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EDUCATION AS A UNIVERSITY STUDY.

BY PROF. W. H. PAYNE, A.M., UNIVERSITY OF MICHIGAN.

WHAT has been said of constitutions may as truly be said of universities, that they are not *made* but *grow*.

The modern university is the lineal descendant of the first solitary thinker who, inspired by a great thought of his own moulding, provoked in another mind a love for thinking. In process of time these solitary thinkers drew around them little bands of affectionate disciples, and so the circles of light became larger. Then, when scholars had a past behind them, when there had come to be accumulations of knowledge, there arose the impulse of diffusion, and so instruction was organized, and the inherited wisdom communicated to those who had just espoused the scholarly vocation.

This organized effort to distribute accumulated knowledge was the beginning of that corporation now known as the university. This institution, therefore, has come to us in the fulness of time as an evolution, or a growth.

Universities are like constitutions

in another respect, they not only *grow*, but they grow *slowly*. Systems of education are the products of the times, they follow in the wake of political and social changes, and as civilization itself is a thing of slow growth, universities ever have been, and must continue to be, conservative.

But, nevertheless, university progress is a constant phenomenon, and we may be sure that when an innovation has been made, it has a justification somewhere in the nature of things; it is either the development of some historic factor that had fallen out of sight, or it responds to some new need. In whatever case, the new idea has a right of domicile and the right of explaining the cause and the purpose of its appearance. The greater part of the world's progress is instinctive. The forward step is made by an involuntary effort, but we at once pause in a reflective mood, adjust ourselves to the new state of things, and thus involuntarily prepare for another forward step.

I do not appear as an apologist for the university study of education. I regard the new movement as an involuntary product of the times, as something without which a rational progress in education cannot be profitably made, and also as a fulfilment of a primitive purpose of university organization. There is no teacher in the land who has no personal interest in the educational movement that I purpose to discuss. Nay, if it affects one class of teachers more sensibly than another, it appears to me to be the class doing the heroic, and often unrequited, work of the primary school. For university recognition of a teaching profession is a certificate of character from the highest academic authority, and this honourable recognition is the greatest boon to those who need it most.

When, in 1876, a chair of education was established in the University of Edinburgh, there was not a teacher in the United Kingdom who might not have felt a new pride in his calling; and I know that more than one teacher even on this side the Atlantic worked under a new inspiration from that day forward. By the simple fact of such recognition the entire teaching profession has been ennobled; and now that there is a tendency in the universities of this country to follow a precedent of long standing in Germany, and of more recent date in Scotland, it is surely worth our while to reflect on a topic of common interest.

More than one college graduate has been puzzled to understand why the day that crowns his four years' toil is called commencement day. To him it seems more like an ending than a beginning, and in our present mode of academic life so it is. But it was not always so. Commencement day is simply the survival of a feature of ancient university life that has been in disuse for centuries. Anciently the terms "master," "doctor," and

"professor" had the same significance. A complete graduate was a master of arts, because he had completely compassed the circle of knowledge offered for his study; he was a doctor because his master's degree was his license to teach; and he was a professor because in his teaching he pursued a given subject, that is, devoted himself to the teaching of a special topic, as philosophy or logic. When, therefore, a student received his master's or his doctor's degree he was said *incipere*, that is, to commence in earnest his vocation or calling, that of teaching.

The Bachelor, or imperfect graduate, could also use his degree as a license to teach, but only on probation.

"In the original constitution of Oxford," says Sir William Hamilton, "as in that of all the older universities of the Parisian model, the business of instruction was not confined to a special body of privileged professors. The university was governed, the university was taught by the graduates at large. Professor, master and doctor were originally synonymous. Every graduate had an equal right of teaching publicly the subjects competent to his faculty; nay, every graduate incurred the obligation of teaching publicly for a certain period the subjects of his faculty, for such was the condition involved in the grant of the degree itself. The Bachelor, or imperfect graduate, partly as an exercise towards the higher honour, and useful to himself, partly as a performance due for the degree obtained, and of advantage to others, was bound to read under a master or doctor in his faculty, a course of lectures; and the master, doctor or perfect graduate was in like manner, after his promotion, obliged immediately to commence (*incipere*), and to continue for a certain period publicly to teach (*legere*) some, at least, of the subjects appertaining to his faculty."

I call attention to this historical fact to show that the ancient universities were, by their very intent and constitution, teachers' seminaries.

The thousands of pupils who flocked to Oxford and Paris there received the highest literary culture that the age afforded; and, on the completion of their studies, they were returned to the world as its accredited teachers. When, therefore, it is proposed to shelter the profession of teaching under university walls, it is, in fact, but restoring to universities their ancient privilege, and, at the same time, requiring of them the highest duty they owe to the world, that of the diffusion of the best results of human thinking. The universities have long since ceased to impose on their graduates the obligation to teach. It must have happened from an early date, that all the doctors or licensed teachers could not be employed in scholastic work; so that, in process of time, the obligation ceased, and the graduate was at liberty to adopt whatever vocation he might prefer. But while all who were graduated did not teach, all who taught were graduates. This was literally true during the earlier part of university history, and has remained substantially true down to the present day. For as Mr. Fitch says: "The great function of a university is to teach, and to supply the world with its teachers." The University of Wisconsin is doubtless an illustration of this statement. The men who are moulding the education of the State through the secondary schools, are doubtless, as a rule, the bachelors, masters and doctors of this great university. Such, at least, is the general fact in the State of my adoption, and this is doubtless the general fact throughout this country and the world.

The relation of a State university to the general educational system of the

State, has never been more accurately stated than by Chancellor Tappan, and I cannot forbear to quote from one of his annual reports: "The highest institutions are necessary to supply the proper standard of education, to raise up instructors of the proper qualifications, to define the principles and methods of education, to furnish cultivated men to the professions, to civil life, and to the private walks of society, and to diffuse everywhere the educational spirit. The common school can be perfected only through competent teachers. These can be provided only by institutions like the Normal schools, which belong to the intermediate grade of education. But the teachers of the Normal schools, again, require other and higher institutions to prepare them, such, at least, as the academy, gymnasium or college; and these, the highest forms of the intermediate grade, can only look to the university for a supply of instructors.

"He who has passed through the Common school is not fitted to teach a Common school. He who has passed through a Normal is not prepared to teach a Normal school. He who has passed through a union school or an academy is not prepared to teach it. The graduate of a college is not prepared to become a college professor.

"But the direct object of a university is to prepare men to teach in the university itself, or in any other institution. Hence, those who in the universities become doctors, which simply means teachers, are by that very degree admitted to the vocation of a university instructor."

If we were to make a summary and concrete statement of Dr. Tappan's thought, it would be as follows: The great function of the university of Michigan, or of Wisconsin, or of Minnesota, is, directly and indirectly to supply the State with its teachers.

Let it be noted that this is both its historic function and the function required of it by the conditions of our present civilization.

It may now be asked whether our universities are not fulfilling this duty, even without making a formal study of education?

Was not the University of Edinburgh, for example, in the full performance of its duty prior to the establishment of the chair of education in 1876? This is a pertinent question, and admits of a satisfactory answer. *Tempora mutantur et nos in illis mutamur.* Changed times require a change in institutions. There have been three well marked and progressive phases of opinion, with respect to fitness for teaching. The primitive conception identified teaching ability with general scholarship; a scholar was, by implication, a teacher; a certificate of scholarship was a license to teach.

A progressive phase of thought was that a scholar needed some special training in his art in order to become fitted for teaching. It must have been observed that good scholars were not always good teachers, and, in many cases, the failure must have been traced to an ignorance of the best methods of doing the work of the school. But, beyond this, there was the fact that teaching had become a special calling, and it was a natural assumption that a trade should be learned before it is practised. The trade of a blacksmith requires strength, but not every strong man is a blacksmith; this strength must be trained into special modes of expending itself. So, technical skill must be added to mere scholarship, in order to fit a man for teaching. Now, the Normal school embodies this second phase of opinion, its purpose being to give a thorough scholastic training, in close connection with instruction in methods of teaching.

The third and final phase of opinion, that which is now emerging, adds a third element to form the preparation of the complete teacher. To knowledge was added skill, and now to skill is added science. The first demand was, What shall I teach? The second, What shall I teach, and How shall I teach it? The third, What shall I teach, How shall I teach, and Why shall I so teach? In other words, the art of teaching has followed the same law that has regulated all the liberal arts; it has passed, or rather is tending to pass, from the empirical into the rational.

The ancient university represented the primitive phase of opinion—that teaching ability was identical with scholarship; and so its masters and doctors were licensed teachers. Since that ancient date, however, the conception of a complete fitness for teaching has been profoundly modified; so that the modern university no longer fulfils its duty to the teaching profession, if it affords its students only the advantages that were offered by the ancient university. In other words, with respect to one of the most widely practised of human arts, the thought of the world has been profoundly modified, and the universities should adjust themselves to the new order of things.

Up to the time of Socrates, the current of human thought had been directed outward in efforts to comprehend the external and the sensible. With Socrates began the reflective movement in human thought. The eye of the soul was turned back upon itself in the effort to comprehend the immaterial and the invisible. Hitherto, thought had been expended on objects lying in the world without. Now, thought took cognizance of itself; thought was employed in the effort to comprehend thought. This arousing of the mind to an examination of its own processes formed an era in the

intellectual history of the race. "The genius that spoke in the soul of Socrates," says Renouvier, "was the genius of the modern world."

And so a crisis is reached in the history of an art, when it becomes self-conscious and reflective. Hitherto, its processes had been empirical; now, they tend to become rational. Hitherto, the guide had been instinct and imitation; now, reason and reflection are to direct. Before, it was the hand that toiled; now, the work of the hand is inspired and guided by the subtle force that descends upon it from the brim. The precious element in labour is the indwelling thought which it involves. It is this element which ennobles the workman and his work.

Teaching seen to be the last of the liberal arts to reach the reflective or rational period. Why this is so, it is beside my present purpose to inquire. But that this period has at last come, there can be no doubt; and when it is proposed to make education a university study, it is education as a rational and not as an empirical art that is to receive university recognition. I have reason to think that the first query to arise in the mind of the college professor, when it is proposed to add the subject of education to the curriculum, is, What can be found in such a topic to engage the serious attention of an instructor? Bear in mind that every faculty meeting is occupied with the discussion of difficult educational problems, practical, theoretical or historical. The rustic in Molière's comedy discovered that he had been talking prose all his life, but without knowing it; and so pedagogical problems are discussed and settled by boards of trustees, teachers' associations and institutes, by newspapers, by everybody in fact, and still the wonder is what a professor of education can find to do! The very *naïveté* of this proceeding is

charming. This is a generic illustration of the unconscious in art, and enforces what has been said as to the need of bringing the processes of the schoolroom out of the realm of the unconscious into the field of reflective vision.

Shall we now dwell for a moment on the field for inquiry comprehended in the university study of education? The comprehensive study of education must be made from three distinct points of view,—the present, the past, and the future. In other words, education must be studied as an art, as a history, and as a philosophy. The art phase involves the study of schools, school systems, modes of organization and of instruction, of everything, in fact, that pertains to the school economy of the present, at home and abroad. There is enough, even in this field, to occupy a portion of one's leisure.

The history of education, Chinese, Persian, Egyptian, Hindoo, Jewish, Greek, Roman, Mediæval, French, German, English, Italian, presents a field of almost infinite extent, too formidable to be contemplated with equanimity; and yet there is not, I venture to say, any knowledge of a higher practical value to the educators of the day than this. The great need of the hour, it seems to me, is "to take stock of our progress" hitherto,—to ascertain what has been done in the line of educational effort, what plans have succeeded, and what have failed, and the conditions under which success or failure has come. General history, that records the instinctive or impulsive acts of men, has a high order of value; but of a still higher value must be educational history, that records the deliberate plans of the wisest and the best for the good of their kind.

Vaster still, if possible, is the field of investigation presented by educational science. First note the sciences

that are tributary to this composite science. The teacher deals directly and principally with mind; then, if his processes are to be made rational, their basis must be sought in psychology. But mental action involves physical conditions, and so physiology must be brought under contribution. The power developed by mental training must be brought under the control of motive, and so the science of ethics must be consulted. The organon, or teaching instrument, is language, employed as the medium of communication; and logic becomes an element in the new science. This is not all, but is enough to prove that this one aspect of educational study, the scientific, furnishes all the material required for the most competent and the most diligent professorship. The real difficulty in the case is not at all where many have supposed it to be,—in not finding enough to do; but rather in being so overwhelmed with the vastness of the field as not to know what to do first. Should any one suspect that these lines are too broadly drawn, he may consult the synopsis of lectures given in the University of Edinburgh, by Professor Laurie, and in the University of St. Andrews, by Professor Meiklejohn.

In further illustration of the field to be cultivated by the university study of education, perhaps I may be allowed to name the courses of instruction now given in the University of Michigan. These are five in number, of a semester each, as follows: 1. Instruction in the art of teaching, the purpose of which is to give pupils correct notions of the best current methods of doing ordinary school work. 2. A course of instruction in the principles of teaching, and the doctrines of education. 3. Instruction in school supervision and general school management. 4. Pedagogical seminary for the discussion and investigation of special problems in

Educational Philosophy and History.
5. The History of Education.

I may add that attendance on these lectures is voluntary, and that the number of students electing this work has been nearly uniform from year to year, the average for each year being about sixty-five. The purposes of a university professorship of education are implicated in what has preceded; but these should now be more articulately defined:

1. The university may, with great propriety, be called the brain of a complete system of public instruction. Historically the university preceded by centuries the primary school.

The very highest institutions of learning were organized first; then followed, in process of time, the secondary schools; and finally, but only after a very long interval, the primary schools. In England, the great universities of Oxford and Cambridge date from the twelfth century; the great Public schools like Harrow, Winchester, Eton and Rugby from the fourteenth and fifteenth centuries; while the English public elementary school was founded in the lifetime of this generation.

In this country a tax was levied for the support of Harvard University in 1636; but it was not till eleven years afterward, in 1647, that funds were appropriated for the establishment of common schools.

It is a popular illusion to suppose that the primary school must support the secondary, and the secondary school call into being the university. The first in time, the first in rank, and the first in necessity, is the university. These three grades of schools may be founded simultaneously, as in our Western States; but the logical pre-eminence of the university is still maintained. In other words, the condition of having good secondary schools is to have a good university; and the condition of having good

primary schools, is to have a sufficient number of good secondary schools. On this point I quote again Dr. Tappan: "We are no more to wait for universities to grow up as the last result of a ripe civilization, than we are to wait for railroads, steamships, manufactories, commerce, and the perfect form of all the industrial arts, as such a result. On the contrary, we are to create all as early as possible, to hasten on civilization."

Now, the deduction I make from the organic position of the university in a public school system is this: The invigoration and perfection of the school system as a whole, are dependent on the influences that descend from the head and brain of the system. "Progress," says a French author, "is propagated from above downwards, and this even to the furthest limits; for science never ascends."

Would we have what is best in education incorporated into the countless primary and secondary schools, the most economically and the most surely? Then whatever is best in educational history, theory and practice, must be organized and taught in the university.

2. In the second place, the university is the only source from which the State can be supplied with a sufficient number of highly educated teachers. With respect to the supply of teachers, a good working rule is this: *a teacher for a school of a given grade should be educated in a school of a higher grade.*

The reasons for this rule are so apparent that I need not dwell on them at any length. Of these things there can be no doubt; a teacher should know considerably more than he expects to teach; the influence of the teacher should be an open invitation to the pupil to higher walks in the intellectual life. All true education is an inspiration. Now, if the rule I have stated is a just one, it

follows that the secondary or high schools of a State require a considerable body of teachers who should have a university training. And such teachers must be far more than mere scholars. If really fitted for their places, they should be masters of the educating art; and to this end, they should have been instructed in the theory, the history, and the art of education. Such men and women occupy places of great influence and responsibility; and their training should make it easy for them to handle educational questions with philosophic insight and with judicial fairness. Such culture requires high scholarship, and the free and serene air of university life.

3. In the third place, public schools have the right to be sheltered from the errors and vagaries of empirics and mere enthusiasts. "Progress," it has been said, "is not a force that acts by fits and starts, but is a logical and graduated evolution, in which the idea of to-day is connected with that of yesterday, as the latter is to a still more remote past."

The double misfortune of the present state of things is, that the greater part of those who have the direction of educational affairs are without any proper degree of professional competence; and so are the easy victims of what is novel, or of what is pressed on their attention by the arts of declamation.

Educational hobbies are epidemic, and the evils that come to the schools from this source it would not be easy to exaggerate. My thought is this: if we would grow into a mode of educational progress that has an historic continuity, there must be a recognized source of opinion that has been formed under the best possible conditions. These conditions are supplied only by the highest institutions of learning.

4. The educating art, when rightly conceived, has all the essential marks

of a profession, it has in its keeping human interests of the highest order; it requires the exercise of the highest intellectual gifts; all its processes have a basis in law, and hence its modes of procedure may be scientific; it requires knowledge of a special kind, difficult to obtain, and, therefore, within the reach of comparatively few; the knowledge of the masses is not sufficient to afford a due protection against malpractice, and so there is a necessity for authoritative evidences of fitness. Teaching is, therefore, a possible if not an actual profession, and any measure that can bring forward this consummation deserves the good will of the general public. Now, it is an historical fact that the main strength of the recognized professions is their organic connection with great seats of learning. Law, medicine and theology had never been professions, except on the condition of university recognition and support; nor could their professional character be sustained, if this support were to be withdrawn. The inference to be drawn is obvious; if teaching is ever to have the rank and the consideration of a profession, it must in some way gain university recognition; and the easy and proper mode of such recognition is the making of education a university study, on a par at least with entomology and forestry.

