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THE CANADA EDUCATIONAL MONTHLY.



THE CANADA
EDUCATIONAL
MONTHLY.

AND

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THE CANADA
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AND SCHOOL MAGAZINE.

JANUARY, 1891.

ON CULTIVATING AN OUTSIDE INTEREST. *

BY PROF. W. J. ASHLEY, TORONTO.

Ladies and Gentlemen of the Normal School:

NO one can stand here to speak to you this evening without some sense of the gravity and importance of the occasion. After an all-too-brief period of learning and training, you are going back to the towns and country districts of Ontario to undertake the highest of all tasks—the education of the children. With many of you, maybe, this work will occupy a few years only of your life, before you turn to other duties; but with some at any rate it will be a life work. How long it may be your occupation, circumstances will determine; but whether it is for many years or few, the responsibility is grave and the outcome of your activity such as cannot be measured. To-night you receive, as it were, your ordination for the ministry; and as in some of the churches those who are about to enter the ranks of the clergy are asked whether they are moved by the Spirit to take upon them that

office and ministration; so I trust that most of you feel an inward call to your mission. I do not expect any impossible virtue; it is right that you should be influenced by reasonable considerations of self interest, or by honourable ambition. But still I am sure you do not regard your profession as a mere shop keeping—as merely the handing over of so much knowledge in return for so much salary. I am sure you have some love for children, some reverence for their happy ignorance of evil, a desire to give them something better than mere ability to read the newspaper and keep accounts—to help them rather to grow up into honourable and high-minded and self-respecting men and women.

But with whatever enthusiasm you may enter upon your career, there is a danger which stands in the way of all of you, of all of us who are engaged in teaching; and it is all the greater danger because it is hardly realized. It is the danger lest our daily work should become a routine, so that while we perform every part of it with

*An address at the close of the Normal School Session.

punctilious care, we lose interest in it. Then the education system comes to be regarded as a great machine, which monotonously goes round and round, grinding out each year its finished articles, while one's own life seems to have lost all its individuality, all its power of free initiative. With some I have known, the evil goes further than this; there grows up an absolute loathing for the daily task, a fierce repugnance which has again and again to be battled down. And even where the reaction is not so grievous, do we not all know how weary an old teacher often becomes? how lifeless? how dulled to all new thought and emotion? It is the remembrance of this that has determined what I shall say to you to-night. There is no need that I should exhort you to do your duty; you have certainly heard that often enough before, and from men whose words carry more weight than can mine. The one piece of advice I would give you is to *keep your minds fresh*. Try not to let your mind get into a groove, doing, half mechanically, the same work time after time without any new thought, any bright sympathy and interest. I know this is easier to say than to do. Much educational work is necessarily an affair of routine; and the brain, like the hand, cannot altogether help being moulded by what it works in. But if one part of your mind—I don't speak as a psychologist, and only use rough-and-ready terms to convey my meaning—if one part of your mind has to become more or less stiff and rigid, aim at keeping some other part of your brain in active movement, so that there may be at any rate a chance of your set ideas and rigid routine being broken in upon from time to time by forces from without.

But how is this to be done? The answer I would give is this: *Cultivate some one intellectual interest outside*

your professional work. I once heard teachers advised on an occasion like this to devote their spare time to studying works on *psychology* which would enable them, it was said, the better to enter into a child's thoughts; and to give whatever minutes they had over to carefully reading the educational journals, so as to keep themselves abreast of the latest methods in teaching. Such advice I cannot help regarding as most mistaken. Comparatively few teachers have any considerable aptitude for philosophical study; if they have, let them give their attention to it by all means; it will to *them* furnish exactly the additional intellectual interest that is desirable. But even when he has a decided bent for philosophy, the average teacher is not likely to gain any direct guidance from it as to the way in which he should teach. Success in teaching does depend somewhat on method: even if it were only to know how to keep in order a large class, the young teacher requires some training; and that is why in a Normal School a good deal of attention is given to method. But success in teaching is still more a matter of sympathy, a matter of insight,—unconscious, but none the less fruitful in results. And human nature is so constituted that every part of it needs to lie fallow from time to time. Joy is all the keener after an interval of sorrow; you can run all the better if you are occasionally able to sit down. And so with teaching. A teacher who has a natural fund of sympathy with children will be able to enter all the more easily into their ways of thought, if he or she for some part of every day is not thinking about children and their minds at all.

Somewhat the same is true about educational journals. They are very useful in their place; I, myself, try to keep up with a whole pile of economic reviews every quarter. But if I am

to do my own work with any vivacity, I know that I must have seasons when nothing is farther from my thoughts than political economy. So with you. * You are more likely to retain zeal and pleasure in your work if from time to time you manage to forget all about books and examinations and methods and teachers' conventions, and even the Education Department itself.

Where are you to find this outside interest? Here the only rule is to *follow your bent*. Let it be botany or geology or any of the sciences, if, after choosing one of them and doing a little work at it in your spare hours, you really find that you care for it. But do not think that it is a fine and virtuous thing to take up geology, for instance, and then pretend to stick to it when you cannot honestly say that it interests you. For then it will become a task, and lose all the value it was intended to have, as a vent for the free play of your own thought.

Possibly, however, some of you are like me—altogether without the slightest taste for natural or physical science in any of its minuter aspects. Then we have the great, the scarcely exhaustible field of literature to fall back upon. I use the term *literature* with some hesitation; for I know what image the word brings up in many minds. It suggests names, dates and those dreadful things "chief works," to be learned by heart and repeated at an examination in the same way as the dates of battles and the lists of imports and exports. What I mean is not reading *about* authors, but the reading *of* authors. And you must not think that you must begin with poetry, and at once tackle Shakespeare and Milton. Poetry is indeed higher than prose; it affords a means of utterance to thought and emotion more elevated, and yet in a way more direct, than prose. But there are very few people

who really care for poetry. They like the jingle of rhyme, and that is all. After all the school poetry we have to learn, it often will do us no harm to have a season of fallow for a few years. Turn to prose. And here the rule I would lay down is not exactly, follow your own bent; but *follow it within the limits already drawn by the judgment of competent readers*. Many a book is just as bad and demoralizing as a sensational newspaper account of a crime; it does not improve a narrative to bind it in book form. But if you take novels, you all know that Walter Scott, Jane Austen, Thackeray, Dickens, Charlotte Bronte, Mrs. Gaskell, George Eliot, Nathaniel Hawthorne stand out from the crowd of lesser English writers; and without troubling yourself about those who are on the boundary line of first importance, you can surely find among these some two or three that you can enjoy. Never mind about useful information; don't look up names and words in a dictionary; but just lose yourself for the time in your author's story; until you begin to breathe the air of the Highlands with Scott, to know your way about London with Dickens, or about Salem with Hawthorne. Or if you care not for fiction, or wish for a change, take what often comes very close to it, the literature of travel. Sometimes one feels one has hardly sufficient mental energy to throw oneself into the fortunes of any imaginary group of persons, and yet we want something which will carry us away from our immediate surroundings, and interest us in other ways of life. Let me mention two books very different that have recently given me the most peaceful of pleasant hours, Kinglake's "Eothen," describing a tour in the East without any of the unreal sentiment which most travellers think it their duty to pretend they feel in historic scenes; and Borrow's

"Bible in Spain" where we hobnob with gypsies and smugglers and rebels with the utmost equanimity. Or take Biography. If I mention a few recent biographies as they occur to me, you will see what a wide range you have here. There is Trevelyan's "Macaulay," and the life of Kingsley by his wife, Miss Lonsdale's life of Sister Dora, Mrs. Gaskell's life of Charlotte Bronte, Stopford Brooks' "F. W. Robertson," and a score of others.

