOD*, and a *Musical Charade*, of a higher character, for school exhibitions, intitled *EXCELLENT*, close the volume, which we are sure will be deservedly popular.

THE BROOKLYN JOURNAL OF EDUCATION.—We have received the first number of this work, which we are sure will receive a warm welcome from all those interested or engaged in education. The different subjects are treated in a masterly style, far superior to that found in a large number of periodicals of the same nature. The letter press and general form of the book are elaborate ; and this gives us promise that the contents will always be of a high order. We wish our new contemporary a long and successful career.

THIRD ANNUAL REPORT OF PUBLIC SCHOOL.—*British Columbia.*

REPORT UPON INSPECTION OF PROTESTANT SCHOOLS, for 1872-73.—*Newfoundland.*

REPORT OF SUPERINTENDENT OF EDUCATION.—*State of Alabama.*

ACTS OF THE BOARD OF EDUCATION.—*State of Alabama.*

OFFICIAL NOTICES.



Ministry of Public Instruction.

APPOINTMENTS.

BOARD OF EXAMINERS.

ST. HYACINTH.

The Lieutenant Governor, by order in Council of the 21st December 1874, has been pleased to appoint the following named gentlemen to be members of the Board, lately established at St. Hyacinth, to examine candidates for Elementary School Diplomas, namely :

The Rev. Messrs. Alphonse Gravel, Amédée Dumenil, L. N. Archambault, Jean-Charles-Alfred Desnoyers and M. Godard, and Messrs. Hilaire Blanchard, Charles Bachand, Jean-Baptiste Delage, Solyme Bertrand and Noé Gervais.

CASPÉ.

By order in Council of the 16th February, 1875 :

The Lieutenant Governor has been pleased to name Mr. François Xavier Lavoie, member of the Board at Percé, in the county of Gaspé, *vice* Revd. J. J. Lepage, resigned.

BEDFORD (PROTESTANT BOARD.)

By order in Council of the 20th February, 1875 :

The Lieutenant Governor has been pleased to name Mr. Cyrus Thomas, member of the Protestant Board at Bedford, *vice* Mr. Benjamin A. Harkell, resigned.

SCHOOL COMMISSIONERS.

The Lieutenant Governor, by order in Council of the 21st December, 1874, has been pleased to make the following appointments :

County of Gaspé, Pabos—The Révd. André Audet *vice* Revd. P. Saucier.

County of Stanstead, Stanstead.—Mr. Alexander Monroe *vice* Mr. Harry House.

County of Témiscouata, St. Paul-de-la-Croix—Messrs. Joachim St. Pierre, Ephrem Caron, Ferdinand Malenfant, Octave Côté and Aristobule Côté.

By order in Council of the 27th January, 1875 :

County of Argenteuil, Harrington No. 1—Messrs. John Cameron and Donald Deware, continued in office.

County of Dorchester, Ste. Claire—Messrs. François-Xavier Chabot, Jean Laliberté, Charles Fradet, Jean Chrysostôme Lecours and Philippe Fournier.

By order in Council of the 16th February, 1875 :

County of Compton, St. Malo d'Aukland—Mr. Jean Roy *vice* Mr. Octave Dagenais.

County of Dorchester, Standon—Messrs. Louis Jacques, François Ferland, Antoine Noël, Jean-Baptiste Nadeau and Anselme Vachon.

County of Rimouski, Rimouski (Parish)—Revd. Mr. Pierre-Charles-Alphonse Winter, *vice* Revd. Mr. L. J. Bernard.

DIPLOMAS GRANTED BY BOARDS OF EXAMINERS.

BONAVENTURE.

ELEMENTARY SCHOOL, 1st class : Misses. Louise Couture (F. E.), Catherine Dutil (E), Angelina Leblanc (F. E.), Angélique Poirier and Marie Anne Audet (F).

8th February, 1875.

CASPÉ.

ELEMENTARY SCHOOL, 1st class : Misses. Helen Maria Harbour and Catherine Emeline Beck (E).

2nd February, 1875.

KAMOURASKA.

ELEMENTARY SCHOOL, 1st class : Misses. Georgina Dionne and Céline Lajoie (F).

ELEMENTARY SCHOOL, 2nd class : Miss. Louise Thériault (F).

3rd February, 1875.

MONTREAL (CATHOLIC BOARD).

MODEL SCHOOL, 1st class : Messrs. Casimir Michaud (F) and Edouard Roy (F. E).