5. The fifth purpose to be served by a professorship of education, is the development of educational science. There is as good reason for investigating and formulating the principles of education, as for investigating and formulating the principles of medicine and of law. In either case, the art grows in value and in dignity in proportion as its co-ordinate science is perfected; and, in each case, the discovery of a new principle introduces a wholesome change into current practice. At the present time, education is chiefly an empirical art; most of

its processes are derived from precedent and imitation, and the greater part of school work is done in absolute ignorance of conditioning principles, and a considerable part of it in violation of such principles. We expect even a Grammar school pupil to proceed scientifically in the solution of an arithmetical problem; we expect him to use the clear light of a principle as his guide through the mazes of his calculations, and we think it to his great discredit if he is the slave to a mere rule. What shall be our judgment of the mature men and women who do the work of the school room by mere rule, without even suspecting that their rules, if good, have a support in some principle psychological, physiological, or ethical? Socrates held up an Athenian to ridicule by reciting this parody of a supposed speech: "I, O men of Athens, have never learned the medical art from any one, nor have been desirous that any physician should be my instructor; for I have been constantly on my guard, not only against learning anything of the art from any one, but, even against appearing to have learned anything; nevertheless confer on me this medical appointment; so, I will endeavour to learn by making experiments upon you." This clever parody was aimed at a young man who aspired to a position of authority, but who was ignorant of the principles upon which just government was based. Now if ignorance of political science was so discreditable twenty-two centuries ago, why may we not count it discreditable for professional teachers to be ignorant of the elements of educational science in this *wonderful period of enlightenment*?

But some one will say a body of educational doctrine has not yet been formulated, as yet there is no science of education.

This is only partially true. From

what I know of the present state of educational science, and from what physicians have told me of the present state of medical science, I am convinced that there is a larger body of valid scientific truth within the reach of the teacher than within the reach of the physician. That is, if teachers would learn and use the principles within their reach, there would be less empiricism in teaching than in medicine. I think there cannot be a doubt that the fundamental principles of psychology are as well settled as the fundamental principles of medicine.

The strangest feature in the case, however, is still to be noted: Although certain laws of mental life have been known since the days of Plato, and although succeeding centuries have confirmed them and added to their number, it is only now that even a beginning has been made in the deductive application of these laws to mental training. In our profession this is the great need of the hour: and the place of all others, and even the only place, where this work can be systematically prosecuted, is the university chair of education. This it seems to me, should be its characteristic function.

6. With my present opportunities, I have often asked myself which would be the greater privilege, to address my instruction to professional teachers, or to the general student. When I reflect on the direct purpose of my chair, I conclude that the professional teacher should be the elect object of my efforts; but when I reflect on the following words of Herbert Spencer, I am in grave doubt. "No rational plea," says Mr. Spencer, "can be put forward for leaving the art of education out of our curriculum. Whether as bearing upon the happiness of parents themselves, or whether as affecting the characters and lives of their children and remote descendants, we must admit that a knowledge

of the right methods of juvenile culture, physical, intellectual and moral, is a knowledge second to none in importance. This topic should occupy the highest and last place in the course of instruction passed through by each man and woman.

The subject which involves all other subjects, and therefore the subject in which the education of every one should culminate, is the 'Theory and Practice of Education.'"

This extract furnishes the occasion for a large amount of serious thinking; and though there may be hesitations between the two classes of auditors we might prefer to address, one thing is beyond dispute: Education, as a branch of general university study, is of at least co-ordinate importance with conic sections, sanscrit, geology, and many others that might be mentioned. If we were to rank subjects on the basis of their direct bearing on the individual interests of men and women in general, there can scarcely be a doubt that education would fall but a little below the head of the list. The university recognition has long been given, and is generally given, to subjects of far less relative importance, is a phenomenon in scholastic history. The exception is the more singular, from the circumstance that this subject is the basis of one of the most widely practised arts; and even still more singular, from the circumstance that the great body of professional teachers have been indifferent to the university study of a subject in which they may reasonably be supposed to feel a deep and peculiar interest. From the standpoint of the general public, this phenomenon admits of an easy explanation; as people in general have so little positive knowledge on the subject of education, they conclude that a professor of education would be without substantial functions, without, in fact, anything to profess.

Whether this mode of thinking may or may not extend to our profession, I will not stop to inquire. The general conclusion to which I am brought by this train of thought is, that education has a valid right to be made a university study, quite independently of its professional bearing, but solely by virtue of its high general utility as a branch of human culture.

I must now return to a theme that was suggested in the earlier part of this discussion, the bearing of the university study of education upon the status of normal schools. No belief is more firmly impressed on my mind, than that normal schools had their origin in the necessities of our civilization, and that they will always remain permanent factors in our educational history. As already stated, they are the exponents of a marked advance in public opinion as to fitness for teaching. They not only supply a need that will always be felt, but there will be a steady rise in their appreciation as the subject of education becomes better understood.

The ground for this belief will become evident from a slight examination. In the teaching force of the country, the volunteers or irregulars very largely outnumber the standing or regular army. For ten who teach from year to year as a regular vocation, there are a hundred who intend to teach, and who actually do teach, only two or three years on the average. So far as can be seen, this state of things will continue indefinitely.

Now, some kind of professional preparation should be required of this large class of teachers. What shall it be? Shall they be expected to pursue a liberal course of study in college or university and to become versed in educational history and science? It is folly to dream of such a consummation. The most that can be expected, with any show of reason, is that this preponderant body of teachers receive a

good secondary education, and in close connection with it, instruction in the most approved methods of doing school work. This, I repeat, is the utmost that can be expected of the transient member of the teaching profession. Here lies the function of the Normal school. As yet, only a small part of the teaching class has been affected by the Normal school; but, with the growth of juster ideas as to the fitness for good teaching, there will surely come a growing demand for Normal instruction; so that an adequate appreciation of the Normal school is yet to come.

What can give extension and intensity to the conviction that all who purpose to teach should have some formal preparation for their duties?

I can imagine no means so effective as the declaration by the highest academic authority, that something besides general knowledge is essential for fitness for teaching. Note the implication; if the highest attainable scholarship is not of itself sufficient to constitute fitness for teaching, then surely the lower scholarship must be supplemented by some special form of professional training. It seems to me to follow inevitably, that the most direct and most effective means of emphasizing the value of Normal schools, and of extending their field of usefulness, is the university recognition of the teaching profession. This opinion is confirmed by the state of educational affairs in Michigan.

Courses of instruction in the science and the art of teaching have been in progress in the university for the past four years; and during this time, the Normal school has been steadily growing in popularity and numbers, and it is now seeing the most *prosperous year of its whole history*.

In what way could a university course of instruction in teaching affect a Normal school injuriously?

In the first place, there is no ground for competition. How can a university compete with a secondary school? It is only after a pupil has completed the academic course in a Normal school, that he is prepared for admission to a university. As there can be no competition there is no ground for jealousy or ill will, provided there is a recognition of the fact that the Public school service of the State requires of some of its teachers a higher grade of scholarship than a Normal school can afford. To employ Dr. Tappan's phraseology: "The graduate of a secondary school is not prepared to instruct a secondary school." In other words, the High schools of a state require the services of men and women who have had a college or a university training. And if certain schools require a higher academic training than a Normal school can give, so they require a higher grade of professional education, instruction in doctrines and principles, rather than in methods.

Below the eleventh grade, Normal school training may suffice; but above the tenth grade, university instruction is requisite.

When Normal schools are charged with the whole burden of professional preparation, they naturally and excusably fall into the error of attempting to do what they are incapable of doing, and so of neglecting to do, in part, what it is their natural function to do,—to supply the ungraded schools, and the first ten grades of village and city schools, with trained teachers.

The adjustment that is to come simply exemplifies the law of the division of labour, the Normal school doing what its constitution permits it to do, and declining to do what it is unable to do, and the university doing what its higher organization charges it with doing. When the professional education of teachers

has attained its proper adjustment, it will be seen that teachers in Normal schools should have a university training. Under no other condition can the work of these schools be done with a breadth of view that is essential for high excellence. The almost inevitable tendency of a lower culture is, on the one hand, to subdivide and minimize more than is meet, and, on the other, to exalt trifles to unwarranted proportions. It is the remark of a recent French writer that, "after all, nothing so much resembles a man as a child. In truth, he is already a man, if not in fact, at least in possibility, and it is important, at an early hour, to call into exercise, by degrees it is true, his innate powers of abstraction and generalization." In these days we are too much inclined, perhaps, to forget this point. This, it seems to me, is a wholesome truth often forgotten by those who train teachers. The child should not be educated in sections, but the whole complex organization should share in a general forward movement. Sense training, for example, is not the exclusive prerogative of the child, but should be employed in due measure in all grades of instruction; and so reflection is not the exclusive prerogative of the adult, but even the child participates in its due exercise. I believe that the source of these errors is a limited intellectual culture that misinterprets a part, because it has never comprehended the whole. This minimizing tendency has certainly brought reproach upon systematic teaching; and the only remedy that I can see is a liberal training, both general and professional, for those who are moulding the lower education of the times.

In order that the professional study of education in universities may be placed upon a proper footing, three conditions seem to me to be absolutely required.

1. The professorship of education should be co-ordinate in rank with other professorships. No other professorship has a more extensive field, or a field more peculiarly its own.

An inferior rank would carry with it an implied inferiority of worth that would compromise success from the very beginning. The work of such a professorship is too great, especially at this formative stage, to permit the doing of any other professional work in conjunction with it. A divided allegiance would seem to me very unwise.

2. These courses in education should count towards a degree, just as other courses do. This is too obvious to deserve further remark.

3. A university degree, earned in part by work done under this professorship, should be a life license to teach. That a degree representing such an amount of academic work, in addition to the courses of professional instruction, should be of at least co-ordinate value with a Normal school diploma, seems to me to be too evident to permit discussion. To this extent, at least, young men and women should be encouraged to attain the highest grade of preparation for the Public school service of the State.

With respect to practice teaching in connection with instruction in the principles of teaching, the current opinion is so unanimous and so decided as against my own thinking, that it is to be presumed that I am wrong. However, I suppose I am not thereby debarred from expressing an opinion. At this moment when we hear it said with such emphasis and absolute assurance, that "we learn to do by doing," it seems like rudeness to affirm that this is the very foundation stone of quackery. Yet so it is.

The fundamental idea of professional instruction is, that the inex-

perienced are to be taught to do by knowing. In medicine, it is only the quack who professes the dogma that he should learn to do by doing. The true doctrine I suppose to be this: First know, and then on the occasion of experience, perfect your knowledge by doing. There is now a widespread denial of the vitality of knowledge, if I may use this expression; that is, the inherent tendency of belief to mould the conduct, to embody itself in act, or to evolve a method out of a theory, is generally denied. How baseless this assumption is, we may see from the natural history of prejudices, and still more clearly, perhaps, from the weekly item relating how the dime novel works itself out in marauding expeditions and midnight burnings.

The working out of beneficent thoughts and purposes, though not so obtrusive, is yet as constant a phenomenon.

Now I would base the higher profession of education of teachers on the assumption that a clear conception of what is to be done constitutes the best attainable preparation for actual work. I am here speaking, let it be remembered, of practice schools for university students. Schools of observation have an admitted value. They serve the same purposes as clinics in medical education. But in each case the aid comes from seeing good models, not from doing. The instruction is still theoretical. My objection to practice teaching in such a case as the one now under consideration is, that it is unnecessary, and that it is so unlike one's real work as to be misleading.

Let it be observed, again, that I am not discussing the experimental teaching done in Normal schools. Here the conditions are changed in some important respects that cannot now be noted; but even here, I think

it may at least be questioned whether the value of this empirical instruction has not been overestimated.

A university student going to his work with clear conceptions of what he is to do, and a Normal school student going to his with methods aëdy to his hand, will be found to have different histories as a general rule.

The first will be likely to stumble, will start rather clumsily, but will soon recover and improve to the end of the race; while the second will start promptly and in good order, but will then be slower in his progress, and finally out-distanced by the teacher having the greater reserved power.

And now a very brief historical notice of the movement I have discussed will conclude this paper.

In English speaking countries distinct chairs of education in universities have been established as follows: In Edinburgh and in St. Andrews, Scotland; in Acadia College, Nova Scotia; in the Universities of Missouri and Michigan. In the Uni-

versity of Cambridge and of London there are courses of lectures on education, but no professorship of education; in the University of Iowa the professor of mental and moral philosophy lectures also upon education; and in various colleges there are Normal departments.

We who are here this hour are participating in a movement that is destined to form a turning point in the history of the educating art; and in this movement there is a complete solidarity of interest. The question chiefly at stake is the ennobling of the teaching profession; and in this question every teacher of every grade has a living personal interest. Nay, more; the interests of every citizen, irrespective of rank or calling, are implicated in this forward movement, for, as Horace Mann has said, "No subject is so comprehensive as that of education. Its circumference reaches around and outside of, and, therefore, embraces all other interests, human and divine."—*Wisconsin School Journal*.

LIFE AND WORK OF DARWIN.

BY GEO. ACHESON, M.A., TORONTO.

(Continued from page 69.)

IN 1871 was published his work on the "Descent of Man, and Selection in Relation to Sex," where he traces man back to a "hairy quadruped furnished with a tail and pointed ears, probably arboreal in his habits, and an inhabitant of the old world." Of this book the author himself says: "I am aware that the conclusions arrived at in this work will be denounced by some as highly irreligious; but he who thus denounces them is bound to show why it is more irreligious to explain the origin of man as a distinct

species by descent from some lower form through the laws of variation and natural selection, than to explain the birth of the individual through the laws of ordinary reproduction. The birth, both of the species and of the individual, are equally parts of that grand sequence of events, which our minds refuse to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of each pair in marriage,

the dissemination of each seed, and such other events have all been specially ordained for some special purpose." As I have said before, we must remember that Darwin does not trace man's descent from any existing ape, but holds that both have descended from a common ancestor now extinct, the modern ape having retained more of the characteristics of the parent form than man. He shows that the original tail and pointed ears exist in man in an aborted or rudimentary state, and are much more prominent in the embryo than in the adult. To the action of sexual selection he attributes both the want of hair, and its peculiarities of growth and varieties of texture and colour. Although he is quite conscious of the difficulties surrounding the question, he holds that both man's superior mental qualities and his superior moral qualities can be traced to evolution acting through natural and sexual selection, just as in the case of domesticated animals, where we know that mental qualities are variable, and the variations are inherited. Upon this point of course many will disagree with him, even those who are quite willing to accept the doctrine of evolution in regard to *material* forms. Although Darwin's investigations led him to believe in the unity of the human race, yet he did not regard mankind as the descendants of a single pair, but held rather, that a whole tribe of ancient quadrumana gradually acquired human characteristics. Of the anatomical resemblances between man and the existing apes a great deal has been written; and here I will only say what every comparative anatomist knows, that the structural differences between the lower and higher apes are far greater than between the latter and man. This subject of the Descent of Man is probably the most interesting part of the theory of evo-

lution, to a popular audience; but I must hurry on, having made this brief allusion to it.

Mr. Darwin's more recent volumes are on the "Expression of Emotions in Man and Animals," published in 1872; "Insectivorous Plants," in 1875; "Cross and Self-fertilization in the Vegetable Kingdom," in 1876; "Different Forms of Flowers in Plants of the Same Species," in 1877; "Movements of Plants," in 1880; and his last work, in 1882, on the "Formation of Vegetable Mould, through the Action of Worms, with Observations on their Habits."

The main object of all these works has been to supply the data upon which he founded the great conclusions of the "Origin of Species," and they all combine to illustrate the incessant and infinite interaction of the various parts of nature upon each other, and the way in which the most noticeable results have been produced by causes seemingly unimportant, but all powerful in their gradual accumulation.

Before closing I must say just a word on his latest work. It is curious to note that one of his first published papers was upon the very same subject. In 1837 he read a paper before the Geological Society of London on the "Formation of Mould," which, as in the present work, he attributes mainly to the agency of earthworms. This fact is an admirable instance of the continuity of Mr. Darwin's thought and writings. Each work is the result of years of patient labour, and it is this which gives such value and weight to his writings. For more than forty years he was engaged in investigations on the subject of the formation of mould, and in working out the idea that earthworms are among the most powerful forces of nature, and that they play a very important part in the physical changes of the earth's surface. His first

paper was ridiculed by several distinguished French naturalists, but he has now proved conclusively "that all the vegetable mould over the whole country has passed many times through the intestinal canals of worms." In this book he first gives an account of the habits of these lowly animals. They require a certain amount of moisture for their existence. They crawl about chiefly at night. They can neither hear nor see, though they are not altogether insensible to light; but they possess the sense of taste and smell to a certain extent, and their sense of touch is strongly developed. Their food consists of leaves and any digestible matter contained in earth, of which they swallow an extraordinary quantity. They have a certain amount of reason as well as instinct, as evidenced by the way in which they draw leaves into their burrows. These leaves they use not only as food, but for the purpose of plugging up the mouths of their burrows; and they almost always draw them in by their narrow ends. These burrows are made partly by pushing the earth aside, but principally by swallowing it, extracting the digestible matter, and then ejecting it from the intestinal canal in the form of so-called "castings;" and it is in this way that they act in modifying the surface of the earth. Mr. Darwin, with the help of his sons, made a series of experiments to determine whether or not these creatures were capable of performing the immense amount of work he was inclined to attribute to them; and he found by weighing the castings thrown up within a certain time in a measured space, and making the necessary calculations, that "in many parts of England a weight of more than ten tons of dry earth annually passes through the bodies of worms, and is brought to the surface on each acre of land; so that the whole

superficial bed of vegetable mould passes through their bodies in the course of every few years." And he calculates that in Great Britain alone no less than 320,000,000 tons of earth is annually brought up to the surface of the ground by worms. We see, then, what an important part they must play in the burial of various objects, such as stones, buildings, monuments, etc., and especially what great assistance they must give to other geological agents in the denudation of land. They also perform a very useful work in preparing the ground for cultivation and rendering it fertile. Mr. Darwin concludes the book with the following striking passage: "When we behold a wide, turf-covered expanse, we should remember that its smoothness, on which so much of its beauty depends, is mainly due to all the inequalities having been slowly levelled by worms. It is a marvellous reflection that the whole of the superficial mould over any such expanse has passed, and will again pass, every few years through the bodies of worms. The plough is one of the most ancient and most valuable of man's inventions; but long before he existed the land was in fact regularly ploughed, and still continues to be thus ploughed by earthworms. It may be doubted whether there are many other animals which have played so important a part in the history of the world as these lowly organized creatures. Some other animals, however, still more lowly organized—namely corals, have constructed innumerable reefs and islands in the great oceans; but these are almost confined to the tropical zones." So ends this author's last work; and it is no unworthy culmination of the labours of a most remarkable scientific career.