But I did not intend to leave poetry out. Only you must remember this, that there are some poets who cannot be enjoyed save by those who already possess some degree of culture, and others who cannot be understood, save by those with some experience of life. Wordsworth has some beautifully simple lyrics; but the charm of his poetry as a whole is for those who have already passed through their first youth. The main thing is to be honest with oneself; if you cannot enjoy some poets, try if there are not others that will have a voice for you. Browning is unintelligible, you say, then read Mrs. Browning; you do not appreciate Matthew Arnold, then read William Morris; you cannot follow Tennyson's "In Memoriam," then read the "Idylls of the King." Somewhere in the fair domain of literature you surely can find a corner where you can be at home.

I have no time to dwell longer upon this my one piece of advice. You will see that it is of wide applicability. If you cannot take an interest in physical or natural science, or in literature, you may, perhaps, in history, in philology, or

in the adjacent fields of ethnology. There is much to be done before we can form to ourselves a satisfactory picture of the early history of man on this planet and the beginnings of civilization, and right at your doors you have, in the relics of various stages of Indian life that have passed away, the material from which you can do your own share in reconstructing the history-b. fore-history of mankind.

This is a continent where men and women are only too practical; where the one test applied to every proposal is, what is its use? And so to-night I might, if I had liked, have argued that it would be immediately useful to you to have an outside intellectual interest; that the reading of good literature would enable you to form a good style, and so get on in your profession; that if you worked at geology you might discover nickel and develop the resources of the Province. But I do not dwell upon any of these considerations. I would give the same advice were I absolutely certain it would never in the least improve your worldly position. I make the suggestion simply as a means of keeping your minds fresh. But then it will react upon your work. A teacher who can bring to his class a mind refreshed will teach all the more brightly, all the more persuasively. The longest way round is often the shortest way there; and you will probably do better for your school in the long run if you often forget all about it—not in petty gossip or frivolous amusement—but in some pursuit which takes you out of yourself and nourishes your sympathies and imagination.

YOU are disappointed. Do you remember, if you lose heart about your work, that none of it is lost; that the good of every good deed remains, and breeds, and works on forever; and all that fails and is lost is the outside shell of the thing; which, perhaps, might

have been better done, but, better or worse, has nothing to do with the real spiritual good which you have done to men's hearts, for which God will surely repay you in His own way and time.—*Charles Kingsley.*

INTERPRETATION OF POETRY.

BY M. F. LIBBY, B. A., ENGLISH MASTER PARKDALE C. I.

PROTRACTED discussions between men of antagonistic religious and scientific creeds sometimes arise from fundamental differences of mental constitution and of education; but frequently they arise merely from misunderstanding of terminology and proposition. How many bitter and rancorous debates might have been averted by a mathematical precision in the definition of terms to be used.

Owing to a wise administration, quite alive to new methods of education, the schools of Ontario have recently made great and gratifying progress in the study of English. The Universities are giving prominence to the study of the language of Shakespeare and Tennyson, with results that seem to warrant a further extension of the English Department. Perhaps a more generally admired movement never affected the curriculum. There are vague rumours that some slight jealousies exist between the friends of English and the friends of Natural Sciences, or between the moderns and the classical men, but even the fear that the new study may encroach upon Greek and physics is magnanimously forgotten in the thorough approval of an effort to push the claims of our own tongue.

It is not surprising that the growth of the English department has led to many views of the best methods of teaching literature and the science of language. The rule that the pupil must do what he can for himself has been questioned very little and there has been a strong reaction against books of second-hand criticism and histories of literature. There is a desire that students shall *learn to read* in the best sense of the word, and that they shall read extensively enough

to acquire by their own efforts a familiar acquaintance with our authors, their minds, and their modes of expression.

At present High School pupils learn to read with thoroughness and appreciation; little time is given to the history of literature; the extensive reading which is to bring the wide familiarity with our great writers is left to the University course, or to the student's efforts for himself. I cannot avoid the conclusion that in consideration of the number of High School pupils who never proceed to a college course it would be wise to add to our secondary course a Literature Primer such as Stopford Brooke's, to serve rather as a reader's guide than as a work of criticism of history. In our Collegiate Institutes such a primer could be mastered in one of the junior forms, and the results would surely be of the greatest worth. The reaction against the old use of Collier and Craik has been extreme. But this is a minor matter, and certainly the work of our masters is to teach boys and girls to read thoroughly well. The purpose of the present paper is to add something to the flood of light that has been thrown on the subject of literature teaching by answering some of the questions involved in that great and all-important question, What is good reading?

There are still wise and learned educationists who object to minute analysis of a poem, and advocate a broad general discussion of its meaning. Is it possible that remembrances of grammar lessons on Milton, and grammatical analysis of Hamlet's soliloquy have a distinct connection with this opinion? Some remarks I have recently heard point to the con-

clusion that many who oppose minute criticism think such work has to do with the grammatical vivisection of poetry. Now I know I speak for most of my colleagues when I say that *grammatical questions are never mentioned in literature classes*, and that any who oppose our methods on the assumption that we parse and analyze words and sentences, may rest in the assurance that the last eight years' work in this province has entirely banished that outrageous system of instruction. When we speak of minute criticism, we mean a close and searching investigation of the meaning (intellectual and emotional) of the poet, and an endeavour to follow the mental process by which he pursued his subject and clothed it in words.

Under the impression that nothing would do more to convert our friends who oppose minute reading than a familiar acquaintance with our work, I shall endeavour by a few examples to illustrate what I understand by a term which has been much discussed.

The best way of learning to love and appreciate flowers is to study them. "Ah, yes," says one, "but not to pull them to pieces, to cut and split and destroy them!" Now this is a nice question, which perhaps we cannot decide for any but ourselves. Is it not possible that a man of scientific mind finds an *æsthetic* delight in scientific process—even *his* highest delight? In that man the analytic and the *æsthetic* are one, reconciled. Some have told us that art has nothing to do with morality, yet there can be no question that in some natures the *æsthetic* and the moral are reconciled, identical in fact. But remember no one now advocates tearing a poem to pieces in a merely botanical spirit: to study a flower may be to gaze at it tenderly but closely, and to many cultivated natures only the poem that will bear the most critical scrutiny will bring the com-

placent pleasure of *æsthetic* satisfaction. Many even doubt their own good taste, and refuse to gorge themselves with what they suspect to be delicious only, because of a coarse palate. Certainly the top gallery applauds a crude piece of platitudinous moralizing or a tinsel sentiment, while the parquette smiles at the playwright's trick, if some cherub up aloft gets it into his head that the playwright is making a fool of him, why should he go on applauding? Now in school we are engaged in convincing pupils that they must learn to look closely, learn to see the flaws and crudities, not to take mere Brummagem for jewels of the rarest quality. Which of us can be sure of taste? Are you quite certain you couldn't be imposed upon by rubbish if it had the forgery of a great name attached to it? This, then, is what I mean by minute criticism—such a method of reading as will enable us to tell the difference between precious and worthy poetry, and verse of a commonplace or flashy kind. Grammar has nothing to do with this. Indeed this best work in literature can hardly be tested by examination papers of any kind. Honest study will bring different conclusions in different minds: indeed if there were no spurious admiration the *quot homines tot sententiae* principle would be most strikingly illustrated in art. But examinations will test familiarity with prescribed texts and careful balancing of expressions, though perhaps very little more.