ELEMENTARY SCHOOL, 1st class (F) : Misses. Joséphine Benoit, Sophronie Alphonsine Brunet, Marie-Anne Charbonneau, Darie Christin, Apolline Dupuis, Angéline Fontaine, Marie-Anne Granger, Rose-Delima Meilleur, Agathe Thériault.

ELEMENTARY SCHOOL, 2nd class : Misses. Emma Allard, (F. E), Strazile Chalifoux (F), Emma Daniel, Cordelie Lacombe, Malvina Lareau, Mary McAffery (E), Ernestine Mercier, Emma Parent, Régina Renault and Zéluma Viau (F).

MONTREAL (PROTESTANT BOARD).

ELEMENTARY SCHOOL, 1st class (E) : Misses. Mary J. Hall, Kate E. Lavalette, Jane McBain and Harriet Smith.
19th February, 1875.

OTTAWA.

ELEMENTARY SCHOOL, 1st class (F. E.) : Mr. John Cook.

ELEMENTARY SCHOOL, 2nd class (E) : Mrs. Widow John Carson, born Elizabeth Bates.
3rd November, 1874

ELEMENTARY SCHOOL, 1st class (E) : Mr. William Russell and Miss. Rhoda McKay.

ELEMENTARY SCHOOL, 2nd class (E) : Mr. Samuel Reynolds and Misses. Jane Smith and Minnie York.
1st February, 1875.

QUEBEC (CATHOLIC BOARD).

MODEL SCHOOL, 1st class (F. E.) : Miss. M. Olympe Eugénie Doucet.

MODEL SCHOOL, 2nd class (F) : Misses. Elizabeth Bélanger, Clara Avelina Lemay and Césarie Olivier.

ELEMENTARY SCHOOL, 1st class : Misses. Mary Cleary, Emélie Falconbridge and Rebecca Staples (E), Reine Azéline Desvarenes, Cécile Turcotte (F) and Célanire Lévesque (F. E).

ELEMENTARY SCHOOL, 2nd class : Misses. Joséphine Labrecque (F. E), Délina Blanchet Julie Alvin Courteau, Caroline Eléonore Francoeur dite Leclerc, Artémise Hamelin, Emélie Elmire Lamarre, Hermelène Lebourdais, Zoanne Leclerc and Malvina Théberge, (F).
3rd November, 1874.

QUEBEC (PROTESTANT BOARD).

ELEMENTARY SCHOOL, 1st class : Misses. Jane Brennan, Agnes Fraser, M. A. McKenzie, Anny Florence McKie, Caroline H. Park, Charlotte Plante, Mary Ellen Webster (E).
4th August, 1874.

ELEMENTARY SCHOOL, 1st class : Miss. Sarah McKillop (E).

ELEMENTARY SCHOOL, 2nd class : Misses. Martha Graham, Celia Jane Shurber and Mrs. Diana Waters (E).
3rd November, 1874.

MODEL SCHOOL, 1st class : Miss. Frances Phillips (E).

ELEMENTARY SCHOOL, 1st class : Misses. Isabella-G. Johnston, Mary E. McKiehan and Caroline McVittie (E).
2nd February, 1875.

SHERBROOKE.

ELEMENTARY SCHOOL, 1st class : Misses. Margaret Farquhar, Elvina A. Greenlay, Orphena J. Lasell and Elizabeth Pallister (E).

ELEMENTARY SCHOOL, 2nd class : Misses. Violetta R. Coats and Alma R. Warner (E).
2nd February, 1875.

THREE-RIVERS.

MODEL SCHOOL, 1st class (F) : Miss. Virginie Vignault.

ELEMENTARY SCHOOL, 1st class (F) : Misses. Rose-Anna Bordeleau, Marie-Alvina Proteau, Noémie Mercure, Victorine Pepin, Honorine Courteau, and Mathilde Brisson.
3rd November, 1874.

WATERLOO and SWEETSBURG (PROTESTANT BOARD)

ELEMENTARY SCHOOL, (1st class (E) : Mr. Charles Curtis and Misses. Hattie Parker and Martha Richardson.

ELEMENTARY SCHOOL, 2nd class (E) : Misses. Delia A. Billetdoux and Ettie England.
8th February, 1875.

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ADVERTISEMENTS.

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(FOR THE PROVINCE OF QUEBEC.)

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All communications relating to the Journal to be addressed to the editors.

Meteorology.

Observations taken at Halifax, Nova Scotia, during the month of January, 1875; Lat: 44° 39' North; Long. 63° 36' West; height above the Sea, 130 feet, by 2nd Corporal J. T. Thompson, A. H. Corps.