In this sketch I have made numerous quotations from his writings, because I believe that the best con-

ceptions of his views can be gained by allowing him to speak for himself.

Mr. Darwin leaves behind him five sons and two daughters. Two of his sons have already distinguished themselves in the field of science, one of them—Mr. Francis Darwin—lately elected F. R. S., having been for some years his father's secretary and faithful and able assistant.

Ever since his return home from the voyage in the *Beagle* he suffered from frequent attacks of nausea, from which he could gain no permanent relief; and it was an attack of this

kind, continued for some days that eventually was the cause of his death. The somewhat sudden announcement of this startled and shocked the world, and called forth such a manifestation of love and reverence as has seldom been bestowed upon its greatest heroes. By the unanimous wish of the nation his remains were laid to rest in an honoured grave in Britain's great mausoleum by the side of her noblest sons, the whole world his mourner. With more truth, however, can it be said of him than perhaps of any other man, that he "being dead yet speaketh."

SKETCH OF A SCHOOL ON ST. JOSEPH ISLAND.

BY QUEENIE.

THE mention of St. Joseph Island awakens little in the mind of the general reader beyond a remembrance of the fact that there is such an island at the head of Lake Huron. Those who have made the trip of the upper lakes, probably have some recollection of it as seen from the deck of the steamer—a long, blue ridge in the distance, which, as the steamer approached, gradually resolved itself into a well-wooded island, with low-lying shores, irregularly denting into bays, or jutting out in picturesque points, pretty enough in itself, but soon left in the background, metaphorically as well as literally, by the rapids of Sault Ste. Marie, and the grand and striking scenery of Lake Superior.

This island, however, which is over twenty miles long by twelve wide, numbers 2,000 inhabitants. As nearly all of these have moved in within the last five or six years, some idea can be formed of the rapid growth of its settlement. The woods are giving place to farms; roads have been opened, municipalities have been formed, and churches, school houses, mills, etc., have been built. It now

boasts half a dozen post offices, and seven school sections. The writer is a teacher in one of its schools.

Our section is in the southern end of the island, and embraces two or three places of historical interest. Bounding the section on the south, is Kaskawan Bay, where Captain Roberts had his gun boats anchored during the War of 1812, and whence he sailed to capture Fort Mackinaw. A few miles west of the bay are the ruins of Fort St. Joseph. Kaskawan Point, lying between the bay of the same name, and Tenby Bay, was the scene in 1648 of the massacre of 400 Hurons. They, together with their missionaries, had fled to St. Joseph from their enemies, the Iroquois, and were surprised and massacred by the latter one day when they had gathered on the point for the purpose of holding religious services.

Our school houses situated in the middle of the section, is also in the middle of the woods, as the opening is little larger than the acre reserved for school grounds. The building, which is twenty by thirty feet in size, is of hewed logs set upright. The ceiling is high,

and the room is lighted by three windows on each side. Of its furniture first in importance, during this cold weather, is an immense stove, with pipes running all around the room. The desks are of the latest improved make, imported from a firm in Ontario. In this respect we are in advance of our neighbours, who have only home-made desks; however, we try not to be insufferably proud. These with maps, tablet lessons, blackboard, clock, window blinds, etc., complete the furnishings.

As the section is large, many of the pupils live a long distance from the school house; and various are their modes of getting to school. Some of them take short cuts through the woods, over the unbroken snow on snowshoes. Walking on snowshoes is an art not easily acquired; and, to the novice, is generally attended with unlooked for, and sometimes unpleasant incidents. Many of the school children, however, seem to be masters of this method of pedestrianism.

Some of the little girls come on sleds drawn by dogs. By whatever means they manage it, the pupils are remarkably regular in their daily attendance. Their ages vary from six to eighteen years, and their grades of scholarship vary in proportion. The studies pursued, time-table, etc., are, of course, the same here as in other parts of Ontario. And I might add that the pupils, also, with their ways, alternately interesting and provoking, studious and mischievous, engaging and repulsive, are at least remarkably similar to the pupils in other parts of the Province; and my efforts in training and teaching them are attended with the same encouragements and discouragements as experienced by teachers in other schools.

An instance of daily school occurrences comes to mind just now. I asked my class in the second reader the

meaning of the word beautiful; and a bright little fellow having promptly answered, "awful nice," I thought it a good opportunity to teach them some respect for that much abused word *awful*. By means of showing its force, as applied to storms on the lake, and shipwrecks, of which St. Joseph children have a clear comprehension, I at length awed them with its awful significance. I then told them when they wished to be emphatic to use the word *very*; *very* pretty flower clearly described something, *awful* pretty flower, did not. I knew by their looks that they had caught my meaning, and fully agreed with me, so I dropped the subject. During recess, some days later, one little girl made the remark to another, "There is an awful lot of snow on your dress." She checked herself, and straightway changed it to, "There is a *very* lot of snow on your dress;" but she glanced at me with an uncertain, puzzled look. I laughed when I heard this second change rung upon the word, and for which I had made no provision. And I thought it fortunate I was at hand to help my pupil out of her dilemma, and to supplement my former lesson. However, I felt rather encouraged than otherwise, for I saw my efforts had not been without effect.

I have adopted the Tonic Sol-Fa method of music in our school. I say *adopted*, for I cannot claim the honour of having introduced it.

Weekly lessons in this method of music have been given to a class in this neighbourhood for nearly two years past by a well-qualified, painstaking teacher. From time to time, examinations have been held,—as this is a feature of this system of teaching music,—and different grades of certificates granted according to the musical proficiency obtained. The result is that half-a-dozen of my pupils hold certificates of music equal

to my own, while the majority of them can sing at sight, in correct time and tone, the different parts of simple tunes. As this system of teaching music is not so common in the schools of Ontario, as I think it would be, were its merits generally better known, I have felt it incumbent upon me to mention the success following its introduction here.

As we are in a backwoods school over three hundreds miles from a city, we deem it necessary to pay careful attention to refinement of manners and the usages of civilized life, especially as "be courteous" is a Divine command, obedience to which is neither limited to place nor circumstances. I am pleased to say that several of the pupils show praiseworthy efforts to cultivate good manners, as well as honourable and just

feelings in their daily conduct and intercourse with each other. We have some uncouth ones among us, but we hope by means of precept and example, in time, to convert even them.

As I looked around the school-room this afternoon, and saw the little ones on the front seats, diligently printing their lessons on their slates, and saw the older ones either reading, with a look of thoughtful interest, their history lesson, or comparing, with an eager glance of satisfaction, the answer on their slates with the one in the book, I felt that I might reasonably indulge the hope that, when they are men and women, they will look back with a grateful sense of profit and pleasure to the days spent in the log school house on St. Joseph Island.

THE ART OF THINKING.

The object of the teacher is to teach to think. The pupil thinks enough, but he thinks loosely, incoherently, indefinitely, and vaguely. He expends power enough on his mental work, but it is poorly applied. The teacher points out to him these indefinite or incoherent results, and demands logical statements of him. Here is the positive advantage the teacher is to the pupil.

Let us suppose two pupils are studying the same lesson in geography or grammar or history. One reads to get the facts; he fastens his eye on the page and his mind to the subject before him; he makes the book a study and acquires information from it; his object is to acquire knowledge. He attains this end. The other also studies the book, but while reading he is obtaining lessons in thinking. He does not merely commit to memory; he stops to see if the argument is sound, he analyzes it to see if the conclusion is warranted by the premises.

The one who thinks as he reads is quite different, it will be seen, from him who simply *arns* as he reads. To read and think, or to

think as one reads, is the end to seek. To teach to think is then the end of the art of the teacher. The reader for facts gets facts; he comes to the recitation seat and reels off those facts. His mind, like Edison's phonograph, gives back just what it received. While this power is valuable, it is not the power the world wants.

The teacher will find his pupils come to the recitation to transmit the facts they have gained. He must put them in quite another frame of mind. Instead of recitations they must be made into thinkers. The value of the teacher is measured by his power to teach the art of thinking.—*Teachers' Institute.*

WE want one man to be always thinking, and another to be always working, and we call one a gentleman and the other an operator; whereas, the workman ought often to be thinking and the thinker often to be working, and both should be gentlemen in the best sense. The mass of society is made up of morbid thinkers and miserable workers. It is only by labour that thought can be made healthy, and only by thought that labour can be made happy, and the two cannot be separated with impunity.—*Ruskin.*

UNIVERSITY WORK.

MATHEMATICS.

ARCHIBALD MACMURCHY, M.A., TORONTO,
EDITOR.

SELECTED PROBLEMS.

Suitable for 1st class and Junior Matriculants

J. L. Cox, B.A.

1. Obtain an expression for the sum of the products of the first n natural numbers three and three together.

2. Find the sum of the products of every three terms of an infinite geometrical progression.

3. Find the sum of the cubes of a series of quantities in $A.P.$

4. Show that if $x^3 + py^3 + qz^3$ is exactly divisible by $x^3 - (ay + bz)x + abyz$, then $\frac{p}{a^2} + \frac{q}{b^2} + 1 = 0$.

5. In how many ways can $2n$ men be arranged in couples?

6. If $(by - cx)^2 = (b^2 - ac)(y^2 - cz)$, prove that $(bx - ay)^2 = (b^2 - ac)(x^2 - az)$.

7. Solve the equations

$$yz + zx + xy = 3.$$

$$yz(y + z) + zx(z + x) + xy(x + y) = 3.$$

$$yz(y^2 + z^2) + zx(z^2 + x^2) + xy(x^2 + y^2) = 3.$$

8. If $\sqrt{x+a+b} + \sqrt{x+c+d} = \sqrt{x+a-c} + \sqrt{x-b+d}$, then $b+c=0$.

9. Construct a triangle, having given the vertical angle, the base and the ratio of the sides.

10. Having given an angular point of a triangle, the circumscribed circle and the centre of the inscribed circle, construct the triangle.

11. Given the straight line bisecting the vertical angle, and the perpendiculars drawn to that line from the extremities of the base, to construct the triangle.

LONDON UNIVERSITY.

JANUARY, 1884.

ARITHMETIC AND ALGEBRA.

Examiners—Prof. A. G. Greenhill, M.A., Benjamin Williamson, Esq., M.A., F.R.S.

1. Multiply 42·36068 by ·0236068 correctly to six places of decimals.

If one foot is ·3048 of a metre, prove that 8 kilometers is very nearly 5 miles.

2. Calculate the numerical value of $\frac{1}{\sqrt{7}}$ to six places of decimals.

3. A sum of £1,325 is borrowed, to be paid back in two years by two equal annual payments, allowing 4 per cent. simple interest. Find the annual payment.

4. The present value of a bill of £442 15s. is £385. Find how long the bill has to run at 4½ per cent. per annum, simple interest.

5. Find the loss on the double exchange in £20, supposing that one sovereign exchanges for 25·2 francs, and 20 francs for 15s. 9d., the £20 being changed into French money and then back again into English.

6. Find the coefficient of x^4 in the product of $1 - 2x + 4x - 8x^2 + 16x^3$, and $1 + 2x + 4x^2 + 8x^3 + 16x^4$; and divide 1 by $1 - 2x + 4x^2 + 8x^3$ in a series of ascending powers of x as far as x^4 .

7. If a beam 16 feet long, 2½ feet broad, and 8 inches thick, weigh 1,280 pounds, what must be the length of a beam of the same material whose breadth is 3½ feet, thickness 6½ inches, and weight 2,028 pounds?

8. Find the sum of all the integral numbers from one to a million.

9. Solve the equations—

$$(1) \frac{x-1}{4} - \frac{19-2x}{5} - \frac{x-5}{6} = \frac{3}{10}(x+3) - 3;$$

$$(2) \left. \begin{aligned} \frac{2x}{3} - \frac{3y}{4} &= 2 \\ \frac{5x}{6} - \frac{7y}{8} &= 4 \end{aligned} \right\}.$$

10. *A* sets out to walk from London to Rugby, and *B* at the same time from Rugby to London, a distance of 84 miles, and *A* reaches Rugby 9 hours, and *B* reaches London 16 hours after they met on the road. Find in what time each performed their journey, and their rates of walking, supposed uniform.

GOMETRY.

1. In a given indefinite straight line find a point which shall be equidistant from two given points.

2. On a given straight line construct a rectangle which shall be equal to the difference between two given triangles.

3. In a right-angled triangle prove that the square described on the hypotenuse is equal to the sum of the squares described on the other two sides.

4. A line *AB* is divided in *C* so that $AC = 2BC$. If the perpendiculars *AD*, *BE*, *CF* be drawn to any line, which does not pass between *A* and *B*, prove that $AD + 2BE = 3CF$.

How is this statement to be modified if *A* and *B* lie at opposite sides of the line?

5. If a point inside a triangle be connected with the extremities of the base, prove that the joining lines contain an angle greater than the vertical angle of the triangle. If the point be outside the triangle, find when the angle formed by the connecting lines is greater than the vertical angle, and when less.

6. Prove that the difference between the squares described on any two straight lines is equal to the rectangle under the sum of the lines and their difference.

7. In a circle prove that all chords which touch a concentric circle are of equal length.

8. Prove that the tangents drawn to two intersecting circles from any point on the production of their common chord are of equal length. State and prove the corresponding property of two circles which do not intersect?

9. Prove that the feet of the perpendiculars drawn to the sides of a triangle from any point on the circumference of its circumscribed circle, are situated on the same straight line.

10. Show how to describe a circle through three given points.

NATURAL PHILOSOPHY.

Examiners—Prof. William Garnett, M.A., Prof. A. W. Reinold, M.A., F.R.S.

[Only *right* questions are to be answered, of which at least *two* must be selected from Section A.]

A.

1. Explain the triangle of forces, and illustrate its meaning and use by a practical case to which it may be applied.

2. Define acceleration. If a ball slides without friction down an inclined plane, and in the fifth second after starting passes over 2207.25 centimetres, find its acceleration and the inclination of the plane to the horizon. Assume $g = 981$ (cm. sec.).

3. What is meant by the centre of parallel forces? Weights are attached to a series of points along a weightless rod. Show that the rod, if supported at a point so as to rest in a horizontal position, will also rest in any other position.

4. Describe some experiments which afford evidence in favour of Newton's Third Law of Motion.

5. Equal forces act for the same time upon unequal masses *M* and *m*, what is the relation between (1) the momenta generated by the forces (2) the amounts of work done by them?

5. What is the character of the action between two smooth surfaces in contact with each other?

A uniform sphere rests on a smooth inclined plane, and is supported by a horizontal string. To what point on the surface of the sphere must the string be attached? Draw a figure showing the forces in action.

6. What is the relation between the mass and velocity of a cannon shot, and the work it can do on a fixed target?

What is the horse power of an engine which can project 10,000 lbs. of water per minute, with a velocity of 80 feet per second, twenty per cent. of the whole work done being wasted by friction, etc.

(N.B.—An agent of one horse power can do 33 000 foot-pounds of work per minute.)

CLASSICS.

G. H. ROBINSON, M.A. TORONTO, EDITOR.

UNIVERSITY OF LONDON.

JANUARY, 1884.

MATRICULATION EXAMINATION.

(First Paper.)

LATIN.

Examiners.—Jas. S. Reid, Esq., LL.M.,
M.A., and Leonhard Schmitz, Esq.,
Ph.D., LL.D., F.R.S.E.

I. Sallust: *Bellum Catilinarium*.

Translate into good English:

A.

Fuere ea tempestate, qui dicerent Catilinam oratione habita cum ad iusiurandum popularis sceleris sui adigeret, humani corporis sanguinem vino permixtum in pateris circumtulisse; inde cum post execrationem omnes degustavissent, sicuti in sollemnibus sacris fieri consuevit, aperuisse consilium suum, atque eo ita fecisse, quo inter se fidi magis forent alius alii tanti facinoris conscii. Nonnulli ficta et haec et multa praeterea existumabant ab eis, qui Cicerois invidiam, quae postea orta est, leniri credebant atrocitate sceleris eorum, qui poenas dederant. Nobis ea res pro magnitudine parum conperta est.

B.

Ad haec Q. Marcius respondet: si quid ab senatu petere velint, ab armis discedant, Romam supplices profisciscantur: ea mansuetudine atque misericordia senatum populi Romani semper fuisse, ut nemo umquam ab eo frustra auxilium petiverit. At Catilina ex itinere plerisque consularibus, praeterea optumo cuique litteras mittit: se falsis criminibus circumventum, quoniam factioni inimicorum resistere nequiverit, fortunae cedere, Massiliam in exilium proficisci, non quo sibi tanti sceleris conscius esset, set uti res publica quieta foret neve ex sua contentione seditio oriretur. Ab his longe divorsas litteras Q. Catulus in senatu recitavit, quas

sibi nomine Catilinae redditae dicebat. Earum exemplum infra scriptum est.

C.

Igitur eis genus aetas eloquentia prope aequalia fuere, magnitudo animi par, item gloria, set alia alii. Caesar beneficiis ac munificentia magnus habebatur, integritate vitae Cato. Ille mansuetudine et misericordia clarus factus, huic severitas dignitatem addiderat. Caesar dando sublevando ignoscendo, Cato nihil largiundo gloriam adeptus est. In altero miseris perfugium erat, in altero malis peritiae: illius facilitas, huius constantia laudabatur. Postremo Caesar in animum induxerat laborare vigilare, negotiis amicorum intentus sua neglegere, nihil denegare quod dono dignum esset; sibi magnum imperium, exercitum, bellum novum exoptabat, ubi virtus enitescere posset.

II. History and Geography.

1. Give a brief account of the life and writings of Sallust.
2. Describe the effects of Sulla's proscription upon the proscribed citizens.
3. To what class of citizens did most of the associates of Catiline belong?
4. In what year was the conspiracy suppressed? and who were the consuls of that year?
5. Explain the expression *Patres conscripti*.
6. Who were the Allobroges? and why had they gone to Rome?
7. What did Catiline mean by calling Cicero an *inquilinus civis*?

8. Describe the site, and state what you know of the following places, *Faesulae*, *Capua*, *Tarracina*, *Carthage*, *Nuceria*, *Pons Mulvius*.