Let us compare the minutely critical method as generally understood now, with the broad and general method on the one hand, and with the perfunctory time-killing, parsing-and-analysis method on the other. At present I shall take only a short extract or two and ask questions on them in the three methods. In another paper I shall endeavour to show how the minute method may be ap-

plied to a whole poem, in the hope that this effort may give those outsiders who are interested a glimpse into our very school-room work, and that it may give assistance to any teacher who may be beginning—and indeed which of us is not?

Let us first look at a well-known quotation from "Macbeth":

Out, out, brief candle!

(Old method):

1. What kind of sentence is this? Is *out* an adverb or a verb? Give Abbott's rules for omission of verbs of motion in Shakespeare.

2. What is the relation of "candle"?

3. Give rules for use of exclamation points.

(General-meaning method):

1. What does Macbeth intend to convey by this exclamation; express his meaning in your own words.

(Minute method):

1. Give a literal equivalent for this figurative expression. Give the literal and the figurative language in one sentence, the latter as a formal comparison.

2. What mental picture corresponds to the words of the passage?

3. Why is *out* repeated?

4. How does the expression harmonize with (fit) the thought and feeling?

5. What do you conceive to be the effect of changing *brief* to *short*? *candle* to *taper*?

6. What suggestions do you get from the putting out of a candle? How do these affect the emotions?

The only objection of any apparent weight that has been urged against this method by those who understand it is that it takes too much time. But this is not a sound objection; to read one play in this way is to *learn to read* Shakespeare; it would take nearly as long to read him by any other method and the reading would be less thorough. Some urge that Shakespeare

wrote without balancing words in the way indicated, that "he just wrote naturally"; and hence that it is a false method which gives reasons for choice of expression, and which develops metaphors in directions that the poet never thought of. A sufficient answer would be as in any other science it is a *fact* that S. wrote these words and our duty is to account in some reasonable way for the phenomena. Should we however study expressions of poets *less* minutely because poets are so far above us that they write with unconscious perfection what the utmost efforts of our art would not enable us to equal? Surely their intuitions require all the greater thought. If S. did not see all the finepoints of his work it was not because he wouldn't have recognized them but because they were too much himself, his very essence, to become objective considerations. He says: "We are such stuff as dreams are made on" he didn't say "such material"; he never even thought of the word, but does his unerring choice seem less or more astounding because he "just wrote naturally"? We cannot hope to become poets by minute study but we can learn to appreciate in no other way; and surely to appreciate poets is to do the best possible for our own literary cultivation.

But let me hasten to conclude with another comparison of the minute method and the broader treatment. Bryant in an inimitable passage says in an invocation to the wind of night:

Go, rock the little wood-bird in his nest,
Curl the still waters bright with stars, and
rouse

The wide old wood from his majestic rest,
Summoning from the innumerable boughs
The strange deep harmonies that haunt his
breast.

Can any broad treatment bring out the delicate and graceful beauties of this inspired passage? What tender and subtle analysis is required to put

clearly before a child the mental pictures that Bryant's eye, in a fine frenzy rolling, must have seen when he wrote *go. rock, little wood-bird, curl, still waters bright with stars, rouse, majestic rest, haunt?* And how a child's mind loves sensuous poetry; it needs a child's heart to know that the poet said *little* because the bird was dear to him rather than because it was small, and that the poet was thinking of a mother when he said *rock*. And does it not require minute reading to see what *harmonies* conveys to us? The poet has observed that while a great multitude of merely human and artificial instruments need almost divine skill to give forth harmony, the myriad sounds of the woods at night, rustling leaves, restless birds, chirping insects, beasts of prey, running waters, creaking boughs, are all in tune and have no discords for his ear. All nature's sounds and colours are harmonized, so fitted are we to the world in which we live.

This is what we mean by minute reading. We know no better way,

indeed no other way, and we work in comparative trust that we have a method by which a child may learn to read, as the author wrote, and what the author wrote so far as the child's capacity may permit; and surely this is good reading. The consummation of a perfect education is to read well, says Thring; he does not imply that a defective voice or a clumsy figure would prevent good reading; indeed he mainly means the appreciative reading to one's self, which is the foundation of all reading aloud worthy of notice. It would seem to be an error to divorce reading and literature or to lead a pupil to think that literature studies have any purpose but learning to read, in both senses. It is the pupil who sees what the poet sees, thinks what the poet thinks, and hence feels what the poet feels, who reads what the poet wrote; and as certainly as art is long, as certainly as genius is infinite patience, so certainly must study of art and of works of genius be minute and patient and prolonged if they would be adequate.

CULTURE AS AN ELEMENT IN EDUCATION.*

BY EDWARD HAGARTY, B.A., HEADMASTER HIGH SCHOOL, MOUNT FOREST.

PROBABLY no subject of public importance receives so much attention and awakens so much interest to-day as education. Politicians, clergymen, the press, the people and educators themselves fill the air with their discussions and their conflicting theories regarding this important factor in the life of civilized society. The fact that interest in the subject is so wide-spread is one that ought to afford gratification to those who have

the welfare of education at heart. Conflicting theories may be advanced, wild criticisms on existing methods passed, and still wilder remedies suggested, but amidst all this confusion, there is evidence of a general desire to do justice to the subject and not allow education to become inane through indifference or obsolete through neglect. It is our duty as teachers to turn this interest to good account, to inform ourselves thoroughly of the trend of public opinion; if we find it wise, to encourage it; if unwise, to correct.

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My present purpose is to bring before the association a question on which a great deal has been said of late, and on which I believe a very erroneous public sentiment is being formed. I refer to the loud demands we hear on every side for what is styled more practical training in our public schools and in those schools immediately bearing on their work.

My own contention is that the programme is sufficiently practical as it is, that what is needed is not more of the practical, but renewed energy, on the part of the schools towards intellectual, æsthetical and moral culture. "The age is a practical age" say the apostles of utilitarianism. "Dollars and cents rule the day, and man's chief or only concern is with the hard facts of existence as experienced in his struggle for his daily bread." Yes, it is a practical age—dollars and cents do rule the day, and only too true is it that the facts of existence are exceedingly hard, through man's perverted obstinacy in making them so. And yet our schools are to be made the medium of hardening existence, still further of increasing the callous materialism of a materialistic age, by familiarizing the impressionable minds of the young with the various lessons of doing, making and contriving. It is not enough for the man, on taking his stand alone amid the giddy vortex of toiling humanity, to find that henceforth all the powers of his life are to be monopolized in one continuous strain of doing, being and suffering, with no opportunity for exercising those faculties for higher intellectual enjoyment with which, as a rational being, he is endowed, but the very desire for such exercise, the very tendency of thought and feeling to assert themselves in a sphere of their own, the barest possibility of human nature revolting against the self-imposed tyranny of incessant, all-absorb-

ing and soul—darkening toil must be stamped out and effaced forever by that very agency, planned and intended for developing the highest faculties of the human soul. "But," say some, "this is exaggeration; no one proposes to exclude intellectual culture from the curriculum of our schools. It is merely proposed to add more of the practical." But with the present limited opportunities of the teacher to develop mental power and refine the tastes of his pupils, I say to crowd in more of the practical would be to reduce to *nil* the influence of the school in the direction of the former. Without delaying further over this point, I shall submit for consideration two reasons why the demand for a greater amount of practical instruction in the schools should not be acceded to.