Barometer, Highest reading, on the 7th.....	30.519 inches.
" " Lowest " " 8th.....	29.333
" " Range of pressure.....	1.186
" " Mean for month (reduced to 32 F).....	29.948
Thermometer, Highest reading on the 31st.....	44.4 degrees.
" " Lowest " " 21st.....	-7.6
" " Range in month.....	52.0
" " Mean of all highest.....	24.4
" " " lowest.....	5.4
" " " daily range.....	19.0
" " " for month.....	14.9
" " Highest reading in sun's rays.....	101.5
" " Lowest reading on the grass.....	-2
Hygrometer, Mean of dry bulb.....	16.9
" " wet " ".....	16.1
" " dew point.....	10.2
" " Elastic force of vapour.....	.063 grains.
" " Vapour in a cubic foot of air.....	.86
" " required to saturate air.....	.28
" " The figure of humidity (Sat. 100).....	.73
" " Average weight of a cubic foot of air.....	583.1
Wind, Mean direction of North.....	4.5 days.
" " " North East.....	5.0
" " " East.....	0.5
" " " South East.....	1.0
" " " South.....	1.5
" " " South West.....	1.0
" " " West.....	0.5
" " " North West.....	4.0
" " " Calm.....	3.0
" " Daily force.....	3.2
" " horizontal movement.....	23.1 miles.
Cloud, Mean amount (0 to 10).....	5.7
Ozone, " " (0 to 10).....	2.4
Rain, Number of days it fell.....	2
Snow, " ".....	12
Amount collected on ground.....	9.27 inches.
Fog, Number of days.....	0

Synopsis of Temperature, Cloud and Precipitation for the month of January, compiled at the Toronto Observatory, from Observations in the several Provinces of the Dominion of Canada:—

PROVINCE.	STATION.	Hours from which means are derived	NEW BRUNSWICK.		NOVA SCOTIA.		P. E. ISLAND.	MANITOWBA.	NEW-FOUND-LAND.
			St. John.	Fredericton.	Halifax.	Treuro.			
	Toronto.	6, 8 A. M., 2, 4, 10 & 12 P. M.	16.13	13	28.62	3.88	23.20	7.84	39.0
	Woodstock.	Tri-hourly.	11.38	13	24.46	4.85	10.08	3.63	29.4
	Little Current.	7 A. M., 2 & 9 P. M.	6.25	1	22.50	15.08	2.45	13	13
	Gravenhurst.	7 A. M., 2 & 9 P. M.	8.20	2	20.35	5.80	7.84	13	13
	Huntingdon.	7 A. M., 2 & 9 P. M.	7.40	2.13	16.00	11.13	30.0	25	25
	Quebec.	Bi-hourly.	2.80	8	13.12	11.13	19.58	29	29
	Montreal.	Tri-hourly.	3.45	13	18.02	8.66	2.51	35.0	35.0
	St. John.	Bi-hourly.	10.85	29	30.00	2.00	35.0	25	25
	Fredericton.	Tri-hourly.	4.45	28	28.29	14.24	27.0	25	25
	Halifax.	Tri-hourly.	14.99	30	28.64	2.17	39.4	25	25
	Treuro.	Tri-hourly.	15.11	30	28.47	5.80	32.9	25	25
	Charlottetown.	8 A. M., 2 & 10 P. M.	8.84	25	25.90	4.13	31.0	26	26
	Winnipeg.	7 A. M., 2 & 9 P. M.	15.68	31	7.60	12.00	31.0	26	26
	St. Johns.	8 A. M., 2 & 9 P. M.	17.23	30	30.00	8.20	31.0	26	26
	Mean Temperature uncorrected for diurnal variation.....		16.13		28.62	3.88	23.20	7.84	39.0
	Warmest day.....		13		28.62	3.88	23.20	7.84	39.0
	Temperature.....		13		28.62	3.88	23.20	7.84	39.0
	Coldest day.....		9		14	5.80	10.08	3.63	29.4
	Temperature.....		9		14	5.80	10.08	3.63	29.4
	Mean of daily Maxima.....		7.84		16.00	11.13	19.58	25	25
	Mean of daily Minima.....		39.0		29.4	2.45	30.0	25	25
	Highest Temperature.....		13		13	11.13	30.0	25	25
	Date.....		13		13	11.13	30.0	25	25
	Lowest Temperature.....		-8.8		19.0	19.0	19.0	20	20
	Date.....		10		20	19.0	19.0	20	20
	Percentage of Cloud.....		76		62	52	0.0	0.0	0.0
	Depth of Rain in inches.....		inap		0.0	0.0	0.0	0.0	0.0
	Number of days in which rain fell.....		1		0	0	0	0	0
	Depth of snow in inches.....		32.3		27.5	45.8	41.7	17	17
	Number of days in which snow fell.....		17		9	15	17	13	13
	Total depth of rain and melted snow.....		3.230		2.750	4.580	4.325	2.650	4.682
	Number of fair days.....		14		14	14	21	14	17