III. Passages for translation from books not prescribed:—

1. Esse pro cive qui civis non sit rectum est non licere, usu vero urbis prohibere peregrinos sane inhumanum est.
2. Si vir bonus habeat hanc vim, ut, si digitis conceperit, possit in locupletium testamenta nomen suum irrepere, hac vi non utatur, ne si exploratum quidem habeat id omnino neminem unquam suspicaturum.
3. Expugnata Carthagine Scipio circa

Siciliae civitates litteras misit, ut ornamenta templorum suorum a Poenis rapta per legatos recuperarent inque pristinis sedibus reponenda curarent.

(Second Paper.)

LATIN GRAMMAR AND COMPOSITION.

1. Decline in the singular and plural: *ista mulier, rufus procerps, latro quidam*, and in the singular only *unusquisque, uterque, vir, ius iurandum*, and *vis*.

2. Give the positive degree of *arquistimus, prior, pluris, imus, locupletior*, and the comparative and superlative of *infra, supra, and extra*.

3. Give the third person singular of the perfect indicative, the supine and infinitive of the verbs *linquo, vivo, vincio, fateo, gigno, fingo, aufero*.

4. Give the present and imperfect subjunctive of *molo, fero, fio, facio, rapio, nescio*, and *irascor*.

5. State the rule about the sequence of tenses in Latin, and illustrate it by examples.

6. Mention some verbs which are transitive in English, but intransitive in Latin.

7. How are adverbs formed in Latin from adjectives?

8. Explain what is meant by the term *ablative absolute*? and compare it with any similar idiom in English.

9. Translate into Latin.

[N.B.—Particular importance is attached to the correct rendering of these sentences.]

(a) Cicero used his slaves very kindly.

(b) I asked my brother why he had so long concealed the truth from me.

(c) If he were a brave soldier he would not so easily have given way (*cedo*) to so small a number of enemies.

(d) He promised me to proceed from Athens to Corinth, as soon as he received a letter from his father.

(e) Who does not know that we must all die?

(f) When the battle was ended the general ordered all the dead both of his own and of the enemy's army to be burned.

MODERN LANGUAGES.

JOHN SEATH, B.A., ST. CATHARINES, EDITOR.

NOTE.—The Editor of this Department will feel obliged if teachers and others send him a statement of such difficulties in English History, or Moderns, as they may wish to see discussed. He will also be glad to receive Examination Papers in the work of the current year.

GERMAN.

(First Paper.)

Examiners.—Prof. Althaus, Ph.D., Rev. C. Schoell, Ph.D.

I. Translate in English.

[Not more than *two* of the following passages are to be translated.]

A.

Hampden hatte im Gewühl des Kampfes sein Leben mehr als einmal in die Schanze geschlagen und oft genug Vorwürfe der Freunde über seine Tollkühnheit hören müssen. Auf dem Felde von Chalgrove, in einem der zahlreichen Scharmützel mit den gefürchteten Schwadronen des Prinzen Rupert von der Pfalz, als es galt, diese aufzuhalten, bis Zuzug käme, stellte er sich im Juli 1643 an die Spitze eines Angriffs und wurde gleich von den ersten Schüssen verwundet. Zwei Flintenkugeln trafen seine Schulter und zerschmetterten ihm den Arm. Langsam, mit herabhängendem Haupt, ritt er vom Schlachtfelde weg und gelangte mit Mühe nach der Ortschaft Thame. Er täuschte sich nicht darüber, dass er zum Tode getroffen sei und war noch darauf bedacht, dem Parlamente militärische Rathschläge zu geben. Sein letztes heisses Gebet war: "Gott rette mein blutendes Vaterland!" Die Königlichen jubelten, denn sie wussten, was ihre Gegner in Hampden verloren hatten. Das Englische Volk aber hat seiner Gestalt, viele Menschenalter nachdem die Wunden des Bürgerkrieges vernarbt waren einen Platz unter den Marmorbildern eingeräumt, welche heute die St. Stephans-Halle in Westminster schmücken, an derselben Stelle, die so manches Mal seine wohlklingende Stimme gehört hatte. Da steht er, eine ritterliche

Ercheinung, mit lang herabwallendem Haar, einen Zug freundlicher Milde um Mund und Augen, aber zugleich mit dem Stempel, unbeugsamen Muthes auf der ernsten Stirn und den festgeschlossenen Lippen, ein Kämpfer um's Recht, der nicht umsonst gekämpft hat und dessen Name genannt werden wird so lange Englische Laute auf der Erde erklingen.

A. STERN.

B.

Alle Schrecken der grossen Erdbeben von Lissabon, Lima und Rioharba wiederholten sich in Caracas, am Unglückstage des 26. März, 1812. Die Nacht vom Donnerstag bis zum Charfreitag bot ein Bild unsäglichen Jammers und Elends. Die dicke Staubwolke, welche über den Trümmern schwebte und wie ein Nebel die Luft verfinsterte, hatte sich zu Boden geschlagen. Kein Erdstoss war mehr zu spüren es war die schönste, stillste Nacht. Der fast volle Mond beleuchtete die runden Gipfel der Berge und am Himmel sah es so ganz anders aus als auf der mit Trümmern und Leichen bedeckten Erde. Man sah Mütter mit den Leichen ihrer Kinder in den Armen, die sie wieder ins Leben zu bringen hofften; Familien wanderten jammernd durch die Stadt und suchten einen Bruder, einen Gatten, einen Freund, von denen man nichts wusste und die sich in der Volksmenge verloren haben mochten. Man drangte sich durch die Strassen, die nur noch an den Reihen von Schutthaufen kenntlich waren. In dem allgemeinen Elend flüchtete das Volk zu Andacht und Ceremonien, mit denen es den Zorn des Himmels zu beschwichtigen hoffte. Die Einen traten zu Bittgängen zusammen und sangen Trauerchöre; Andere, halb sinnlos, beichteten laut auf der Strasse. Da geschah auch hier was früher bei dem Erdbeben in Quito vorgekommen war, viele Personen, die seit Jahren nicht daran gedacht hatten, den Segen der Kirche für ihre Verbindung zu suchen, schlossen den Bund der Ehe; Kinder fanden ihre Eltern, von denen sie bis jetzt verläugnet worden; Leute, die Niemand eines Betrugs beschuldigt hatte, gelobten Ersatz zu leisten; Familien, die lange in

Feindschaft gelebt, versöhnten sich im Gefühl des gemeinsamen Unglücks.

A. VON HUMBOLDT

C.

Das bedeutendste Ereigniss, was die wichtigsten Folgen für mich haben sollte, war die Bekanntschaft und die daran sich knüpfende nähere Verbindung mit Herrr. Er hatte den Prinzen von Holstein-Eutin, der sich in traurigen Gemuthszuständen befand, auf Reinen begleitet und war mit ihm bis Strassburg gekommen. Unsre Societät, sobald sie seine Ankunft vernahm, trug ein grosses Verlangen, sich ihm zu nähern, und mir begegnete dies Glück zuerst ganz unvermuthet und zufällig. Ich war nämlich in den Gasthof "Zum Geist" gegangen, ich weiss nicht, um welch' bedeutenden Fremden aufzusuchen. Gleich unten an der Treppe fand ich einen Mann, der eben auch hinaufzusteigen im Begriffe war, und den ich für einen Geistlichen halten konnte. Sein gepudertes Haar war in eine runde Locke aufgesteckt, das schwarze Kleid bezeichnete ihn gleichfalls, mehr noch aber ein langer schwarzer seidener Mantel, dessen Ende er zusammengenommen und in die Tasche gesteckt hatte. Dieses einigermaßen auffallende, aber doch im Ganzen galante und gefällige Wesen, wovon ich schon hatte sprechen hören, liess mich keineswegs zweifeln, dass er der berühmte Ankömmling sei, und meine Anrede musste ihn sogleich überzeugen, dass ich ihn kenne. Er fragte nach meinem Namen, der ihm von keiner Bedeutung sein konnte; allein meine Offenheit schien ihm zu gefallen, indem er sie mit grosser Freundlichkeit erwiderte und, als wir die Treppe hinaufstiegen, sich sogleich zu einer lebhaften Mittheilung bereit finden liess. Es ist mir entfallen, wen wir damals besuchten; genug, beim Scheiden bat ich mir die Erlaubniss aus, ihn bei sich zu sehen, die er mir denn auch freundlich genug ertheilte.

GORTHE.

II. Grammatical questions:

[Not more than six of the following questions are to be answered—three in Group A. and three in Group B.]

1. State and exemplify the rules connected with the declension of proper names of persons and of places.

2. Write down the degrees of all adjectives and adverbs having an irregular comparison, and give examples of the adverbial use of the superlative in its absolute and in its relative forms.

3. Conjugate the pluperfect subjunctive and the second conditional of the passive voice of *rufen*.

4. Specify the uses of the auxiliary verbs of tense and of mood.

5. Explain the difference in the translation of *there is* and *there are* by *es gibt* and by *es ist, es sind*.

B.

1. What cases are required to express time, definitely and indefinitely? Give examples.

2. Give as many instances as you can in which the preposition *of* is not expressed in German, and others in which it is translated by *von*.

3. How must participial clauses denoting time and cause be translated into German? Give examples.

4. Classify the conjunctions *denn, dass, daher, obgleich, als, und, ausserdem, aber, nachdem, weil, seit, folglich*, and show the effect of each class on the construction of the sentence.

5. *Sich bekümmern, sich erfreuen, sich erbarmen, sich erholen, sich crinnern, sich verlassen*. Form sentences with these reflective verbs, showing the prepositions or cases required by each of them.

(Second Paper.)

I. Translation into English.

[Not more than *two* of the following passages are to be translated.]

A.

Im folgenden Jahre starb Franz II. Er hatte keine bedeutende Persönlichkeit gehabt: eine kleine, schwächliche Gestalt, ein schüchternes Benehmen—aber viel Gutmüthigkeit. Maria Stuart beweinte in ihm aufrichtig den ersten Freund ihrer Jugend. Sie verlor mit

ihm die glänzendere ihrer Kronen und zugleich ihre zweite, schönere Heimath. Denn Katharina, jetzt Regentin Frankreichs, liebte sie nicht, und in Schottland war soeben ihre Mutter gestorben. So musste sie dens. zurück in den rauhen, halb barbarischen Norden. Am 15 August, 1561, bestieg sie zu Calais das Schiff, welches sie nach Schottland führen sollte. Mit thränen schweren Augen stand sie auf dem Verdeck, nach der Küste Frankreichs schauend und wieder und wieder ein Lebewohl seufzend. Stundenlang, bis in den späten Abend hinein, stand sie traurig so neben dem Steuer; der Wind war schwach, das Land noch immer sichtbar. Man fragte sie, ob sie sich nicht in die Kajüte zurückziehen und zu Nacht speisen wolle. Sie lehnte es ab und befahl, ihr auf dem Verdeck ein Bett herzurichten. Sobald es tagen würde, solle der Steuermann sie rufen, falls die französische Küste noch in Sicht wäre. Ihr Wunsch wurde erfüllt: in Morgenstrahl sah sie den letzten Schimmer des Landes ihrer Jugend, ihres Glückes "Adieu, Frankreich!" rief sie; "es ist dahin. Adieu, Frankreich! Ich glaube, ich werde dich nie mehr wieder sehen." Nach fünfägiger Fahrt landete sie im Hafen von Edinburgh. Dort stieg sie zu Pferde und hielt Abends ihren Einzug in das alte Königsschloss Holyrood.

W. PIERSON.

B.

Ueber seine ersten Jahre im preussischen Dienst erzählt Graf Moltke folgendes: "Der Anfang meiner Laufbahn war arm an Freuden des Lebens. Ich kam auf die Kriegsschule in Berlin zu einer Zeit, wo das Vermögen meiner Eltern durch die Kriege und eine unabsehbare Reihe von Unglücksfällen fast gänzlich verloren gegangen war. Kein Pfennig Zulage konnte mir gewährt werden, und man kann sich kaum vorstellen, wie ich mich einschränken musste. Trotzdem gelang es mir, noch so viele Ersparnisse zu machen, dass ich Unterricht in den neueren Sprachen nehmen konnte. Es ist wahrhaftig kein beneidenswerthes Loos, das eines armen Lieutenants! Glücklicherweise kehrte ich bald zum Regimente zurück, wo mir die

Direktion der Divisionsschule übergeben wurde, und als ich meine Aufgabe zur Zufriedenheit meiner Vorgesetzten gelöst hatte, attachirte man mich an die Commission, welche die topographischen Vermessungen in Schlesien und Posen ausführen sollte. Der General von Müffling leitete diese Arbeit, einer der Officiere, deren man sich sein Leben lang mit aufrichtiger Hochachtung erinnert, wenn man das Glück gehabt hat, mit ihnen in nähere Berührung zu kommen. Er hatte einen sanften, freundlichen Humor, der seinesgleichen suchte. Ich entsinne mich, dass einer meiner Kameraden einst einen unmöglichen Berg auf einer der Karten angebracht hatte; und als ihm der General dies bemerklich machte und jener dennoch seinen Irrthum nicht anerkennen wollte, der General mit ruhig und freundlich ausgesprochenen Worten zu ihm sagte: "Nun, so wünsche ich Ihnen Glück, die Wissenschaft bereichert und die Provinz mit einem neuen Berge versehen zu haben." Bald nach dieser Zeit schien mir das Glück lacheln zu wollen; ich wurde Hauptmann."

MOLTKE.

C.

Am Sonntag wohnten König Philipp und sein Sohn einer feierlichen Messe in der Schlosskapelle bei; dann gingen Boten zwischen dem Könige und dem Staatsminister, hin und her. Don Carlos, Argwohn schöpfend, legte sich zu Bett und verliess das Bett auch nicht, als ihn sein Vater zu sich

bestellte. Nachts um 11 Uhr berief Philipp, der von allen Handlungen seines Sohnes von Minute zu Minute unterrichtet wurde, den Fürsten von Eboli, den Herzog von Feria, den Prior Antonio von Toledo und den Stallmeister des Prinzen zu sich, und ging dann mit ihnen und der nöthigen militärischen Begleitung in das Schlafzimmer seines Sohnes. Da die Thüre schon vorher geöffnet war, so drangen die Minister ohne Hinderniss bis vor das Bett und bemächtigten sich rasch eines Degens, eines Dolches und eines geladenen Gewehres, welche der Schlafende neben seinem Kopfkissen liegen hatte. Durch das Geräusch erweckt, fuhr derselbe auf und wollte nach seinen Waffen greifen. Jetzt erst trat der König vor, einen Helm auf dem Kopfe, einen Degen unter dem Arme und einen Panzer unter seinem Gewande tragend. "Was soll dies?" rief Don Carlos, suchte ihn zu beruhigen, und versicherte es geschehe Alles nur zu seinem Heile. Dann liess er die Fenster des Schlafzimmers fest vernageln, alle Eisengeräthe entfernen und einen kleinen Koffer mit den Papieren seines Sohnes sogleich in sein Cabinet bringen. Man fand darin, ausser den schon erwähnten Briefen, nur einige Kostbarkeiten und eine Liste mit den Namen der Freunde und Feinde des jetzt Gefangenen. Unter den ersteren standen die Königin und Don Juan obenan, unter den letzteren Philipp selbst.

A. KLANKE.

NATURAL SCIENCE.

H. B. SPOTTON, M.A., BARRIE, EDITOR.

ON THE NATURE OF CHLORINE.

The history of this familiar substance is so remarkable as to merit more than a passing notice at the hands of the student of chemistry. Discovered in 1774 by Scheele, while experimenting upon the ores of manganese, it was not at first assigned a position among the elementary bodies. Its discoverer, applying the then prevailing phlogistic theory to account for its production, gave the sub-

stance the somewhat oppressive title of "dephlogisticated marine air." The phlogistic theory was then, however, tottering to its fall, and being succeeded by that of Lavoisier who explained the reactions occurring in the formation of acids and earths as due rather to the addition of oxygen than to the subtraction of phlogiston, the nomenclature was revised, and dephlogisticated marine air was now presented to the scientific world as "oxygenated muriatic acid," a name

shortly afterwards abbreviated into "oxymuriatic acid." This name held its place up to the year 1810. Though universally recognised up to that time as a compound of oxygen, some hazy suspicions that the substance might possibly be a genuine element seem to have entered the mind of the French chemist Gay-Lussac, who observed that the body appeared to be incapable of decomposition by carbon. Still, up to 1810 no one had avowed his belief in the elementary nature of the suffocating yellow gas; but in that year Sir Humphrey Davy revolutionized scientific thought in regard to this body. The experimental evidence upon which he based his conclusions appeared so convincing that these were within a short time accepted by almost every scientific man of note, and the substance under its new and apt title of "chlorine," assumed its position among the non-metallic elements—a position which it has held undisturbed and unquestioned until very recently. A commotion has, however, been created within the last two or three years by the announcement of the result of some experiments at Zürich, conducted by Victor and Carl Meyer. The former of these chemists had already rendered a signal service to his professional brethren by the invention of an extremely ingenious and simple contrivance for ascertaining the specific weight of vapours at very high temperatures. Every one knows that the specific weight of chlorine is usually set down at 35.5 or thereabouts, and at ordinary temperatures there can be no doubt that estimate is correct. But Meyer found, on applying his process, that as the temperature reached the neighbourhood of 700° C. the density, which up to this point had tallied with the results obtained by other processes now began unexpectedly to diminish and continued to diminish until something over 1200° C. was reached. Then a constant density appeared to have been arrived at, and a further rise of 300° produced no perceptible alteration. This constant density was as nearly as possible two-thirds of the generally received value; that is instead, of 35.5 it had receded to very nearly 24.

Now, what is the conclusion to be drawn from this circumstance? It is well known that the vapours of certain compound bodies do not conform to the law which defines the relation between vapour density, and molecular weight. The vapour of sulphuric acid, for instance, instead of occupying two volumes, is found to expand to four, its density being thereby, of course, reduced to one-half of its theoretical value. The same is true also of Ammonium chloride vapour, of phosphoric chloride, and some other substances. These anomalies are explained by the theory of "dissociation," according to which the molecule of sulphuric acid is, at a sufficiently high temperature, broken up into two molecules, one of sulphur trioxide, and the other of water vapour; the molecule of ammonium chloride is, in like manner decomposed into a molecule of ammonia, and one of hydrochloric acid; and so on. Are the results of Meyer's experiments on chlorine capable of this explanation? Or rather, are they capable of any other? It would seem that the expansion must be due either to such an increase in the number of molecules as that observed when ozone is converted into ordinary oxygen, or to that caused by dissociation in such cases as those just recited. The former alternative is pronounced inadmissible for theoretical reasons, and we are further driven to accept the other explanation by the fact that when the expanded gas was passed through a liquid capable of absorbing chlorine, a small quantity of gas was found to remain uncombined, and this remainder proved to be oxygen.