1. There is no time for it.

2. It would only serve to confirm one of the evil tendencies of the day.

It is the duty of the state-aided school to develop the future citizen, the future man or woman as a member of society. This development, I think, can be accurately described as culture. In order that society may be in a healthy condition, its individuals must be intellectually strong, sympathetically inclined, and accustomed to act with ease in accordance with the rules by which society, like any other organism, is governed. Moreover, its members must be happy—not with a sordid, selfish happiness centring in their own individual efforts to exist; but with that happiness that adds intellectual joy to their daily labour and puts them in harmony and sympathy with their fellow men. Ruskin says, "It may be proved with much certainty that God intends no man to live in this world without working: but it seems to me no less evident that He intends every man to be happy in his work."

It is the duty of the school to

furnish a man with all these qualifications for exercising the functions of citizenship, not to fit him for this or that special mode of earning his living.

The all-round development of the man embraces the following :

1. Mind culture—the power to think.

2. Heart culture—the power to feel.

3. Energy culture—the formation of proper habits of thinking and feeling, the disciplining of the faculties to energize in the direction in which logical thought and proper emotion would naturally impel them.

True culture will manifest itself in a tendency to realize as fully as possible a perfect ideal of thinking, feeling and acting.

1. What is involved in the development of the power to think? The mental perception of truth, the power to discern the facts of existence in their logical bearing one upon another, the knowledge of cause and effect; to know, so far as the human mind is given to know, "What is," and "Why it is," to grasp analogies or corresponding truths, to classify facts according to these analogies, to state the general principles involved therein. In short, intellectual culture means the readiness of the mind to admit knowledge and to store it away systematically for future use. I now come to the cultivation of the heart (and on this I purpose having the most to say). It is not sufficient to know the facts of existence; we must *feel* them. It is this heart-culture that to many students of human nature appears so sadly lacking in the world to-day. In what does it consist? In the power to recognize and the soul to feel whatever of beauty comes in our way. The beauty of the far-off heavenly melodies of the spheres as we gaze on the summer evening sky. The exquisite blending of the hues in autumn foliage. The beauty of the various sounds in

nature—the carolling bird—the babbling brook—the rustling leaf—the beauty of moral behaviour. Yes, the beauties of sight, of sound and of human intercourse—all the various manifestations of harmony, the eternal fitness of things.

Now to understand the development of the sense of the beautiful it is necessary to consider the two elements of beauty, the external and the internal. We are so accustomed to think of beauty as merely external, and not at all as part of ourselves. Beauty is as much a condition as it is an independent fact. Indeed the condition and the fact must combine before there can be any reality to the beauty. Beauty may be defined as the harmonious blending of things external to the senses, operating through the senses and awakening a corresponding blending within the soul itself. The very existence of beauty depends upon the inward consciousness. For example, what avails the art of a Raphael or a Michael Angelo if enshrouded in the blackness of night? The beauty may be there as a physical possibility in the materials of the picture, but what we call beauty does not exist as a reality to the eye that sees it not. And after all what is the eye, but the window of the soul—the avenue of approach? If the soul within is darkened, is slow to respond, to stir into life and vibrate in unison with the motion which philosophers tell us vibrates without, the beauty does not exist for that soul at least.

The power of the soul, then, to realize beauty depends upon its readiness to respond with an activity within itself. How is that readiness for activity to be developed? Just as in the case of every other activity, by exercise. The first motions of the soul are implanted there by nature as instincts or the germs of future faculties. Every time these motions

are stirred, the soul becomes more sensitive. The child's sense of the beautiful must be awakened by the constant presenting of objects calculated to stir the soul to action in accord with the beautiful.

How is this to be done? By practical experience? Limited indeed would be such a course of instruction. Fortunately we have a convenient summary, a comprehensive representation of the various forms of the beautiful, which can be utilized for the child's education. We have it in such a form that, in our own little corner of the world and in the few short years of our own short life, we may become eye-witnesses of the beautiful sights of every land and the noblest deeds of every age. I mean literature. Literature, I believe, may be aptly described as a picture-gallery of all that is worth admiring and knowing in human experience. Through the portals of this gallery into the ante-chambers of this miniature land of wonder may the child be led. Here, teacher, pause and reflect on the opportunity that is yours, on the responsibility that rests upon you. To you belong the duty and the privilege of opening the eyes of the child's groping soul to this never-failing source of refining, elevating joy. Is the soul of your pupil awakening to that life which your own soul possesses. It may be at first the faintest glimmer. But is it kindling? Is the light dawning? These are the questions you ought to ask yourself from day to day. Now the requisites for utilizing literature as a means of exercising the soul to appreciate the beautiful, appear to be three:

1. The child's own experience, what he has actually seen and heard.
2. The enthusiasm of the teacher.
3. The assistance of the child's imagination. This last is a most important factor, and its development, step by step with the increasing

demands upon it, is one of the most essential features of true culture. "The shaping spirit of imagination," to use the words of Coleridge, that which makes the poet and the lover of poetry. It is the creative faculty, beating with all the intensity of the life-giving rays of the sun upon the sensitive organism of the impressionable soul. It is the power that enables the mind to realize from description what has not been actually seen or heard. Moreover, it is the power to originate within the soul itself images formed of the materials of what has been already discerned.

Thus we have two elements: the passive susceptibility of the soul to impressions of external beauty, and the active, life-giving power to form new beauty of its own. Both of these can be developed through the medium of literature. The rhythmic flow of the writings of our masters of prose, the brighter and more artistic music of verse with all its subtle melodies, the constant reference in all true poetry to the delights of sound and sight in nature, the genuine outpouring of refined emotion with all the alluring devices of style, these cannot fail to create in the growing mind a tendency to lend itself to the beautiful, to seek it out, and linger in its company, to indulge itself in the secret delight of revolving and evolving, as it were, in a mental kaleidoscope the ever varying images which the soul is capable of conjuring up for its own enjoyment.

And now we come to the third form of culture: the formation of proper habits, habits in accord with logical truth and eternal beauty. Little need be said on this, except to call attention to it as an advantage and inseparable characteristic of true culture. The teacher's agency here probably takes a secondary place. It is the influence of the mind and inward character that must assert itself over

the external actions. The teacher can assist the influence of the mind by basing his methods of discipline on the principles of culture, by impressing upon the pupil that everything required of him in school in the way of conduct is to be logically consistent, and not likely to disturb the harmony of his surroundings. That he is to obey a law of his own being and not the mere fiat of the one who happens to be in authority over him. That, if he is idle, the natural consequence will be loss to himself. That, if he is forgetful of the comfort of others, he is disturbing the balance by virtue of which he himself enjoys freedom from molestation.