Observations taken at Halifax, Nova Scotia, during the month of February 1875. Lat: 41° 39' North; Long. 63° 36' West; height above the Sea, 130 feet, by 2nd Corporal J. T. Thompson, A. H. Corps.

Barometer, highest reading on the 11th.....	30.506 inches.
" " lowest " " 26th.....	29.146
" " range of pressure.....	1.360
" " mean for month (reduced to 32° F).....	29.860
Thermometer, highest reading, on the 25th.....	47.9 degrees.
" " lowest " " 15th.....	13.2
" " range in month.....	61.1
" " mean of highest.....	30.2
" " mean of lowest.....	7.2
" " mean daily range.....	23.0
" " mean for month.....	18.7
" " highest reading in sun's rays.....	99.9
" " lowest " " on the grass.....	Frozen.
Hygrometer, mean of dry bulb.....	20.3
" " mean of wet bulb.....	19.6
" " mean dew point.....	14.6
" " elastic force of vapour.....	.084 grains.
" " weight of vapour in a cubic foot of air.....	1.04
" " weight required to saturate do.....	.26
" " the degree of humidity (Compl. Sat. 100).....	.77
" " average weight of a cubic foot of air.....	577.7 grains.
Wind, mean direction of, North.....	2.5 days.
" " " North East.....	1.5
" " " East.....	0.0
" " " South East.....	1.0
" " " South.....	2.0
" " " South West.....	1.0
" " " West.....	2.0
" " " North West.....	1.0
" " " Calm.....	3.0
" " Daily force.....	3.2
" " horizontal movement.....	Out of repair.
Cloud, mean amount (0 to 10).....	5.6
Ozone, mean amount (0 to 10).....	1.7
Rain, number of days it fell.....	5
Snow, number of days it fell.....	13
Amount collected on ground.....	8.40 inches.
Fog, number of days.....	0

ABSTRACT FOR THE MONTH OF FEBRUARY 1875.

OF TRI-HOURLY METEOROLOGICAL OBSERVATIONS TAKEN AT MCGILL COLLEGE OBSERVATORY. HEIGHT ABOVE SEA LEVEL 187 FT.