We are assured that the utmost care was taken to guard against all possible sources of error, and assuming the perfect accuracy of the experiments, the conclusion seems inevitable that the gas is really a compound of oxygen.

Curiously enough, this result is corroborated in a remarkable way by the results of spectroscopic observations, the red line of oxygen being, according to Lockyer, a prominent line in the spectrum of chlorine under certain conditions. The suggestion that the phenomenon of dissociation may be

of much wider occurrence than is generally supposed is contained also in the following sentence from Ganot's well-known work on Physics. Treating of the method of exhibiting the spectra of gases he remarks: "If the electric discharge takes place through a compound gas or vapour, the spectra are those of the elementary constituents of the gas. It seems, as if at very intense temperatures, chemical combination was impossible, and oxygen and hydrogen, chlorine and the metals, could co-exist in a separate form as though mechanically mixed with each other."

If it be true that chlorine is a compound, and it would perhaps be rash to jump to the conclusion that it is so, until further investi-

gations confirm those of Meyer—it is reasonable to conjecture that other bodies, hitherto recognized as elementary, may, with the aid of improved apparatus, be proved to be compound also. When we remember that it only required properly devised apparatus to liquefy gases which had for a long time resisted every attempt at liquefaction, and had hence been commonly spoken of as "permanent," the further possibilities which present themselves to the mind are only limited by the limit of human ingenuity, and it need not surprise us to learn that such men as Pictet are at present actively engaged in developing schemes for utilising the heat of the sun itself, so as to produce hitherto unheard of temperatures.—H.B.S.

SCHOOL WORK.

DAVID BOYLE, TORONTO, EDITOR.

COUNTY OF PEEL PROMOTION EXAMINATIONS.

November, 1883.

SENIOR FIRST CLASS TO SECOND.

ARITHMETIC.

1. Write in words:—1001; 110; 804; CDXCIX; CMXLIV.

2. Write in figures, one thousand and ten, nine hundred and one, and in Roman numerals, 390, 429.

3. Find the sum of $849 + 75832 + 657 + 2564 + 4536$.

4. Find the value of $6573 - 7258 + 24 - 2365 + 6425$.

5. Find the difference between 671031 and 872010.

6. A girl had 70 cents; she paid 25 cents for a slate, and 8 cents for a copy; how many cents had she left?

7. A farmer had 100 animals, 28 of them were pigs, 37 of them sheep, and the rest were cows; how many cows had he?

8. A boy bought a book for 25 cents, and

a copy book for 8 cents, and gave the store-keeper 60 cents to pay for them; how many cents should he get back?

9. A has \$50, B has \$73 more than A, and C has as much money as A and B together—how many dollars have all three together?

10. There are 48 boys in a school, and 19 fewer boys than girls; how many pupils?

11. John went up 8 steps of a ladder, then down 3, then up 4, then down 7; how many steps is he now up?

12. From the sum of 896 and 981 take the difference between 1267 and 979.

NOTE.—10 marks each; 100 marks to count a full paper.

SECOND CLASS TO THIRD.

LITERATURE.

(Open books at page 148.)

1. Explain:—"brute," "luscious fruit," "reapers," "gnarlers" "drones," "dell," "crimson leaves." [18.]

2. Why is autumn called golden? Mention some of autumn's gifts. What shape is the

flower of the foxglove? Where do ferns grow? [18.]

3. Distinguish, either by giving meanings, or by writing sentences in which the words are correctly used, between "rain" and "rein," "pear" and "pair," "scent" and "cent," "ant" and "aunt," "air" and "ere," "red" and "read." [15.]

4. The examiner will cause the book to be removed before giving this question, which will be found immediately following the *Spelling* paper. [24.]

GEOGRAPHY.

1. Define Sea, Island, Cape, Peninsula, Bay. [5.]

2. Over what railroads and through what towns or villages would you pass in going by rail:—

(a) From Bolton to Streetsville?

(b) From Port Credit to Brampton?

(Full marks for a correct answer to either of the above.)

3. Draw a map of County Peel, marking rivers, townships, railroads, towns, and villages. [20.]

4. What direction is Lake Ontario from Brampton? In what direction does the river Credit flow?—through what townships does it pass? [5.]

5. In what County and Province do you live? Name five other Provinces in the same country. [12.]

6. In what Township of the County are grapes and strawberries extensively grown? In what Townships is the soil generally heavy? What Township has the most rock? What two Townships are most hilly? [6.]

NOTE.—Fifty marks to count a full paper.

ARITHMETIC.

1. Write in words:—78001, 60010, M̄VCXC, and in Roman Numerals:—3499, 8649.

2. Find the value of $3564 - 4876 - 358 \div 9587 - 789$.

3. Find the product of 83659 and 70690.

4. $9870681 \div 2768$.

5. A boy had 69 cents and earned 28 cents; how many more cents will he have to earn to have \$3?

6. A man sold 48 bushels of wheat at \$2 a bushel, and 34 tons of hay at \$8 a ton; he paid a debt of \$287 out of the money he got; how many dollars had he left?

7. If 26 cows cost \$806, what will 16 cows cost?

8. 25 horses and 29 pigs are worth \$2647; if the horses are worth \$85 each what is each pig worth?

9. A man gave 17 bushels of oats, worth 47 cents a bushel, and 157 bushels of wheat worth 93 cents a bushel, for 22 sheep; what was the value of each sheep?

10. A farmer bought a certain number of horses for \$146 each, and sold them at \$155 each, thereby making a total gain of \$189; how many horses did he buy?

11. How many times must 43 be taken from the product of 8673 and 489 so that the remainder may be exactly divided by 361.

11. For what must I sell eggs apiece, which cost at the rate of 4 for 3 cents, so that I may gain 3 cents a dozen?

(10 marks each; 100 marks to count a full paper.)

THIRD CLASS TO FOURTH.

GRAMMAR.

1. Define Possessive Case, Relative Pronoun, Superlative Degree, Gender Modifier. [5.]

2. Write a sentence with the subject modified by a noun in the possessive case, a noun in apposition, and an adjective. [5.]

3. Analyze:—(a) Kiss him once for somebody's sake. [16.]

(b) From the summit of Vesuvius there shot a pale light.

(c) No more shall he hear thy voice.

(d) There stands John's daughter, a bright little girl with curly hair.

4. Parse:—The poor little match-girl was still in the corner of the street on a very cold New Year's morning. [16.]

5. Write in the possessive plural:—A woman's hat, a calf's head, a gentleman's cane, an ox's yoke. [8.]

6. Give (a) the two plurals, with meanings, of genius, brother, index; (b) the feminine of baron, marquis, negro, hero, count; (c) the

plural of phenomenon, cherub, axis, court, martial, beam, Roman, K, 9, genus, chimney. [18.]

7. Correct :—"My hands is froze."
- "Don't buy any more of those sort of peaches."
- "Please teacher, can I go home?"
- "I know he done it, for I seen him do it."
- "The lesson is tore out of my book."
- "You had better go and lay down for a while."
- "London has the largest population of any city in the world."
- "Which is the tallest, John or James?" [32.]

COMPOSITION.

1. Write in a correct form :—
Little Ann had a famous dog his name was grip one day ann went out to visit a poor woman and took grip with her grip had not went far until he seen a cat he then gave chase but the cat ran up a tree and was safe grip stoud at the bottom and barked with all his might but the cat never heeded him. [15.]
2. Combine into a simple sentence, and draw one line under the Noun part, and two under the Verb part :
The robber was shot at the entrance to the cave.
The cave ran far into the interior of the hill.
The robber had spread terror in all directions.
The robber was pursued by the King's troops.
The troops were commanded by the King in person. [10.]
3. Change the following Adjectives and Adverbs into phrases :
Sensible persons never do it.
The *intelligent* boy always knows his task.
John drives the *black* horse. [10.]
4. Transpose into prose two stanzas of "We are Seven," beginning "My stockings there I often knit."
5. Your mother has been away from home visiting; write her a letter. [25.]

LITERATURE.

(Open books at page 186.)

1. Explain in your own words :—
"Frenchman of elegant address."
"Four stalwart Chippeways."
"New energy to his sinews."
"Despatched his attendants on imaginary errands."
"Related the catastrophe."
"Deposited his remains."
"Severest agony."
"Divested himself of his clothes."
"Ascended one of its branches."
"A rude wooden cross, surmounting a solitary grave."
"He frequently manifested the pleasure he experienced." [22.]
2. Give meanings of *causeway*, *abandoned*, *picturesque*, *portages*, *memento*, *annually*, *transported*, *assisted*, *amazement*, *horror*, *lingering*, *obtained*, *purchased*. [13.]
3. Page 46 :—
Distinguish, either by giving meaning, or by writing sentences in which the words are correctly used, between "ale" and "ail," "aunt" and "ant," "vale" and "veil," "peer" and "pier," "meet" and "meat," "fowl" and "foul," "dye" and "dire," "panes" and "pains." [16.]
4. To be given by the examiner after books are removed. See page 3. [24.]

CANADIAN HISTORY.

1. Tell what you know of Cartier, Cabot, Wolfe, Brock, Tecumseh, Ryerson, W. L. McKenzie, Dufferin. [16.]
 2. Tell what you know of the History of the Canadian North-West. [10.]
 3. What events took place in 1608, 1628, 1672, 1691, 1814, 1837. [12.]
 4. Give an account of the cause, the progress and the result of the War of Independence. [12.]
 5. Tell what you know of one form of Government, Provincial and Federal. [10.]
- NOTE.—Fifty marks to count a full paper.

GEOGRAPHY.

1. Define Continent, Prairie, Channel, Archipelago, Tropics. [5.]

2. (a) Give the boundary rivers of Ontario.
(b) Give tributaries of St. Lawrence on both sides.

(c) Give rivers of South America, distinguishing the slope. [9.]

3. (a) Name the Counties on Lake Ontario with their County Towns.

(b) Name 10 of the largest cities in the United States.

(c) Name the Islands west of the Continent of America. [15.]

4. What and where are Hamilton, Chuquisaca, Athabasca, Wolfe, Parimè, Bermudas, Madawaska, Aux Coudres, Charlottetown, Thames, Tehuantepec, Staten. [12.]

5. Draw a map of South America, showing countries, capitals, rivers, and islands. [12.]

6. Through what waters would a boat pass on a trip from Port Arthur to Quebec city? [9.]

7. How many degrees in width is the Torrid Zone? How many degrees in length? [4.]

8. Over what railroads and through what towns would you pass on a trip from Collingwood to Sarnia? [9.]

ARITHMETIC.

1. What is the least number which, when divided by 24 or 27 always leaves 4 for remainder?

2. Make out the following bill:

2½ yards of flannel at \$½ per yard; ¾ lb. of tea at \$½ per lb.; ¾ lb. coffee at \$½ per lb.; 2½ bags of flour at \$2½ per bag.

3. Simplify: $2\frac{1}{2} + 1\frac{1}{2} - \frac{1}{2}$ of $\frac{1}{2}$; $-\frac{1}{2} + 28 \div 17 - 1\frac{1}{2}$.

4. Bought a cow for \$29½, and a pig for \$3½ less than this, and sold both for \$8 more than they cost; what did I get for them?

5. If ¾ of a cord of wood cost \$2.40, what will a pile 24 feet long, 6 feet high, and 4 feet wide cost?

6. How many times can I fill a measure, which holds 1 gallon, 1 quart, from a barrel of coal oil containing 55 gallons?

7. Reduce 712024 inches to miles, and prove.

8. If it cost \$1.75 to gravel 12 feet of road, how much will it cost to gravel 4 miles?

9. If 68 men own 1202 acres, 2 roods, 30 rods, 8 sq. yards, 4 sq. feet, 92 sq. inches, what is the average quantity owned by each?

10. What is the difference between $3.8 + .046 - .2145$ and $.406 + 25.1 - .004$.

11. A hound in pursuit of a fox runs 9 rods while the fox runs 7, but the fox had a start of 70 rods, how far will the hound run before he overtakes the fox?

12. If ¼ of a farm is worth \$7524, at \$45 an acre, how many acres are in the farm?

(10 marks each; 100 to count a full paper.)

READING.

(Note emphasis, expression, inflection, distinctness of articulation, etc.)

Senior First Class to Second.

1. Page 52: "When George—brought him home." [30.]

2. Page 66: "Who taps—snug nest." [20.]

Second Class to Third.

1. Page 47: "Would you like?—he said." [35.]

2. Page 207: "You don't know—see him do it." [40.]

Third Class to Fourth.

1. Page 28: "Dear Master—to swing in." [35.]

2. Page 287: "You have slept—her and you." [40.]

WRITING.

Senior First Class to Second.

1. First Reader, page 44; Write seven lines at the beginning of the lesson. [50.]

Second Class to Third.

1. Second Reader, page 176. Copy exactly: "Why, what's—attention to it." [20.]

2. The teacher will mark for last ten pages in candidate's copy. [30.]

Third Class to Fourth.

1. Copy exactly, Third Reader, page 272: "Midas shook—perfectly happy." [20.]

2. The teacher will mark for last ten pages in candidate's copy. [30.]

SPELLING.

First Class to Second.

(On slates, from dictation; three marks off for each error.)

1. (a) Guard me safely through the night.
- (b) Tinkers and gipsies mend tea-kettles.
- (c) I'll pay you for each stitch that's given.
- (d) The man at the helm took it in great gulps.
- (e) Jack's trick made him quite ill.
- (f) Wicked boys rob birds' nests.
- (g) It is the surest way to be happy.
- (h) It was a nice cosy place with a good fire in the grate.
- (i) Jack was eating his Christmas pie in the corner.
- (j) All must hate a lying tongue.
- (k) The cows got in and ate a lot of the beets and cabbage.
- (l) They paid visits to the woods, fields, geese, ducks and fowls.
- (m) Will treat him kindly and not abuse his gifts.

2. Sure, friend, cheek, blown, tries, colts, bloom, bullets, brown, nursing, sincere, direct, morning, velvet, whelp, sprawl, noise, fleece, warm, appear, rule, single, gladdens, thankful, colours, endless, written, birth, deal, rough, ceiling, watch, reply, creature, tumble, laugh, garden, crumbs.

Second Class to Third.

(Dictation; paper; four marks off for each error.)

1. "Urchins stand with their thievish eyes on watch."
- "Pallid fear's distracting power."
- "In the reign of King Edward the Third."
- "She speedily acceded to the request."
- "He severed the string from the buoy."
- "Hardly dare venture to stir."
- "She snipped off the ribbon with her mother's scissors."
- "His barns were set on fire by lightning."
- "She was too young to know that roots could come to flowers."
- "Called to their parents' bedside to hear their last words."
2. Guidance, niece, abominable, complaisance, parliament, grievous, leisurely, perse-

vere, carcass, Israel, sieve, presently, ceaselessly, conceive, circle, wield, dense, Bethlehem, demurred, treacherous, motto, inclement, jealous, obstacles, handiwork, bowlful, awkward, busy.

Third Class to Fourth.

(Dictation; paper; four marks off for each error.)

1. "The peasant's wife upbraided him."
- "Calm mien of the officers."
- "We've visited the isles and ice-bound main."
- "Two or three dozen martens."
- "Hies the fire-brand to its destined goal."
- "Dock-yard chapel at Portsmouth."
- "God mercifully sent Jasper Jerry."
- "John Adams, second President of United States."
- "Shuffles in an awkward way."
- "Celebrated French author, Crebillon."
2. Munificently, embarrassed, pernicious, facetiously, missiles, annals, February, harassed, parricidal, allegiance, initials, soliloquies, scimitars, Kentuckiana, symphony, hydrophobia, Christian, manoeuvre, Gloucester, cessation, Latreille, rhinoceroses, conscientiously, Admiralty, expedients, deficiency, French Canadians, annihilation, secession, hurriedly, nauseous, repetition, taffrail, Brigadier.

Note—The value of the spelling paper for each class is 100.

LITERATURE.

Second Class to Third.

(To be given by teacher after Questions I. to III. are answered, and the Second Readers laid aside.)

4. Write from memory two stanzas beginning: "A little girl with happy look"; or four stanzas beginning: "Around the fire one wintry night."

Third Class to Fourth.

(To be given by teacher as above.)

4. Write from memory "Tyrolean Evening Hymn," or first three stanzas of "A School Boy's Reminiscence."

ESTHETICS IN THE PRIMARY SCHOOLROOM.

BY OLIVE HAMRLY.

THE word *primary* in the heading of this article should be emphasized for two reasons: first, because the many means of teaching esthetics in the higher grades are not even touched upon here; for, to the developed mind, for instance, a certain, keen-edged beauty can be extracted from the exactness of mathematics. Second, because it is intended to emphasize the fact that the primary school-room is a fit place for its introduction and cultivation. Indeed, perhaps it is the most fit, for "Whatsoever things are true, whatsoever things are pure, whatsoever things are lovely," are in place there. The danger is not in the direction of too much, but too little.

The drawing lesson has its place, at least in most graded schools, 'tis true, but *apparently* good objections are still hurled against it, not only by the ignorant, but by the cultured. I do not propose to attempt to answer these here; for to handle the *pros* and *cons* of this subject in all their bearing, would constitute an article in itself; besides, it would be unnecessary, as it has already been ably done by others, to the satisfaction of most teachers at least. Drawing can be made a means of developing and fostering the love of the beautiful among children, even when the prescribed course is neither a natural nor an ideal one. There will always be a few who will show natural taste for its and who will draw voluntarily that which is beyond their limit. Let them do so. Have their work put on the board,—if only to stay there for a short time—praising when you can, hinting and helping always. I always have some pupils pleading to put this or that on the board at recess. Perhaps the this or that is something that makes you smile at the child's innocent presumption, but perhaps, also, you will be made to smile at the success. I have often done so. We find it is with them as with ourselves,—they can do many things that they have never been taught to do. At the Washington

memorial exercises, February twenty-first, I had drawn on our board *good* pictures of Washington's tomb and his house at Ft. Vernon by pupils who had never taken a lesson in object-drawing or perspective. They were copied, too, from small photographs, and without the least assistance from me.