By often doing, the habit grows. Let the pupil begin to act in a cultured manner in the school-room, and he will find it easy in after life.

But vain and visionary, some one will say, are all these theories. Too often have we reason to regret that our theories do not work in practice. But still we must need have an ideal. Our well-meant efforts may be thwarted by opposing forces over which we have no control. Hereditary perverseness of disposition, weakness or neglect in home training—many are the obstacles that make our work difficult. All the more need for elevating our standard, for knowing what we are doing and why we are doing it, for examining and strengthening ourselves for our task. And

then if we fail there is no need for self-reproach. Let us not be discouraged. Let us not look for too striking and immediate results in all cases, but remember with Dr. Arnold that what we have to look for is not performance but promise, and, it is to be feared, sometimes not even that. Our reward must mainly be the satisfaction of having done our duty in the vivid consciousness of a definite aim.

In conclusion, I would beg leave to urge upon my hearers the following considerations:

1. That culture is the chief duty of the educator, not the training of the future farmer, tradesman, lawyer or mechanic, but the moulding of the future citizen. That *all must be moulded alike, to start with—*

(a) To know and to think the truth.

(b) To see and to feel the beautiful.

(c) To show the effects of what they see and feel in their conduct as members of society.

2. That owing to a mistaken conception gradually gaining ground, we are in danger of having thrust upon us the duties of a spurious education, one which will tend to harden the Philistinism of a painfully Philistine age. That in the face of this danger to the cause of human progress, it is our duty, each and all, to direct public opinion into proper channels by disseminating as far as we can a true conception of a genuine education of the masses.

“THERE are some novels which may be described with a great deal of accuracy as prose poems, but I do not limit myself to them. What is in my mind is simply the reflection of the enormous force which the novel has become in modern life. There was a day in which this younger sister of letters was looked at somewhat askance; people felt she did not come before them arrayed in the garments of wisdom. Now, it is not an unknown thing for a judge to fly from the bench and take refuge in his study and con-

sole himself with a novel. Statesmen are known in their leisure hours to indulge in the pages of a three-volume novel; and I know very well that clergymen have done so. And so this young sister—the Cinderella of Literature—has been brought out of her obscurity and, if I might so speak, the Prince, in the form of the public, has preferred her to the elder sisters, poetry or history, for she holds high supremacy.”—*Dr. Boyd Carpenter, Bishop of Ripon.*

WHAT CAN TEACHERS DO TO DRAW MEN AND WOMEN OF LEARNING AND TEACHING POWER INTO THE SERVICE OF OUR SECONDARY SCHOOLS? *

BY HORACE M. WILLARD, HOWARD SEMINARY, WEST BRIDGEWATER, MASS.

THIS question by its form implies a number of things :

First : That teachers of learning and of ability to impart are needed : that they are needed in our secondary schools ; *i.e.* that the number of teachers of learning and ability to impart is not adequate to the demand.

Second : That such men and women are not wanting in the world, but that for some reason they are reluctant to enter the service of the schools for secondary instruction.

Third : That these men and women can be drawn into the service of these schools.

Fourth : That something can and should be done by teachers to draw them into our academies and high schools.

A question, then, so pregnant with meaning, revealing a need in the field of education and a duty on the part of teachers, as well as of the general public and of the colleges, will naturally appeal with special force to this body.

It is ours, then, to ascertain what ought to be done, how it can be done, and then to do.

If, by their combination and organization, the labouring classes have accomplished so much for their own advantage during the past few years, what may not teachers accomplish to promote education by concerted action ?

They have the additional incentive to this effort, that whatever advances the interests of the schools promotes,

in the same degree, the welfare of the teachers.

Standing before this N. E. Association of Colleges and Preparatory Schools, an association whose list of membership comprises so many names of learned and successful teachers ; in this city, whose schools have a world-wide reputation, one might naturally suppose that this question could require no discussion. But the very prominence and character of this body make its discussions and judgments of great value, and therefore its *ipse dixit* of discussion and resolution will be watched with interest, as indicating the trend of thought at the present day. Hence, it is desirable that this question should be laid before you for solution.

It may not be generally believed, even among educators, that there is any difficulty in securing teachers of learning and power to impart for our secondary schools. But the very fact that the question has been proposed for discussion indicates that some do believe that there is a need of considering it, and it is to be hoped that it will receive due attention, thought, and discussion.

But just here, let me say with Anthony :

I am no orator—

But as you know me all, a plain, blunt man.
For I have neither wit, nor words, nor worth,
Action, nor utterance, nor the power of
speech

To stir men's blood : I only speak right on ;
I tell you that which you yourselves do know :
Show you sweet Cæsar's wounds, poor,
poor, dumb mouths,

And bid them speak for me

and put a tongue
In every wound of Cæsar that should move

* Read before the N. E. Association of Colleges and Preparatory Schools.

you, not "to rise and mutiny," but rather to discover and exert that influence which shall bring able men and women in larger numbers into the service of our secondary schools.

Sweet Cæsar's wounds! Poor, poor, dumb mouths,
Yes, let them speak for me.

What are the imperfections in our educational system which deter men and women of a desirable stamp from entering it? Such are, for the most part, from our colleges. As the time of graduation draws near, a man must cast the horoscope of his future, measure the forces within him, confront the question: "What is to be my life work? What shall I do in this great world?" If family relations, or other pressing considerations, do not attract him to law, medicine, or theology, to business, or to some scientific or mechanical pursuit, he turns to the profession of teaching, as a temporary employment or a last resort, because he sees a stepping-stone to ready money. Profession? I must correct that word. There are commonly reckoned but three: law, medicine, and theology. Entrance to these must be through the door of the law, medical, or theological school, and three additional years of study are needed to meet the exacting requirements for admission to the learned professions. This would seem to deter many on the threshold, and the majority would naturally throng to the open door of teaching, for, within that door, the call is loud for workers, and there is no delay in the pecuniary returns. But many a bright young man looks a little farther. He sees men occupying positions of honour, responsibility and authority, with titles of honour prefixed and affixed to their names. These have not been called from the ranks of the teachers, but from the lawyers, the clergy, the intelligent business men.

He may hear that, in rare instances, a college president is sent to Congress or on a foreign embassy. He may hear that a teacher of even a secondary school, but an orator by inheritance and cultivation, is sent to Congress, by a district which could not find his equal within its own borders—sent, because of his consummate ability, in spite of his views on the McKinley, the Lodge, or the Pension Bill. Turning his attention from the throng of distinguished men, who have won for themselves place and honour, he sees the teachers who have glided so smoothly into their life work, grinding away in their several mills, "toiling, rejoicing, sorrowing," for whom each morning sees some task begun, but by no means does each evening see its close. He sees them subjected to a machine of supervision, organization, classification. Grading, percentages, uniformity, promotions, tests, examinations, "Vox omnibus una."