Day.	THERMOMETER.				BAROMETER.				† Mean Pressure of Vapour.	‡ Mean Relative Humidity.	WIND.		SKY CLOUDED IN TENTHS.			° Snow Melted.	Day.
	Mean.	Max.	Min.	Range.	Mean.	Max.	Min.	Range.			General direction	Mean Velocity in m. p. hours.	Mean.	Max.	Min.		
1	15.26	18.1	12.2	5.9	29.9461	30.091	29.819	.272	.0735	84.4	W.	16.4	8.6	10	4	0.06	1
2	22.01	28.2	15.2	13.0	30.2482	30.307	30.156	.151	.0739	77.1	W.	13.0	7.5	10	0		2
3	26.88	39.0	19.6	19.4	29.6994	30.123	29.303	.820	.1276	84.6	E.	14.1	8.7	10	0	0.12	3
4	7.26	27.8	-6.1	33.9	29.6415	29.982	29.508	.474	.0389	62.5	W.	30.1	3.6	10	0	0.01	4
5	2.75	9.0	-6.5	15.5	30.1817	30.252	30.070	.182	.0335	66.1	W.	21.0	3.1	10	0	Inappreciable	5
6	2.77	9.0	-12.4	22.2	30.2242	30.525	30.018	.507	.0412	76.9	W.	17.2	4.6	10	0	0.11	6
Sunday 7		-9.1	-21.3	12.2							N. W.	5.6					7 Sunday
8	-13.96	-3.3	-24.0	20.7	30.0189	30.238	29.919	.319	.0206	90.4	N. E.	9.1	2.7	8	0		8
9	-9.14	-3.3	-14.3	11.0	30.0542	30.286	29.927	.359	.0244	87.0	W.	24.3	3.0	8	0		9
10	-4.25	2.6	-11.3	13.9	30.4926	30.601	30.304	.297	.0262	73.5	S. W.	16.6	4.3	10	0		10
11	18.69	30.5	+0.9	29.6	29.7589	30.128	29.516	.612	.0986	90.4	S. W.	22.5	7.7	10	0	0.23	11
12	-3.59	14.0	-11.1	25.1	29.8841	30.094	29.692	.402	.0270	71.2	W.	22.7	2.0	8	0		12
13	-5.80	3.1	-12.0	15.1	30.0434	30.115	29.987	.129	.0239	71.7	W.	13.1	1.5	6	0		13
Sunday 14		+0.5	-9.5	10.0							W.	20.0					14 Sunday
15	-4.47	+0.7	-8.1	8.8	30.0331	30.158	29.955	.203	.0246	70.0	W.	30.0	7.5	10	2	Inappreciable	15
16	3.94	10.2	-5.5	15.7	30.1591	30.205	30.117	.088	.0382	72.2	W.	19.7	7.1	10	3		16
17	9.70	16.5	5.6	10.9	29.8874	30.098	29.715	.383	.0552	81.0	W.	16.5	6.3	10	0	0.03	17
18	-1.14	6.4	-6.5	12.9	30.1912	30.294	30.060	.235	.0286	69.6	W.	15.9	1.6	10	0		18
19	10.47	18.5	-0.5	19.0	29.9091	30.096	29.717	.379	.0559	75.7	S. E.	11.7	6.7	10	0	0.01	19
20	20.12	25.5	12.2	13.3	29.5007	29.677	29.340	.337	.1016	92.0	S. E.	6.2	10.0	10	10	0.39	20
Sunday 21		23.8	7.3	16.5							W.	15.6					21 Sunday
22	14.47	25.8	3.3	22.5	30.1564	30.331	29.867	.461	.0661	74.2	S. W.	13.5	10.0	10	0	0.01	22
23	24.21	28.5	19.2	9.3	30.0426	30.112	29.897	.215	.1194	91.5	N. E.	7.7	10.0	10	4	0.37	23
24	33.90	43.4	23.4	20.0	29.7526	29.969	29.612	.356	.1894	94.7	S. W.	14.4	9.2	10	10	0.13	24
25	24.56	40.5	17.1	23.4	29.6446	29.921	29.401	.520	.1235	92.2	N. E.	14.0	10.0	9	0	0.34	25
26	14.06	25.0	9.0	16.0	29.6869	29.913	29.511	.402	.0581	69.6	W.	30.2	2.0	10	0		26
27	7.80	13.0	2.2	10.8	29.8632	29.968	29.781	.187	.0405	65.9	W.	15.0	4.6				27
Sunday 28		8.4	-6.0	14.4							W.	21.7					28 Sunday
Means	9.44	16.18	-0.28	16.46	29.9592			3.455	.0630	78.54		17.06	5.93				

* Barometer reduced to Sea level and to temperature 32° Fah. † Pressure of Vapour in inches of Mercury. Humidity relative, saturation being 100. ° Ten inches of Snow is taken as equal to one inch of water.

Mean temperature for the month + 9.44 ; mean of maxima and minima temperature, 8.0 ; greatest heat was on the 24th, 43.4 ; greatest cold was on the 8th, 24 below zero ; giving a range of temperature of 67.4 degrees for the month. Greatest range of the thermometer in one day, was 53.9 degrees on the 4th ; least range, was 5.9 degrees on the 1st. Mean range for the month, 16.46. Number of days on which the thermometer was below zero, 15. Mean height of the barometer for month 29.9592 ; highest reading of barometer, 30.601, was on the 10th ; lowest reading, 29.303, was on the 3rd ; giving a range of 1,298 inches for the month. Mean elastic force of vapour in the atmosphere = 0.630 inches of mercury. Mean relative humidity, 78.54. Maximum relative humidity, was 100 on the 7th, 8th, 9th and 25th during clear and cloudy weather. Minimum relative humidity, was 45 on the 4th during fair weather. Mean velocity of wind, 17.06 miles per hour ; maximum velocity, 45 miles per hour on the 3rd ; prevailing wind from the West. Mean of sky clouded in tenths, 5.93. Snow fell on 12 days. Depth of snow fall during month, 12.9 inches, which is equal to 1.29 inches of water. Rain fell on three days ; depth of rain fall during month, 0.42. Total precipitation in inches of 1.71.