Drawing is not the only study, by any means, that affords opportunities in this direction. Of course there are many. Plant-lessons are an especial source from which to draw deep for this purpose. Plants should be considered almost indispensable to the schoolroom. "No place for them," says some one. Contrive a place, then. "No window-ledges, and only two windows, and they are looking north." That is pretty bad to be sure; but we must have them, so we will buy twenty-five cents' worth of plank, and get some boys to put up two shelves and paint them. Then we will get a few sturdy geraniums, ivies, and evergreens—not so many as to obstruct the light; we must always guard against that. They will live and be green and fresh without the sun, and we will love them the more, even as we do some sweet, strong souls who are so without much to cheer them. Whenever there comes one of those rare, warm days that drop upon us sometimes in the winter from the overlaid arms of bounteous Spring, as she passes over us on her journey to other lands, let the children carry the plants out to feel her smile. "I cannot afford to buy them," says some one. No, dear friend, I know you cannot; few of us can. But they need not cost you a cent—only a little forethought and management. Get slips from acquaintances in the summer. I invite the children to bring them, and take up a collection for your shelf. Have ferns, mosses, all kinds of sweet wildwood things, in a box or pan on your desk. Have something green in your room somewhere. Give to the children and yourself "The mute, mute comfort of the green things growing." One room I taught in once had four large, ugly pillars in it. The children disliked them, and so did I. They pouted when they had to sit near them, and I did

not blame them. One night I dreamed that I went to school in the morning and found each pillar transformed into a beautiful column of verdure. The next morning I told the children my dream, and that afternoon my desk was covered with empty yeast-powder bottles, string, tacks, and slips of "Wandering Jew," *tradescantia*, and ivies, all of which will grow in water, and lo! the pillars of my dream. No, not quite so beautiful, but in a few weeks they were nearly so. We had also mixed spray of pressed autumn leaves among the vines. These and pressed ferns are a beautiful means of ornamentation that every one can have. The pointing now came from those who did not sit near the pillars; and after I named them "The Bowers," the seats near them were so coveted that I used them as rewards for diligence.—*American Teacher*.

THE MASSACHUSETTS EXPERIMENT IN EDUCATION.

BY CHARLES BARNARD.

THE conventional school, with its book-lessons and recitations, is familiar to all; but the new public school, with its realistic methods, its entertaining sessions devoted apparently more to talking than recitation, more to amusement than drudgery, is unknown as yet except to the fortunate children of a few towns. We recently visited a model primary schoolroom in eastern Massachusetts, and, sitting down among the little children, tried to see the system pursued there from the little one's point of view.

It is a plain room, with windows on two sides. In the sunny windows are blossoming plants, and on the walls above the dado-like blackboard are pretty pictures, stuffed birds, and crayon sketches of plants and animals, shells, and curious things from fields and woods. The boys and girls enter the room together, and take their seats behind their little desks, on which are slates and pencils—nothing more. The teacher comes, a smiling woman with flowers in her hand. She advances to the front of the twoscore

children and begins to sing. They all sing "This is the way we wash our slates, wash our slates, so early in the morning. This is the way we wipe our slates, wipe our slates, so early in the morning." Some of the girls bring little pails of water, and each child dips a sponge in the water and washes the slate as they sing.

"Pussy Willow's class," says the teacher, "may copy the red words; Tommy Thorndike's class may take the green words; and Jenny's class may take the white words."

These words are already written in colored crayons on the blackboard. Three rows of the children take their slates and begin to copy the colored words—a happy device for teaching to write and "to tell colors."

"Sophy May's class," resumes the teacher, "may come to the blackboard, and the babies may make a fence and a gate with the sticks."

One of the girls places a handful of large shoe-pegs on the desk of each of the youngest children, and several of the children come to the teacher's desk and stand before the blackboard. They are invited to tell what the teacher holds in her hand. Every hand is raised with almost frantic eagerness. They know what that is, "What is it, Johnny?" "A cat." "Can you tell me a story about it?" Every hand is up. "Well, Katy?" "I see a cat." "Good, now look at this on the board." She writes in script "cat." "What is that?" Not a hand is raised, though every eye is intently studying the unfamiliar letters. "What is this?" says the teacher, rapidly making a sketch of the cat. They all see that. "Now [pointing to the word] what does this stand for?" Two hands are up. "Freddy?" "A cat." "Oh, no. Mary?" "Cat." "Right! Now I will add our old friend," and with this the article is prefixed to the word. "Now Freddy is right—'a cat.' Who can find another?" With this the word "cat" is written a number of times on different parts of the board, and the children eagerly hunt it up.

The sentence, "I see a cat," is written on the board. That puzzles the children. One has it; another, and another. "Mary?"

"I have a cat." "No. Sophy?" "I see a cat." The word "see" is wholly new to the class, and they get at it from the context, and have its appearance fixed in the mind by association. "Now you may copy this on your slates. Good-bye." This dismisses the class, and they return to their seats to write and re-write the two new words whose sound, meaning, and aspect they have just learned. The pronoun and the article they learned before; so that now they join them to new words, and study spelling, language, and writing at the same time.

At first sight there appears no special novelty in this lesson. Other teachers have used objects as a basis of instruction. The thing to be observed is this: These children do not know their letters. They do not study the alphabet at all. The aim is far wider than mere learning to read. First, the child's interest must be won by the sight of some familiar object. Secondly, the word is a substitute for the picture. The child is not told anything. He must arrive at things through his own thinking. There is no reward or punishment, no head or foot of the class. Each one must tell a story; that is, he must say something, make a complete sentence, and not use detached words. Lastly, and perhaps the most important of all, the young scholar must be happy in his pursuit of knowledge, because that which is happily learned is remembered.

The youngest class in numbers is now called up to a large table, on which are scattered a number of wooden blocks, such as are used for toys. The six little men and women have learned already five numerals. They can count five, but no more. To-day they are to learn five more numbers. Again the same merry session, the same stories told, language, expression, grammar, and numbers, all taught at once. Each child has ten blocks, and the game begins. The teacher leads the sport.

"I have five blocks, two and two and one. Now I hold one more. How many are there now?" Half the hands are up, "Well, Teddy?" "Seven," says Ted, with enthusiasm. "How many think

Teddy is right? None. Well, Kitty, tell us about it." "I have five blocks, and I add one, and have six." "Six what?" "Six blocks." "How many noses have we around the table? Well, Tommy?" "Eight." "No; we will not count company. Tell me something about it." "I see seven noses." "Now we'll all go to sleep." Every head is bent down while the teacher quickly removes two of the six blocks. "We wake up and find something." Every eye is intensely studying the blocks. "Tell us about it, Jenny." "There were six blocks, and two have been taken away." "How many are left, Teddy?" "There are four blocks left."

With exhaustless patience, good humour, and ingenuity, the lesson proceeds, every problem being performed with the blocks, and every fact fixed in the mind by a statement made by the child. If bad grammar is used, it is quietly corrected without a word of explanation. The habit of right speaking is the only aim.

By this time the school is becoming weary. They have all worked hard for fifteen minutes. It is time for a change. The class is dismissed, and the teacher begins to sing. It is a merry song about the rain and the snow, and all join with the greatest interest, because at the end, when the snow falls and covers the ground there are mock snow-balls to be picked up from the floor and tossed all over the room in a jolly riot of fun. Everybody feels better and ready for work again.

The teacher writes a series of simple sums in addition on the board, and the whole school watch her with the keenest interest. Now for a grand competition in language, grammar, arithmetic, and imagination. As soon as the figures are set forth a dozen hands are up. "Well, Lizzy?" Lizzy rises and says: "I was walking in the fields, and I met two butterflies, and then I saw two more, and that made four butterflies." "Good." The answer is put under the sum, and another child is called. "I had seven red roses, and a man gave me three white roses, and then I had ten roses." By this time the school has caught the spirit of the

game. Forty hands are up, trying in almost frantic eagerness for a chance to bowl over one of the sums and tell a story. Whispering is plenty. One by one the sums are answered and the quaint stories told. Then all the upper figures of the sums are removed, and the lesson is changed to subtraction. Again the stories. "I had four red apples, and I gave two away, and then I had two apples," etc. Nearly every one mentioned the colour of the object described. The children plainly observed colour in everything. They took their subjects from out-of-doors, as if all their thoughts were of the woods, the fields, and the street. The most striking feature of the lesson is the intense eagerness to tell something, the alertness, the free play to the imagination of the pupils, and the absence of formality and anything like a task or recitation. It is practically an exercise in imagination, grammar, language, expression, and arithmetic.

Then follows another song. The slates of those who have been writing are examined, and even the babies who were playing with the shoe-pegs are commended for their work. They are not strictly learners. They are like little fellows put in a boys' choir, not to sing, but to sit among singers in an atmosphere of study.

A class in reading is then called up. Each child has a book and reads a sentence in turn. The manner of reading is peculiar. The pupil first reads the entire sentence over to herself in silence, and then, looking up from the book, speaks it in a natural manner, as if talking to the teacher. The lesson is a story, aptly illustrated by a good picture, and the children not only understand what they read, but enjoy it. This done, they turn back to a story they had read before. Now the exercise is to read the story, a paragraph at a time, in their own words, to practise expression, and to prove that they understand what they read. Next, a new story is taken, and the class gives its attention, not to the text, but to the picture. "Can any one tell me something about this picture?" There is an intense study over the book for a moment, and then the hands

go up. "I see a dog." "I see a crane." "The crane is standing on one foot." "The dog is a pug." "Tell us something about the dog." "The dog has four legs." "He has two ears." "The crane has wings." "The crane is a bird." "The dog is an animal." "The pug looks very cross. Perhaps he is going to bark at the crane." All these statements are given in breathless eagerness, as if each child were anxious to add something to the sum of human knowledge, and not one of them is over seven years of age.

Another class is called. They form a line before the blackboard, and the teacher says: "Who can tell me something? Well, Susie?" "I have a red apple in my pocket." The teacher writes it on the board, and before it is written the hands are up and there is a ripple of laughter through the class. Teacher has made a mistake. "Where is it, Tommy?" "You made a small i at the beginning." "Right. Another story." "It is a cloudy day." This is written: "It's a cloudy Day." The hands go up again. "Where is it, Jane?" "The capital D is wrong." The hands are still up, eagerly thrust right in teacher's face, in a sort of passionate anxiety to get the chance to explain the error. "She said *it is* and not *it's*." "Right." Still the hands are up. "The dot has been left out." "Good. Any more mistakes?" Not a hand is raised, though the eyes scan the letters again to see if there be nothing more. They crowd close up to the blackboard, and watch every word as it is written with unflagging interest.

To vary the lesson, a sentence is written on the board containing two words the children have never seen. They swarm like bees around a plate of honey, standing close up to the strange words, even touching each letter with tiny fingers, and silently trying to spell them out by the sound of the letters. One child tries and fails, plainly showing that nearly all the sentence is understood, but the new words are not wholly mastered. Another tries and gets it right, and is rewarded by dismissal to her seat. Other sentences and

new words are tried, and there is a lively competition to read them. No one speaks the new words alone, but each reads the whole sentence in an intelligent manner, as if it were grasped as a whole. As fast as the right answer is given, the pupils return to their seats, till all have answered.

The first class in simple fractions then comes up. It is studying the deep science of wholes and halves, quarters and eighths. The first step is really to see a whole divided into eight parts, and then to study a diagram on the board. The class gather around a low table, and each is given a lump of clay. Each one pats his lump down to a square pancake on the table. The object now is to enable each child to see visible quantities by size and weight, and the effect of division. The cake of clay is divided into two equal

parts, and these again divided, and the portions compared by size and weight. Each experiment with the clay is made the basis of an example of fractions, and must be explained in words. The addition of fractions is studied in the same way. One child's cake is divided into eight parts, and four are taken away, and half a cake added to make a whole cake. The children see the one half and four eighths put together to form one whole, and they speak of it as a real fact, and not as an unmeaning formula read in a book. On the blackboard they draw in white chalk four bands of equal size. Then each is divided by green lines. The pupil sees, by tracing the colours through each band, the exact relation of whole, halves, and quarters.—*The Century*.

(To be continued.)

CONTEMPORARY LITERATURE.

THE READING OF BOOKS: ITS PLEASURES, PROFITS AND PERILS, by Charles F. Thwing, author of "American Colleges: Their Students and Work." Boston: Lea & Shepard; New York: Chas. T. Dillingham.

A competent critic assures us that more than three thousand years would be required for the mechanical operation alone of reading all the books which have been, or which are, standard works of literature. This calculation is made upon the basis of one book per week—a very good average. Clearly then it would be the height of folly for any reader, however diligent, to attempt to compass this bewildering mass of literature; and it is only common business prudence to select the best—as Charles Lamb says, "The books that *are* books." Mr. Thwing kindly engages to direct us to those books in each department of general English Literature. To this end he discusses briefly and pointedly the merits of the standard authors and their individual works. His opinions are generally sound, and his conclusions just, although we cannot agree

with him in his high estimate of the *historical novel* and the *handbooks of literature*. Many of his suggestions are highly practical.

A classified list of books is appended, which is not, however, designed as a course of reading. Such is not the design of the author; he merely wishes to indicate what is best, leaving the reader to select.

That "the reader should master books" is good advice, and Sir William Hamilton's apothegm, "Read much, but not many works," is equally good. It would certainly not be gracious, and perhaps it would hardly be just to point to our author as an example of what neglect of these precepts leads to. We do not necessarily look for high literary form in a guide-book—even in a *literary* guide-book; but we cannot help observing that the author's extensive knowledge of books has not made his style perfect, and that many passages bear the mark of haste and loose composition. We will not, however, press this point. Mr. Thwing has given us, in small space, a very good guide

to general literature, and for such we think him.

THE BOOK OF PLANT DESCRIPTIONS, OR RECORD OF PLANT ANALYSES, by Geo. G. Groff, M.D. Science and Health Publishing Co., Lewisburgh, Pa.

THE use of blank forms of description, such as this little book contains, is absolutely essential to the effective teaching of elementary botany. It is only by writing down the actual results of observations that the most can be made of the subject, at all events where young pupils are concerned. The forms are very neatly got up, and embrace all that is necessary for ordinary plant description; while the earlier pages contain some very useful information for teachers and pupils, together with a collection of common botanical terms, hints for laboratory work, and a list of subjects suitable for theses.

A PRIMER OF AMERICAN LITERATURE, by Chas. F. Richardson. New and revised edition, with twelve portraits of American authors. Boston: Houghton, Mifflin & Co., 1884. [Price 30 cents.]

OF recent years Primers have almost ousted from public regard the bulky volumes wherein students were wont to think dwelt all recondite knowledge. A new era has dawned in book-making, to the pleasure and profit of the student. Macmillan's Science Primers, one of the happiest thoughts in modern literature, ushered in the Historical Primer, and the dainty and succulent Literature Primer. And now what Mr. Brooke did so admirably for English literature, Mr. Richardson has done for American literature. In a simple and concise, but critical and sympathetic style, he has presented the salient features of American literature in a way that is very helpful and entertaining to his readers. Since American literature has become of such importance as to obtain no inconsiderable space in our Canadian school books, the teacher, as well as the student and general reader, will be glad to make the acquaintance of this valuable hand-book. They will be grateful especially for the admirable portraits of the

old-time favourites, Longfellow, Whittier, Holmes and Lowell, not to mention others as well as the more modern favourites, Aldrich, Howell, Henry James, jr., and Warner. No Canadian teacher or High School student has now any excuse for not knowing the features, as well as the names of the chief works of these famous writers—our own kinsmen.

MOFFATT'S TEST PAPERS: Drawing to Scale, or Elementary First Grade Geometry. Moffatt & Paige, 28 Warwick Lane, London. [Price 1s. 6d.]

ALTHOUGH the recent dictum of one of Her Majesty's Inspectors of Schools is indisputable: that text-cards must be regarded as a mushroom growth of modern days, and when they supersede, as they sometimes do, class teaching and the use of the blackboard, they are mischievous, we are disposed to welcome these test-papers as a useful addition to the mass of school literature. Apart from their intrinsic merit, they are useful in affording us an idea of what is being done in some of the elementary English Schools and Training Colleges. They form a series from A to L, each paper containing three questions with space for the pupil's work, directions, with a place for his name, age, and school address. Teachers interested in drawing should try to obtain a set of these papers.

THE BOOK OF FABLES, chiefly from *Æsop*, chosen and phrased by Horace E. Scudder; with illustrations, by H. W. Herrick. Boston: Houghton, Mifflin & Co., 1883.

THIS little book is another instance of the growing influence of the rational and practical in educational methods. How to find a literature for children which will be worth their while to read when reading has become a pleasure, has been a puzzle to nearly every one who has had much to do with the training of the very young. Mr. Scudder thinks that the Fable solves the problem, and there are many very good reasons why a book of fables should be the first real book which a child reads. We shall not here adduce his reasons, but merely remark that they are sub-

stantiated by our experience. The illustrations are spirited and fairly accurate, and will add much to the pleasure of our young readers. The editor has done his part with much good taste and judgment, and the little folk owe him a very hearty word of thanks.

As we read over the dear old fables of our

childhood, and pondered long on some of them, the lesson taught by the farmer to his sons in the bundle of twigs, seemed to us singularly applicable to the teaching profession: "So is it with you, my sons; if you are all of the same mind, your enemies can do you no harm; but if you quarrel they will easily get the better of you."

EDITORIAL NOTES.

We present our readers with a summary of the educational proceedings in the Provincial Witenagemot, which, we trust, may be acceptable to them. It will be observed that thus far there has been no new legislation, but that there has been a number of motions for Returns, which serve to indicate the feeling of the House on certain educational questions.

We give place to Mr. Baigent's communication on the presumption that he is competent to speak from personal knowledge upon the working of the Provincial Art School, and that he has no purpose to serve but the public good. We regret to learn that difficulties have arisen between the Departmental Superintendent of the Art School and the Council of the Ontario School of Art. The matter, we understand, is now before the Minister of Education, who, no doubt, is fully apprised of the gravity of the situation. Meantime we leave the matter without comment. Our columns are, of course, open for a reply to Mr. Baigent.