But individually, ideas, independence, originality, study, investigation, seem to be relegated to that long catalogue of the things of the past which Wendell Phillips used to describe in his lecture on the Lost Arts. The sight does not inspire him, and feeling the value of his own individual being, he turns to the door of the professional school and enters resolved to win honour and fame. Another young man, who has struggled for years with poverty to acquire a college education, eager to make for himself a name, is confronted by the same necessity of choice. If he will teach, he may at once be free from the pecuniary embarrassment which has so long ground him. If he goes on with study, poverty still accompanies him. The fiend of poverty is at his elbow and bids him run. "Via, says the fiend. Away, says the fiend." But his conscience and inclination say, "Budge not." "Budge, says the fiend." "Go on with your studies,"

say conscience and desire. The fiend prevails and, without enthusiasm, often without interest, he takes up the work of teaching. He soon finds that it has been reduced to a sort of mathematical system, and that this system works with a machine-like regularity. There is little chance for the development of one's individuality. A certain number of pupils are assigned to a teacher; so many hours are given him for their preparation; so many studies with just so many pages of each; so many months are allowed in this department, so many in that; "a class goes into the hopper at one end and out at the other." This system is calculated to produce a general average intelligence, higher perhaps than that produced by the old system of teaching individuals, not classes; but the bright boys and girls suffer, since the teacher is compelled "to make one individual smaller than another may be larger."

This repression of the individual reacts upon the teacher, who must, likewise, to a great extent, repress his own personality. The theory of the greatest good to the greatest number has so harnessed him to a system that he becomes a part of it and in a measure loses his own identity.

Again, examinations have been so emphasized, that the real pleasure of teaching, for the sake of education, is, in a measure, destroyed. This system of examinations may have benefitted the lazy majority, but in the words of Max Müller, "the vigour of the really clever ambitious boys has been deadened by it." "Formerly," he says, speaking of student life at Oxford, "formerly, some of my young friends were what is called idle at Oxford, but, during their hours of idleness, which mostly meant discursive reading and thinking, they grew into something, they became different from others. Now, my young friends seem all alike, all equally excellent,

but so excellent that you can hardly tell one from the other." "Many years ago," he continues, "we wanted to have examinations for the sake of schools and universities; now we seem to have schools and universities simply and solely for the sake of examinations." This, even if exaggerated, contains much truth. He who ought to be a guide and director to intellectual activity, has in many cases degenerated into a mere crammer, whose business is to cram his pupils with all the facts for which an examiner is likely to call. Examinations were originally designed as an aid to intellectual activity, but have grown to be the masters, tending to crush out all heartiness and spontaneity; compelling the student to resort to a stuffing process and to terrorize his students with the bugbear of examinations. How much better if he could only lead them through green pastures and beside still waters, their minds at ease for gathering and enjoying the flowers and fruits of the way.

Men and women of culture do not like to be cramped in their methods of work, much less to be prostrated before the Juggernaut of examinations. Instead of inspiring their pupils with a genuine love of learning and developing an enthusiastic desire for knowledge, instructors are compelled to hold up before their classes approaching examinations for which they must be prepared. Published examination papers are carefully studied by teachers and pupils, for both know that they are likely to be judged by the amount of information they can pack away in their heads to be called out at a moment's notice. Fortunately more rational methods of examination are beginning to prevail, and isolated facts are not sought after so much as the relations which bind these facts together.

But besides the mechanical routine of a teacher's life and the cramping

effect of much of the examination work required by committees, superintendents, supervisors, and colleges, there are other causes which have deterred men and women of learning and teaching power from entering upon this work.

The social position of the teacher is somewhat uncertain. The culture required for it is not *per se* such as to admit him to the exclusive circles of our best society; nor is society wholly at fault for this. The teacher is too apt to confine himself to his class room and study, until he comes to be regarded by the public as a sort of recluse, rather than as a man of affairs *en rapport* with the live issues of the day. Other men are producers, building up great fortunes for themselves or others, advancing the wealth and promoting the welfare of the town or city in which they live. The teacher, on the other hand, lives apart from this activity, and is in great danger of treading a daily round of petty duties of such a nature as to hinder his own mental growth, instead of growing to commanding stature by the very breadth of his purpose.

"For wisdom," says Emerson, "you must have some entrance to the heart of humanity. He who is exclusive, excludes himself." Confined, so large a part of the time, to the companionship of those who are younger than he, and who naturally look up to him with a certain awe and respect which authority inspires in the young, his tendency is to become autocratic, opinionated, dogmatic. He makes statements to his pupils which may be wrong, but which no one ventures to call in question. He cracks the same old jokes year after year, to which his pupils may respond with a laugh—but oftentimes the laugh is at the teacher rather than at his joke.

"He does not know men. If he did," as Emerson says, "he could talk even on politics, trade, law, war, religion; for everywhere men are led in the same manner."

He is much alone, and his associations, even, confirm him in his loneliness. Isolation unfits him for society; he is not aware of his own deficiencies; his manners become bad.—*The Academy*.

(To be continued.)

HOW THE CHILD BECOMES A LEARNER.

DR. JAMES SULLY, M.A.

I HAVE chosen what many may think an unmanageably large subject for our discussion this evening. For it may be said that a successful development of the learner sums up the whole business of education, intellectual and moral alike. Yet there is sometimes an advantage in rising to a point of considerable elevation above so large and complex a subject as education, and trying to take it in as a whole with a rapid movement of the mental eye. To see clearly the large comprehensive end of our work

is to save ourselves many an injurious error. Our object this evening will be to take a new comprehensive survey—or what the Germans call a "glance over"—of our educational aims and the correlated processes. For this purpose, we will look at the child as having for his main duty to learn, and at the teacher as being concerned with understanding and furthering the work of learning. And here I must ask you, in order to ensure clearness of ideas, to follow me in a short preliminary definition of

terms and more particularly of the word "learn."

We are said to learn what we do not bring into the world with us, but acquire in the course of our life. Yet all that we acquire is not learnt. We do not learn a disease, or a slovenly gait that comes from mere indolence and want of effort; nor, strictly speaking, do we learn what we pick up in an unconscious way from others. To learn, then, is to acquire by a process of conscious exertion. Thus a child learns facts by using its powers of observation and understanding, and learns to do what is right by the exercise at once of understanding and of will. While we may thus distinguish intellectual and moral learning, we must bear in mind that they are at bottom one process; for both alike engage intellect and will in a process of intelligent reaching out towards and grasping some object. I need hardly say that for our present purpose we shall use the word with special reference to intellectual acquisition, or the laying hold of knowledge.

And now let us go a step further in our elucidation of the meaning of the term. There are evidently two ways in which a child can acquire knowledge. He may use his own senses and understanding, and in this way reach a respectable amount of such common knowledge as that the sun is hot, apples are sour ere they become sweet, and so forth. Or he may gain knowledge by way of instruction from others. In a large sense we might apply the term "learn" to each of these ways of coming by knowledge; and the actual usages of language do exhibit a tendency in the word to take on this comprehensive meaning.* Nevertheless, it must be admitted that, in English at least, we ordinarily understand by learning a

mode of gaining knowledge which has derived some aid from others. A boy learns when he gets information from another by way of conversation, or of reading, or of formal instruction. While allowing this, however, I am far from saying that there is a radical difference in the mental process in the two cases. So far from this, it will be one main object of this paper to bring out that, when a child grasps a fact through another's information, he performs essentially the same piece of mental work as when he acquires knowledge independently. The existence of a special word for describing the process of acquiring knowledge from others may be explained by the practical importance of distinguishing the two modes of acquisition.

One other distinction has to be touched on in this connection. If learning is a process of gaining *knowledge*, that is, a true apprehension of realities, it excludes verbal memorizing, cramming, and everything that resolves itself on close scrutiny into a pretence of knowledge-getting. A child only learns when, by an appropriate exertion of his mind, he lays hold of some new fact, if only the fact that a known object bears a particular name.

And now let us see what is implied in the learner. A learner is obviously one who learns. Since every child begins to learn from others as soon as he becomes intelligent at all, we may say that every child is a learner. According to this view the learner is a *datum* and not a *quæsitum* of the teacher. But a moment's thought will tell us that the child beginning his school course, a prey to every disturbing sight and sound, impatient for the signal of the bell that is to bring him deliverance, is not a learner in the highest sense. A learner in the full sense of the word is characterized by one or more very valuable qual

* Cf. the use of *disco*, *μαρνάω*, *apprendre*, *kennen lernen*, &c.

He is deeply impressed with the fact that there is a great deal to be known of which he is ignorant. He is exceedingly desirous to get as much of this unattained knowledge as possible. And he has the capacity of applying his mind in the way required for its attainment. Now it may be safely said that a child is not born but is formed a learner in each of these three respects. Emile, cut off from others and handed over to nature, would never have woken up to the fact of his profound ignorance. It is the dim apprehension of vast stores of knowledge which others possess, but which are as yet unpossessed by him, which quickens in the normally trained child the slumbering impulse to learn. Still more manifest is it that a child can only acquire the power of learning by help of trial, exercise, and the systematic training which a good education supplies. From all which it is evident that the teacher, while he presupposes a learner at the beginning, has a good deal to do with bringing up this feeble fledgling to the level of the strong-winged bird. Nor would it indeed be much of an exaggeration were I to say that the highest thing any teacher can do for any boy or any girl is to draw out into joyous realization the full potentiality of the learner. And here let me just note that in this formation of the learner we are working not entirely for our own time and our own temporary ends, but for after-days. We want the child to be a learner, not altogether that he may learn this bit of Latin to-day and this portion of English history to-morrow, but that he may be fitted and disposed to go on learning all his life through. It is in this sense of the term, a mind that has acquired a lasting desire to extend the boundaries of his knowledge, and a capacity to learn trained to an unflinching habit, that we may call the learner the highest product of education.

Since a child becomes a learner by actual effort in learning, we shall have to look rather closely at this process of learning, in order to see what it involves, and on what conditions its success depends. What work does a child's mind perform when it learns something? If we can answer this question, we may be in a position to see more clearly into the nature of teaching, conceived, as we may conceive it, as a furthering and a regulating of the process of learning.

(1) The forms of the process of learning will differ somewhat according to the nature of the fact or truth learnt. Thus, a child's mind goes through one series of actions in learning that the sun is millions of miles away, that the cat, the tiger, and the lion are members of one family, or that the people of England used to elect their kings. But, allowing for the difference of the subject-matter, the essential elements of the process appear to be the same. We may thus indifferently take any one of these examples in order to illustrate the point, and so may as well take the last.

The first thing that is necessary here is the presentation, through the medium of words, of a new fact. A child is, we may suppose, hearing or reading about the way in which the early Saxon people chose its rulers. Herein learning stands on precisely the same footing as gathering knowledge through the senses; for in this case, too, there must be some external object presented to the mind. In other words, learning obviously presupposes the presence or accessibility of something to be learnt. But now note, if you please, that though one obvious condition of learning, this presence of thought-suggesting words is not enough to ensure the process of learning. Just as there are many objects of sense that tell the child nothing, so there are many words that fall on his ear or strike

his eye. In each case the mind must be active in relation to this material. We commonly express this by saying that the child must attend. Unless he fix his mind on the proposition, he will get no knowledge by it. Let us see how this fixing of the attention on a new fact comes about.

We may perhaps best discover what takes place here by saying that a certain state of bodily and mental tension is produced. This tension may come about in different ways. In the case of the baby staring at the candle-flame, it is a strong sensuous stimulus that calls forth this tension. This crude form of attention is, however, only indirectly helpful to the gaining of knowledge. The tension we want for purposes of learning involves more than this. It involves some feeling of defect or ignorance, and a vague consciousness that there exists knowledge which can supply this defect. In other words, the child that listens to the account of king-making among our ancestors, listens under the stimulus of a feeling of intellectual need and a desire to gratify its need.

This proposition may seem by no means self-evident to some. Let us then, for the moment, suppose that the child who is reading the fact about king-making has previously heard that English kings were not always hereditary. In that case, you will allow, a sense of ignorance, and the attitude of curiosity and enquiry, would have time to develop. Well, I say that something answering to this attitude of mind is developed in every case. A child will only listen to anything you say in so far as it goes through this experience of feeling defect and desiring its supply. There must be the consciousness of need before there will be the requisite exertion.

Now, I think, it is easy to see how such feelings of intellectual darkness, together with vague outreachings of

mind towards the light, come about and become larger and more effectual as the child grows older. We are apt to take a far too mechanical view of intellectual development. We greatly misrepresent it when we talk of it as a series of additions of intellectual material, much as if it were like packing new stores in a warehouse, or adding new storeys to a building. Facts do not get into the mind in this simple and expeditious way. The child's mind, if it is fully awake, is quite as much occupied in brooding over what it sees and hears as in seeing and hearing. And it is highly necessary that it should so brood. This mental incubation means that the child is attempting to bring facts into their right relations one to another, to see the antecedents and consequences of this action, and to discover other facts like this one, and so forth. It is by such processes that a child finds out its limitations. Here stands a fact to which it cannot append its belongings. It sees, for example, the rainbow and begins to wonder where it comes from, and how long it will be before it comes again, or it hears a fact about Africa, and begins to wonder how far away it is, and how long it would take to get there. The child's intelligence is, when normally active, continually engaged in such organizing work. And, now, what follows from this? That its mind is on a look-out attitude for new facts. It feels there is more to know, and it reaches out in desire towards this knowledge.

Thus it happens, in the case supposed above, that the child brings a certain openness and expectancy of mind to bear on what it reads. It drinks in the information about the old-fashioned way of getting kings, because it has already discovered that there was an old-fashioned way to be known about.

The particular desires for this, that,

and the other knowledge tend to grow keen and prolonged in certain definite directions. Thus, one child gets specially curious and inquisitive in relation to animals; another in relation to countries, or regions for exploration; a third in relation to mechanical appliances, and so forth. What does this mean? That a sufficient mass of knowledge, relating to the particular class of objects, has been accumulated to generate recurring movements of enquiry. Thus, the child who has found out a certain number of facts about countries finds by reflection that his knowledge is incomplete. Thus, one book of travel has told him what animals he would find in Africa, but he has not learnt what animals he might come across in China, and he begins to wonder about this. What we call interest in a subject seems to me to imply this expectant, forward-reaching attitude of the attention. It means that the child has acquired a sufficient knowledge of some parts of the subject, and under the stimulus of these has wondered and imagined long enough about the other portions to be in a state, not merely of open-mindedness or receptivity, but of keen alertness in relation to any new contributing fact.