A GROWING EVIL.

OUR attention for some time past has been directed to a growing evil in our schools: the display of sumptuousness and finery made by some parents in the dress of their children; and the time seems opportune to utter a protest against it. It is no uncommon thing to see young girls arrayed in silk, satin and velvet and bedizened with jewelry sufficient

for a dowager upon Presentation at court, and young lads clad in attire that in richness would not discredit their fathers at a levee. The whole system of display in dress is in excessively bad taste, and reveals too plainly the existence everywhere of Sir Gorgius Midas and his vulgar spouse. Every teacher knows that it feeds vanity, excites envy, provokes rivalry, and completely destroys the *entente cordiale* of school life. No girl or boy can succeed in study who is over-dressed, and whose thoughts are suffered to run upon vanity and display. The teacher is often powerless to counteract the evil except by the force of example. He can hardly venture upon precept. There seems to be no cure for the evil except in awakening the good sense of parents to its p. valence and power. We therefore appeal to parents to consider the matter, and, in every school, unite to put down an evil that is no less a breach of good taste than a hindrance to study.

CO-EDUCATION AT UNIVERSITY COLLEGE.

THE Legislative Assembly for Ontario has recently, as is stated in our Educational Intelligence, pronounced in favour of co-education of the sexes at University College. We presume the next step will be to introduce the system into Upper Canada College and the Agricultural College, Guelph. The views of THE MONTHLY have already been expressed upon the question, and we need not traverse the ground again. We have

heard nothing to alter our opinion, but rather to confirm it. However, if this experiment must be made, we shall be glad, though we do not hope, to see it succeed. We suspect that the plan of co-education proposed has little to recommend it but the plea of so-called economy. The resolution is but a sign of the times and another warning to educationists. Grants for prize books and apparatus have disappeared; the Collegiate Institute grant is constantly menaced, the superannuation fund is in jeopardy, the High School grant is threatened, and they will all, in time, go as the grants for prizes and apparatus have gone, to preserve a fund for building more railways, more public works, and those other ways of spending public money in which politicians of all parties take special pleasure.

THE HOUSE AND THE SUPER-ANNUATION QUESTION.

THERE is, we gather from opinions expressed in the House, a feeling of unrest respecting the Teachers' Superannuation Fund in this Province. Many members, we apprehend, are in favour of the abolition of the system as necessarily involving a large annual expenditure, and in itself not a desirable system to encourage or perpetuate. Nor are teachers, we have good reason to know, a unit upon the merits of the scheme. Many regard the enforced payment of the annual levy upon their salary as a species of legislative tyranny, which should have no place in a country governed by free institutions. Doubtless all teachers would prefer to be independent of public bounty, if independence were possible. But there's the rub. Salaries are still so small that few public school teachers can put by anything for the rainy day or old age. Moreover, the profession is swarming with young people, who avowedly do not intend to make teaching their life-work, and who, to obtain some ready money to enable them to prepare for other employments, are eager to underbid and supplant men and women who have grown old in the public service. The public,

as a general rule, has no conscience or sentiment in the matter. In nine cases out of ten the hawk of cheap wares wins the day. If the trustees should be so patriotic as to prefer merit to cheapness, an indignation meeting of the rate-payers would soon let the views of the section be known. Hence salaries are mere pittance, and it is not possible for the public school teacher, except by ruinous economy, to lay by anything. In such circumstances it is natural for the veteran teacher, who has given his best years for a merely nominal sum to the State, to look to the State for support in his old age. This is the plain logic of the facts. The present method is, doubtless, very unsatisfactory, but it is not so bad as to be past remedy. If the House will not put the fund in such a form as to provide a yearly grant to every worn-out and disabled teacher, and sufficient to keep the wolf from the door, let it make the profession an incorporation, as is done in the case of the lawyers and doctors, with a right to fix a tariff for their work and to regulate admission into and continuance in the body corporate. If this power be granted, we venture to assert that all the evils that now beset the profession will immediately disappear. But if Parliament will not agree to this, then it must be prepared to stop the supply of cheap teachers or to supplement the teachers' pittance by a liberal grant from a Superannuation Fund. If it can be shown, however, that the abolition of the Superannuation Fund would indirectly, as some urge, be the cause of increasing teachers' salaries, we say let it be abolished at once, with of course a due regard to the interests of those who have already contributed to the fund. If the law of supply and demand is a panacea for commercial evils, let the law apply also to teaching.

THE TORONTO PUBLIC LIBRARY.

TORONTO has recently taken a step in educational progress, which though outside the schools, the colleges, and the universities, bids fair to yield as rich fruit as is to be

plucked in academic groves or in the forcing-houses of the primary and secondary schools. On the sixth instant was formally opened in the provincial capital the City Public Library, an institution for the people, where, whatever taste for reading, and habits of study the schools may have implanted in the youth of the land, the means are now afforded of bringing both to maturity, and to the flowering stage of intellectual development. The opening of the Library fittingly signalized the fiftieth anniversary of Toronto's incorporation as a city, and the institution and its equipment form one of the most laudable civic enterprises which recent years have set on foot. Being the cradle of the material life of the Province, there is something peculiarly appropriate in Toronto being the first to found, under the Public Libraries' Act, an institution which shall be of the highest service in advancing its intellectual life. From an early period the city, like many towns in the Province, has had its Mechanics' Institute, and, with the funds at its disposal, has no doubt done much to keep the lamp burning of mental enthusiasm in the student and the artisan. But the old system of voluntary association has happily given place to a system less precarious in its character, and likely to be more efficient in the work expected to be done by such organizations. With the revenue at its command, the Toronto

Public Library will now be enabled to give such facilities for research as will adequately meet the wants of those who will make use of it, and, what is of no less importance, will in its collection of books and comprehensive scope show to the organizers of other institutions what books to purchase, and what to select from in setting on foot similar, though smaller, organizations. In this, as in other things, Toronto must necessarily lead the way, and we think that the successful founding of what is likely to prove a most useful institution will incite enterprise in other towns in the Province, and that we shall soon see every place of importance having its Public Library, and extending to the masses the incalculable benefits of free reading and the means of popular enlightenment. To direct this movement as an educating power of the highest type, that talent may receive the aid it must daily stand in need of, and that our people may live the best lives they are capable of living, the Library will want the counsels of wisdom and the thought and industry of broad-minded, far-seeing, competent managers. The ways of the world too much tend now-a-days to flippancy and idleness, but if the Library system can introduce the needed serious element into minds that are vacant, and lives that are motiveless, a real benefit will be conferred alike upon the people and upon the age. G. M. A.

COMMUNICATION.

To the Editor of the Canada Educational Monthly.

SIR,—With your permission I would like to make some observations suggested by your article on Art Education, in the February MONTHLY, and to point out some hindrances to the proper growth of art in our schools. In the Report of the Minister of Education for the year 1883, will be found an interesting account of the founding of the Ontario School of Art. The vicissitudes of its early struggles in the cause of genuine Art Education, necessitated an appeal for pecuniary help to the

Government, which being insufficiently and erratically given, culminated in a negotiation for the entire expense of the School of Art being assumed by the Education Department. These negotiations resulted in the removal of the Ontario Art School to the Normal buildings, with an understanding and a written agreement that the Ontario Society of Artists should, as heretofore, manage the school, engage teachers, and provide Art instruction in the several branches of the day and evening classes respectively (vide page 171). The representatives of the Ontario

Society of Artists consisted of the President, Vice-President, and seven other members, with the addition of a representative of the Educational Department, viz., Dr. S. P. May.

The representative of the Educational Department diligently, and with consummate tact, organized the school under its new conditions, and has already promoted himself into the position of Superintendent of the School of Art, which feat, however conducive to his own interest, can hardly be said to be in the interest of Art. The gentleman who fills such a post ought of necessity to have some Art knowledge and qualifications, and be selected on account of being able worthily and satisfactorily to fill it, but Dr. May has no such qualification.

The by-laws of the Council of the School of Art are drafted to suit coming exigencies and developments, and were made known to the Society of Artists (who were supposed to have the management of the School) by each member being presented with a printed copy of the same. In former times, and in the first two sessions of the school in the Normal buildings, the teachers as a collective committee examined the pupils' work, without expense to the school; but in these two sessions payment for their services was tendered by Dr. S. P. May. The teachers did the work of examination because of the dearth of capable men for such adjudication. With the advent of the "By-laws," this was done away, and the teachers were eliminated. No

teacher could serve on the Council, and if by virtue of office of Vice-President a teacher had a seat, he could have no vote, nor take part in any discussion on any matter relating to the appointment of teachers or their emoluments, (By-law VII., page 177). All active direction of the school being thus taken out of competent hands, it may well be asked how will the present management of the school succeed? Will the Ontario Society of Artists relinquish their rights in favor of the Superintendent, who, according to By-law VI., is simply the representative of the Educational department, possessing the like powers as to voting and taking part in the discussions and other proceedings of the Council of the school, as the other members thereof. Mr. O'Brien, President of the Royal Canadian Academy, I may inform you, has tendered his resignation as a member of the Council of the Ontario School of Art, "in consequence of the teachers being hampered, and the efficiency of the teaching impaired by the injudicious arrangements and restrictions, and every attempt at improvement being hindered by the representative of the Government on the Board."

Trusting THE MONTHLY will lend its aid in the removal of what is prejudicial to true Art Education in this Province.

I am, yours truly,

RICHARD BAIGENT.

TORONTO, March, 1884.

A TEACHER, wearing a new dress, governs more easily than when the dress is threadbare. In a school with new furniture, clean floors and good walls, days, weeks, and even months, elapse without one word of reproof from the teachers.

CURIOUS EXPRESSIONS.—The following sentence of only thirty-four letters contains all the letters of the alphabet: "John quickly extemporized five tow-bags." Is there a word in the English language that contains all the vowels? There is: "facetiously."

EDUCATIONAL INTELLIGENCE.

THE new Technical and Commercial College, Kingston, is largely attended. It gives instruction in Shorthand, Telegraphy, Banking, Physiology, etc. Its calendar will be sent on application to the Secretary.

At the annual meeting of the Institute of Chartered Accountants of Ontario, held in Toronto on March 7th, Alderman J. W. Johnson, of Belleville, one of the principals of the Ontario Business College, was re-elected a member of the Council. Mayor Mason, of Hamilton, is the new President, succeeding Mr. S. B. Harman, Treasurer of the City of Toronto.

MR. GOGGIN, Head Master of Port Hope Public Schools, has been appointed Principal of Winnipeg Normal School.

A MOTION to erect a new school house in Pickering village was lost by a large majority.

At a recent meeting in Toronto of the Ontario Provincial Grange Hon. Mr. Ross, Minister of Education, delivered an address on educational topics. Mr. Ross stated, among other things, that it was intended to have more attention paid to agricultural instruction in the Common Schools. Desirable improvements in and additions to the Readers would be made with this end in view; and the importance, true dignity, and worth of farming as a calling or profession would be inculcated.

THE friends of education will regret to hear of the death of Mr. A. F. Butler, of St. Thomas, Inspector of Public Schools for the County of Elgin. Congestion of the lungs was the immediate cause of death, although some minor complaints hastened the end. He came from Ohio to Canada in 1863, and taught Aylmer Public Schools for four years. After teaching three months at Fingal, in 1868 he was appointed local superintendent of the Public Schools, which position he held until his appointment, in

1871, as Inspector of Public Schools for the County of Elgin. He then moved to St. Thomas, where he has since resided.

ABOUT a month ago Rev. Principal Davies, of the Toronto Normal School, and Principal MacCabe, of the Ottawa Normal School, received instructions from the Minister of Education to pay a visit to some of the Normal and other schools in the neighbouring States. A full report has been prepared for the Minister of Education, in which improvements in our system are suggested, and a variety of small changes of detail, where they are found to be needed.

THE death of Mr. F. W. Hicks, a greatly respected professor of the McGill Normal School, Montreal, has taken place in the Southern States.

At the recent meeting of the Dominion Grange at Ottawa, the Education Committee reported that: The Committee are aware that farmers are not so educated in their business as to be able to attain the highest financial results, and would advise that text-books containing the elementary principles of agricultural education be introduced into the Common Schools, so as the better to prepare the rising generation for their occupation in life.

CONVENTIONS.

TORONTO.—The first semi-annual meeting of the Toronto Teachers' Association for 1884 was held on Friday, February 29th, in the Sunday School building of Carlton Street Methodist Church. Mr. Samuel McAllister, the president, occupied the chair. There was a large attendance of members of the Association. At the morning session, Mr. J. L. Hughes spoke on the subject of "Mental Arithmetic." He contended that its importance in teaching had not been thoroughly recognized, and that its application should be made more practical. At the conclusion of Mr. Hughes' remarks a general discussion took place on the subject. A comprehensive

paper was read by Mr. J. T. Slater, on teaching writing to senior classes. Miss A. Freeman read a paper entitled "How to direct the private reading of scholars." The paper was very interesting, and contained a good many useful hints. The Association decided to publish it, as it would prove a valuable addition to what has already been written on the subject. During the afternoon session Mr. J. L. Hughes gave an address on "Object Lessons," illustrating the subject by means of leaves, and pointing out the different kinds of veins on leaves from different classes of trees. Mr. J. A. Wismer spoke on the teaching of hygiene, and illustrated his remarks by a class of boys who were present. Mr. J. Boddy read a paper on the monthly reports to the Inspector. He claimed that in consequence of the ambiguous way in which returns were asked for, great injustice was frequently done to schools. The returns from the different schools, which were compared one with the other, were very often made up in altogether different manners. There was no generally recognized rule for computing the average attendance and the percentages. After discussing the various methods of calculating the attendance of scholars, the meeting adjourned for the day.

The closing meeting of the Toronto Teachers' Association Semi-annual Convention was held on Saturday morning in the school-house of Carlton Street Methodist Church. Mr. S. McAllister, President, occupied the chair. A motion was made by Mr. J. L. Hughes, and carried, that during the latter half of the present year meetings be held of teachers of the different grades in the several schools for the purpose of observing the practical working of the school-room, and discussing the best methods practised and their workings in the different grades. The committee to whom was referred the letter from Miss Annie Orchard with regard to temperance instruction in the schools reported that it is advisable in view of the manifest evils of intemperance that special attention should be directed to the subject of scientific temperance in connection with hygiene. They also recommended that if Mrs. Hunt should visit Toronto to lecture on temperance, the Association lend its assistance in making the meeting a success. The committee appointed to consider Mr. Bryant's paper before the Ontario Teachers' Association on the desirability of having a Superintendent of Education and a Council of Public Instruction, reported that it was undesirable to have any change from the present system of having a member of the Cabinet as Minister of Education. Mr. Doane moved the adoption of the report and

spoke in favour of the present system. Mr. Boddy claimed that a necessary consequence of having a Minister of the Crown at the head of the Educational Department was that it was used as a political machine. He moved in amendment to the report, that in the opinion of the Association a Chief Superintendent of Public Instruction would best serve the interests of Education. Mr. Crane seconded the amendment, which was declared lost on being put to the meeting. The report was then adopted. The following officers were elected for the ensuing year:—President, S. McAllister; vice-president, R. W. Doane; secretary-treasurer, R. McCausland. The Executive Committee were elected as follows:—Messrs. J. L. Hughes, W. J. Hendry, Cassidy and McEachren, Miss Williams and Mrs. Arthurs. After passing a vote of thanks to the Trustees of the church for the use of the school-room the meeting adjourned.—*Mail*.

EAST MIDDLESEX.—The meeting opened on Saturday morning, March 1st, at ten o'clock, President Dearness in the chair. There were over eighty teachers present. The Secretary read a communication from Miss A. Orchard, Secretary of the Women's Christian Temperance Union of Ontario, memorializing the Association to co-operate with them in urging the introduction of scientific temperance instruction into the public schools of the Province. After some remarks in praise of the movement, Mr. McQueen moved, seconded by Mr. N. Jarvis, that the Secretary be instructed to reply, expressing the sympathy of this Association in the said work, and informing them that in this inspectorate temperance and hygiene have been placed on the curriculum of studies in the public schools and are taught in the majority of them. Carried. Mr. Jarvis gave an illustrative and amusing address on "Veneering in Teaching." He would divide the subject into two classes, legitimate and illegitimate. He illustrated the latter, and applied it to teaching. He thought it wrong to cripple the minds of youth by storing them with useless knowledge for the purpose of making a show. It was very hard to tell when a teacher was "veneering," but if the teacher really knew the difference between instruction and education he could gradually draw out the mind in accordance with nature. Mr. Smith took up the subject of "Literature." He would cultivate an insatiate desire to know. He would endeavour to have pupils learn the author from his work. Reproduction was of great value. The early introduction of literature would decrease the labour in other subjects, as it, correctly taught, would in-

crease the vocabulary of the child. He then illustrated his method of dealing with the subject. He would teach ideas and words, and strongly recommended the use of the dictionary. Mr. Liddicoatt thought the definition made use of by a child after searching the dictionary was often more difficult than the original. Messrs. J. McLaughlin and R. M. Graham created a discussion about the manner of assigning a lesson in literature. Mr. McLaughlin thought such a work as Gray's *Elegy* was too difficult for public school pupils. Mr. Graham thought the value a teacher gave to teaching literature as a method of educating the mind depended on the assigning of a lesson. Moved by Mr. R. Walker, seconded by Mr. Smith, that our thanks be expressed to those who took part in the programme on Friday evening, and to Mr. Colwell for use of organ. Carried. Afternoon Session—Mr. Liddicoatt took up the subject of assigning a lesson in history. He would assign a lesson, always keeping in view the idea that by laying a platform the pupils had, as it were, guiding lines for their own reading. The details could then be gradually added, it being carefully observed that the whole depended on some original text in the original platform. Mr. Liddicoatt gave a well-worded and instructive address, and exemplified by means of the blackboard. Several questions were asked Mr. Liddicoatt, but he answered all with that happy confidence which he derives from the beauties which permeate his method. Mr. Dearness solved a number of typical questions in arithmetic. Before commencing, he stated that often such questions came up to the teachers, but he did not think it advisable to burden the minds of pupils with such mathematical gymnastics; but it was sometimes advantageous to teachers to master them. Five of the questions out of the six were all dependent on a certain constant difference, the solutions of which were elaborately exemplified. Mr. Dearness endeavoured throughout to place before the teachers the method by which such questions might be done arithmetically. He did not think an algebraic solution necessary if the unknown were represented by a letter. He said the question on discount had been proposed by Mr. Graham, taken from one of the papers for teachers' examinations. Mr. Graham, before proceeding to give the solution, stated that he thought it very unfair to set such questions and then head the paper with "No algebra allowed." The question

might receive an approximate solution by arithmetic, but to give a clear solution involved a quadrate equation. These questions, Mr. Graham thought, were altogether in the wrong place in our school arithmetics. They were distributed throughout the late arithmetics, placed on the market and authorized. They were mere pickings from such works as Todhunter, who dealt with questions in his book under quadratic equations. If we were to teach our pupils good practical business questions, and not waste time trying to reduce something of a difficult nature requiring a knowledge of algebra to reach the comprehension of a youth, much time would be saved. These should properly come up after a more advanced knowledge. The Nominating Committee appointed by the President reported the following officers had been chosen:—President, Jno. Dearness; Vice-President, W. H. Liddicoatt; 2nd Vice-President, Fannie Geeson; Secretary, A. McQueen; Treasurer, W. D. Ecker; Librarian, W. Bell. Moved by Mr. Graham, seconded by Mr. W. F. May, that the report be adopted. Carried. Moved by Mr. Liddicoatt, seconded by Mr. Kerr: That in future the meetings of the Association be held on Thursday and Friday instead of Friday and Saturday. Carried. The motion was warmly discussed. Mr. Liddicoatt thought it was a very inconvenient time to hold the meetings on Friday and Saturday. Many teachers not being able to go home conveniently on Sunday had to leave early on Saturday afternoon, thus proving an annoyance to the essayist. He had noticed it very much this afternoon, and by request of many teachers wished to put the motion. Moved by Mr. McQueen, seconded by Mr. Jarvis: That the Management Committee have power to communicate with West Middlesex Teachers' Association for the purpose of amalgamating with them in conducting promotion examinations. Carried. Moved by Mr. Harlton, seconded by Mr. Walker: That the Management Committee have power to settle accounts contracted at this meeting. Carried. The first question from the Question-drawer was taken up by Mr. Harlton. "A large boy prompted a small one to commit an offence. I punished both alike. The parents of the large boy are very angry that their son was punished. How should I have acted in the case?" Mr. Harlton thought it was justifiable to punish both. Votes of thanks were passed to the press and County Council. Adjourned.—*London Free Press.*

EDUCATIONAL AFFAIRS IN
THE LEGISLATURE OF
ONTARIO

For the information of our readers who may not have had an opportunity to see accounts of the proceedings in Parliament and for future reference we present a summary of events.

January 20 h, 1884.

House met. No mention of educational affairs in the Speech from the Throne.

February 1st.

Mr. Brereton—Order of the House for a Return:—1. Showing the number of teachers in each High School and Collegiate Institute in the Province, for the years 1881, 1882, 1883; 2. The salaries paid to each teacher; 3. The Government grant to each School and Institute.

February 8th.

SCHOOL FUNDS AND GRANTS.

Mr. Wood moved for a Return showing the assessed value of property in each school section for the year 1883; the amount raised in each section for ordinary school purposes, with the rate on the dollar for the same year; the amounts received by each section from the Government grant for the same year; the length of time in said year the schools in each section were kept open; the class of certificates held by the teacher in each section; and, so far as practicable, the area of acres in each section, or generally, about the number of acres in each section.

Mr. G. W. Ross said that the information sought for by the hon. gentleman was not in the Education Department. The only way in which he could get the details required in regard to the school sections would be by sending a circular to each of the school inspectors, asking them to supply the information, and then to compile the returns in the Education Office. He would not be able to supply the Returns in any case for two or three weeks.

February 11th.

Mr Hardy laid on the table of the House the report of the Minister of Education for 1883.

February 12th.

SUPERANNUATION OF TEACHERS.

Mr. Broder enquired whether it is proposed to make any change in the provisions of the law respecting the superannuation of

teachers, with a view to placing it on a more satisfactory basis, as promised by the late Minister of Education.

Mr. G. W. Ross said it was the intention of the Government during the recess to consider the advisability of making a change in the law referred to, with the view, if possible, to have it on a more satisfactory basis.

Mr. Harcourt—On Thursday next—Enquiry: Whether it is intended to introduce the kindergarten in connection with the Model Schools in Toronto and Ottawa, and if so, when?

February 13th.

SCHOOL BUILDINGS.

Mr Gibson (Hamilton) moved for a return showing what, if any, plans of school buildings of various kinds have ever been prepared by the direction of the Education Department for adoption by School Boards; and also showing how far, if at all, any systems of lighting, heating, ventilating, and draining have been approved of by the Department or recommended for general adoption. He said that great good might be done by the Department of Education taking this matter into consideration, and devising what might be regarded as model plans for general adoption throughout the country. He suggested that the architects be invited to send in plans in competition for schools, with a special reference to lighting, heating, drainage, and ventilating. These plans should be examined by a committee, and the best selected. It would then be an easy matter to have lithographic copies of plans kept in the Department for transmission to school boards intending to put up new schools. This plan would have the advantage of getting our schools built according to a principle, instead of on the present hap-hazard system. Something of the kind was needed, because very little attention was paid to the subject of school architecture, neither was the accommodation given the pupils sufficient from a sanitary point of view.

Mr. G. W. Ross said for some years more or less attention had been paid by the department to the subject, and works on school architecture had been distributed among the inspectors. He was willing to admit, however, that much more could be done. He was considering whether the teachers should not be instructed in school hygiene, and steps were being taken to have a text-book on the subject prepared. The suggestion of the hon. member would receive his fullest consideration.

The motion passed.

February 27.

March 7th.

THE "ROYAL" READERS.

SCHOOL GRANTS.

Mr. Broder asked whether any instructions have been given by the Department of Education as to the use of any of the text-books known as the "Royal Readers" in the Normal and Model schools, and if so, when such instructions were given. Whether any report or recommendation was asked for or received from the Principals of such schools, or either of them, with reference to the "Royal Readers," and if so, from, or by which of them? Whether it had previously been the practice of the Department of Education to give instructions as to the text-books to be used in the Normal or Model schools?

Mr. G. W. Ross said instructions had been given by the Department as to the use of the text-books in the Normal and Model schools. They would be found in page 7 of his Report of Education. They were given on the 25th July last. No report or recommendation was asked for or received from the Principal of such schools. It was the duty of the Department, as laid down by statute, to supervise or prescribe the text-books used in these schools.

Mr. Metcalfe moved for a return showing the names and residences of the members now composing the Central Committee of Examiners. The dates of their several appointments. Copies of all Orders-in-Council or departmental regulations defining the powers and duties of the committee. Copies of the minutes of the proceedings of the committee, except those relating to examinations since first day of January, 1882. Copies of all recommendations made by the committee to the Minister of Education or the Government, upon any matter upon which they have made recommendations.

March 5th.

CO-EDUCATION.

Mr. Gibson (Hamilton) moved—"That inasmuch as the Senate of the Provincial University, having for several years admitted women to the University examinations and class lists, and inasmuch as a considerable number of women have availed themselves of the privilege, but labor under the disadvantage of not having access to any institution which affords tuition necessary in the higher years in the course: in the opinion of this House provision should be made for the admission of women to University College." After a lengthened and exhaustive discussion, the motion was carried on division.

Mr. Baxter moved for a Return showing the total number of school sections in the province in which the Government grant has been withheld since 1880; giving the reasons therefor in each case, and copies of any correspondence in the Education Department bearing upon the subject. He said there were some cases of hardship, and the Minister of Education should exercise very great caution before withholding any grant. The people or trustees should have some opportunity, in cases where the population is decreasing, to lay their case before the Department.

Mr. Ross (Middlesex) said sometimes it was necessary to withhold the grant, but he hoped the power was always exercised with caution.

The motion carried.

SCHOOL BOOKS.

Mr. Creighton moved for copies of all correspondence or communication since first of January, 1882, between the Minister of Education, or any other member of the Government, or departmental or other officer thereof, and any other person, or company, with regard to text-books for use in the provincial schools or the authorization thereof, and with regard to the withdrawal of any such authorization, or the adoption of one uniform or composite series, or otherwise, in regard to the use of text-books in the provincial schools. Copies of all Orders-in-Council, or departmental regulations, with regard to the powers or duties of the Public School Inspectors as to changes in the text-books in use in the schools within their inspection districts, and of all circulars issued by the Department of Education with reference to such powers, or duties, or the authority under which changes should be made.

The motion passed.

March 10th.

SUPERANNUATED TEACHERS' FUND.

Mr. McLaughlin moved for a return showing in each and every year since 1871, inclusive, the amount of money paid by the teachers of Ontario into the Superannuated Teachers' Fund; the amount paid out by the Government to superannuated teachers; the amount in each year paid out in excess of the amount paid into said fund; the total amount paid into said fund; the total amount paid out of said fund, and the amount of the latter above the former. He stated that a

change in the present system was needed, as they had reached a point when the fund involved a loss to the province of \$40,000 a year; that the total amount paid out was \$438,736; paid in, \$167,390; total loss during the twelve years, \$272,335. He thought hon. gentlemen would agree with him that this burden on the finances of the Province should not be increased. Nowhere on this continent outside of Canada could they find such another system in vogue. He would not advocate any system which had led teachers, or compelled them, to pay a certain amount of money into the fund, and prevented them from enjoying it. What he thought should be done was that the door should be shut against any more teachers paying into the fund and becoming in future a burden on the province. He trusted that the Minister of Education would give the matter his serious attention.

Mr. Ross (Middlesex) said he had given this subject some attention, and hoped during the recess to obtain the views of teachers on it. He well recollected the time when the fund was instituted, and the views advanced in favour of it. By it they were made civil servants, on the ground that the teacher's salary was very low, that he was a public benefactor, that he was spending his time more in the interests of his Province than in his own interests, and by making this allowance it was thought an appropriation would be made which would serve him when he was no longer able to act as teacher. He thought it was a mistake for them to consider the teacher as a civil servant. The profession was one, although the salary was not a high one, in which they should endeavour to cultivate a higher feeling of independence than was usually attached to civil servants. (Hear, hear.) The question of abolishing the fund was beset with many difficulties, and two views of the matter immediately presented themselves. One was that the fund should be self-sustaining, but if that view were adopted it would be a heavy tax on the profession, and the payment would have to be greatly increased. At present the teachers paid \$4 a year, and it would be needful at once to increase it to \$16, and eventually to \$20. If they considered the question of the abolition of the fund they would not have to overlook those who were sharing in it now, and the refunding to those who were not yet claimants upon it. The amount due to those who were not yet pensioners was about \$100,000.

Mr. Meredith asked for the amount withdrawn from the fund.

Mr. Ross said the total amount withdrawn was \$22,586, and there now stood to the credit of the teachers the sum of \$140,000, but as many had left the country it would be reduced to the \$100,000 he had previously mentioned. He was not prepared to say exactly what he would do, or what he thought best. From the information he would no doubt receive during the recess he thought next year he might be able to bring down a scheme to make it self-sustaining or else would lead to its abolition.

Mr. Meredith agreed with the last speaker, that the fund should not be continued if it could be avoided. He concurred in the observations of the member for West Durham, that so far as that House was concerned there was no necessity for grafting on the provincial system any scheme of superannuation. He thought it was far better to pay those in the employ of the province as they should be paid, so that they might be enabled to save something against a rainy day, rather than that they should be dependent on the Province for a gratuity. He trusted that the discussion would result in something being proposed next session that would tend to relieve the Province of a liability of this kind.

Mr. Mowat said that the analogy afforded by what was done at Ottawa had probably led to the institution of this fund. He thought that if the teachers had not received this allowance some of them would actually have been starving. Nobody could dispute the fact that teachers' salaries were so low that nothing could be saved from them, and it would be a lamentable thing if those who had spent their lives in performing a duty, the most important, perhaps, in the State, should be deprived of this assistance. He trusted that the Minister would be able to arrive at some scheme which would meet the object of the fund without increasing the burden on the Province.

Mr. Harcourt suggested that to the motion the following words be added:—"And the amount paid out to teachers who have withdrawn from the profession during the same period." He said he thought if the Minister of Education were to address a circular to the teachers that fully ninety per cent. of them would be in favour of the abolition of the fund.

The motion, with Mr. Harcourt's addition, was adopted.—*Mail and Globe Report.*

TO OUR READERS.

1. Matters connected with the literary management of *THE MONTHLY* should be addressed to The Editor, P. O. Box 2675. Subscriptions and communications of a business nature should go to The Treasurer, Mr. Samuel McAllister, 75 Maitland Street, Toronto.

2. The Magazine will be published not later than the 15th of each month. Subscribers desiring a change in their address will please send both the old and the new address to Mr. McAllister not later than the 15th of the month. Subscribers failing to receive the magazine after the 15th of each month, should communicate at once with him.

3. The Editor will be glad to receive school and college news, notices of meetings, and concise accounts of conventions.

4. Correspondence on all questions relating to education is solicited. No notice will be taken of anonymous communications.

5. Subscription, \$1.50 per annum, post paid. Club rates—Five copies per year at \$1.25 each, ten copies at \$1.20, twenty copies at 85 cents, net, post paid. Send money by registered letter or P.O. order. Be careful as to the address. Letters intended for us sometimes go elsewhere, and are not recovered without delay and annoyance.

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9. If you are in arrears for subscription, please remit at once. We again thank those of our subscribers that have paid promptly.

Messrs Houghton, Mifflin & Co.'s new catalogue containing portraits of authors, with a description of their works, is very interesting to all lovers of good literature. It will be sent free on application to the publishers. Boston.

One of the best programmes of teachers' associations that we have lately seen, is that of East Middlesex. In addition to the programme proper a list of officers and members with their P. O. address, a statement of the municipal grant for January 1884, and the names of the winners of diplomas at the High School entrance examinations, with other timely information are given.

The Pupil's Companion for home and school reading, [C. W. Hagar, 637 Broadway, New York: 75 cents a year] is now in its second year. It is a carefully planned and well conducted school paper. It contains poems, stories, articles on history, ancient and modern, animals, countries, industries, the news of the day and many other things interesting to young people presented in a bright and attractive manner. It is admirably illustrated.

Mr. THOMAS LAURIE, 31 Paterson Row, E. C., sent us an educational circular containing his net price list of books on the principles and practice of Education. Many of the books are now out of print, and only a single copy of each can be supplied. Inspectors and teachers forming professional libraries should not fail to see his various catalogues.

We are in receipt of the Announcement for 1884 of the *Correspondence University*. The *Correspondence University* is an association of instructors formed "for the purpose of enabling students to receive at their home systematic instruction at a moderate expense, in all subjects which can be taught by means

of correspondence, whether the studies be collegiate or graduate or professional, or preparatory for the higher institutions of learning. The secretary is Lucien A. Wait, Ithaca, N. Y.

We are indebted to Mr. Inspector Daerness for a copy of his address on School Hygiene delivered at the London Sanitary Convention. We hope to be able to reproduce it in *THE MONTHLY* at an early day.

The Dominion Sanitary Journal (\$1.50 a year, Edward Playter, M.D., editor, Ottawa); *The Canadian Pharmaceutical Journal* (\$1.50 a year; E. B. Shuttleworth, ed. tor, Toronto) always contain much matter likely to be useful to the wide-awake and progressive teacher.

Our clubbing rates have been very welcome to many of our readers. It is not yet too late for others to take advantage of them.

The Book Buyer (10 cents a year, Chas. Scribner's Sons, New York) and the *Literary Bulletin* (50 cents a year, D. Appleton & Co., New York) are very helpful to all that wish to know what the new books are and what the critics say about them.

Littell's Living Age (Weekly, \$8 a year, Littell & Co., Boston) as usual contains the cream of serial literature. Among the recent papers likely to be interesting to the profession we may mention *The Uncertainties of Science* from *The London Quarterly*, *The True Story of Adam Bride*, *Sunday Magazine*, *Restoration of Men of Letters*, *All the Year Round*, *Christianity and Politics*, *The Spectator*, *The English Church in the Eighteenth Century*, from *The Quarterly Review*, is especially interesting to all students of history.

AFTER twenty years experience of the *Eclectic Magazine* (\$5 a year; E. K. Pelton, publisher, New York) we turn to it every month with fresh pleasure. The fine paper, the large clear type are especially grateful to eyes that have to do much reading. There are magazines and magazines to suit all tastes, but there is not in our opinion anyone so suited to the intellectual teacher as *The Eclectic*. It puts him in possession of the thoughts of the best intellects of our time. The Literary Notices, the Foreign Literary Notes, and the Miscellany, always show fine literary taste and workmanship. Take our advice, young teacher, and read both *The Living Age* and *The Eclectic*, and do not spend all your spare time on the newspaper.

Many friends of Mr. G. Mercer Adam, late editor of *THE CANADA EDUCATIONAL MONTHLY*, will be glad to know that he has returned to Toronto and has entered into business relations with Messrs Williamson & Co., late Willing & Williamson, King St., Toronto. The teaching profession and the public will, we feel sure, be delighted to see Mr. Adam once more among the books, and will find him as of old the most admirable cicerone in literary pursuits.

Would you, dear reader, kindly read our "Notice to Readers." It may have some special interest to you.

The Hamilton Board of Education has adopted for use in the Public Schools the *Canadian Accountant*, the well known text-book of Ontario Business College, Belleville, now in the fifth edition. An American book was formerly used.

The Century for March is on our table, with its magnificent frontispiece, a striking full page portrait of "The Great Tactician," Von Moltke, and 59 illustrations of the usual high order adorning its pages. In *Old Public Buildings* in America, and *The Cruise of the Alice May*, we have some interesting sketches. *The Average Man* and *Cable's Dr. Sevier* are continued. Among the *Open Letters*, one from "The Author of the 'Bread Winners,'" does not give any hint as to the identity of the author, save that he is a New Yorker and a working man, and that this is his first venture.