And here, let me say in passing, that the impulse of learning never takes its rise in a state of utter ignorance. I am not here concerned to explain how the child passes from its primordial nescience to its first knowledge. What we have now to do with is the child at the age of learning. And by that time it is indisputable that the direction of mental activity that constitutes the fundamental element in the process of learning is determined by interest, which, according to the view I am now taking, means a preceding adjustment of the mind to the fact or truth to be learnt. We may express

this fact in various ways, as when we say that a thing interests the child when it is brought into relation to what he knows, or viewing the process in the inverse direction, that its old knowledge carries him on to the grasp and appropriation of new knowledge; or, as some of the Germans have it, constitutes a fund of ideas by help of which the new fact is "apprehended."

The proposition here contended for, that the child when learning attends or gives its thoughts to a subject just because it is prepared for, and, in a sense, on the look-out for the new ideas, seems to me to be provable by common observation. Every teacher must have remarked that it is the child who knows something about a matter, and has been made to think by what he knows, who will be keenest in learning more of the subject. Again, you can best excite a child's mind to the effort of learning by exciting the attitude of *qui vive*?—as when you get him to reflect on what he knows of a given point with a view to seeing what more there is to be known. And then, to quote a third fact, how much deeper does the interest of a child grow in a subject as he progresses in it, and so wins more vantage-points for looking out discerningly into the unexplored residue. For so vast is the realm of knowledge that the more he knows the larger seems to grow the region of the unknown. In the intellectual world it is indisputable that to him that hath shall be given.

So far as to the initial attitude of the learner's mind—the preliminary focusing of attention on given material under the stimulus of a desire for a particular sort of knowledge. This fixing of the attention may be said to start the true process of learning; or the appropriation or assimilation of knowledge. This last process is in every case a gradual move-

ment or development. To begin with, since learning is an interpretation of words, there must be a due mastery of the language used, and a sufficiently full and distinct reinstatement of the ideas signified. All processes of learning involve this. Every teacher knows the difference in ease and rapidity of learning which turns on inequality in knowledge of words and readiness in verbal interpretation. It is obvious that the completeness of the acquisitive process must be limited by this circumstance. We may readily see this by comparing the ideas gained by different children from the reading of one and the same book. The one child has hastened on, content with vague shadowy ideal reproductions; the other has taken care to get at the precise meaning of the symbols. The latter has learnt much, in the sense of having acquired a mass of distinct information; the former has learnt nothing. The art alike of listening well and of reading well depends on a respect for words which prompts us to take sufficient pains to untie them, so to say, and see all that they contain.

This effort made, the process of assimilation naturally follows. The group of words, once properly attended to, would suggest a particular arrangement of ideas. Thus, on listening to the proposition "our Saxon ancestors elected their kings," there arises in the learners mind a rough draught of the answering thought. But this thought does not grow distinct in an instant, but only gradually by help of various assimilative processes. Thus, the child understands this simple statement by help of the previous knowledge it possesses of the Saxon people and their times. It further grasps the idea of king-elections by its analogies to choosings of leaders in the playground, and the like.

In the illustration just used, the

process of learning seems simple enough. Let us now take another kind of instance, say the understanding of a continuous description or narrative; or of a closely concatenated chain of reasoning. The very first condition of learning here is a *sustained* attention. A child that cannot or will not go on listening is not yet a learner in the fuller sense; that is to say, the appropriator of a complex piece of knowledge: at the same time, it is well to note that the prolonged attention needed here does not depend altogether on the initial effort or resolution of will. In listening to a narrative, say of the doings of Clive in India, there is a continuous re-creation of interest as the mind moves on; nay, more, there is a deepening or intensifying of this interest in connection with the assimilative process itself. Remember what I said just now respecting the fecundity of knowledge in breeding the desire for further knowledge. We may liken the effect here spoken of to that of pecuniary gains on the true gambler; the more he wins the more eager he becomes to win. The boy who hears or reads of Clive finds himself, after the first stage of application is passed, in possession of certain facts, say the low estate of the British dominion in India, and the immediate danger of its extinction. These facts, being in themselves interesting in the sense that they stir certain nascent patriotic emotions in his breast, are brooded on, and such brooding immediately begets that consciousness of want, out of which springs the impulse to gain knowledge. The brooding mind of the boy desires to know whether the French did succeed in driving out the Company's force, whether the daring young ex-clerk was able to hold his own against such odds, and so forth. The mind is put into a state of eager expectation of highest tension; with the result

that the attention instead of falling off gets more strained, more absorbent, as the narrative unfolds itself.

It is the same in the case of matter less excitant of the emotions, say the demonstration of the 5th proposition of Euclid. Here the learner, if he have the proper knowledge and interest in the subject to set out with, will grow more and more eager for each successive step. The curious construction awakens his curiosity. Why, he asks himself, go outside the isosceles triangle to prove two of its angles to be equal? As the steady march of the argument advances, the knowledge already furnished begets vivid anticipations or outstretchings of mind towards the succeeding steps, which fore-graspings will be more or less definite according to the amount and the distinctness of the learner's previous knowledge, and according to the degree of his inventiveness or power of applying knowledge to new uses. His mind is now strung to a tense state of inquisitiveness, and the whole process of learning is secured.

This brief account of the learning process may help us to understand the point emphasized in the title of this paper, that the child is not at the outset in the full sense a learner, but gradually becomes one. The mind of the new-born inexperienced babe is hardly more troubled by a sense of ignorance than that of a happy ruminating cow. It is apt to be provokingly incurious with respect to its surroundings, and so is inattentive, except in a spasmodic and ineffectual way. The feeling of ignorance must come, and bring the keen desire for knowledge and the strong impulse to attend. We see the germ of this in occasional watchings of persons and things, with a view to see what they are going to do. Later on, this

wakening of curiosity evidences itself in a much more important form, viz., in questioning about this or that. The questioner is, for the moment at least, overtaken with a sense that there is knowledge not yet reached by him. And under this momentary consciousness of need he will, perhaps, await your answer, and even give it, in his lordly way, a passing consideration. How far this capricious undisciplined quest of information is from the genuine desire for knowledge, which makes the learner, I need not point out. The power of giving the attention to words must be exercised and made strong, by the exciting stimulus of story, before the child will be a true learner. And thus a certain assimilation of knowledge must have been made in order that his mind may move forward towards new facts and truths, not in a haphazard, but in a methodical way that conducts to the truth of things. For the first questionings of children are feeble and futile just because they are vaguely thought. It is only when a child begins to have some presentiment of the whereabouts and the nature of the knowledge he is in quest of that he becomes earnestly inquisitive. And as his organized sum of knowledge becomes more massive and more compact, he will grow more and more capable of learning. So that, far from having done for ever with lessons when he comes to leave teachers and school, he may be said in a sense to have merely got over the first preliminary business of learning how to learn, and will now be able to go on learning by himself from the store houses of knowledge and wisdom which he will find if he looks for them in men and in books.

—*The Educational Times.*

(*To be continued.*)

PROFESSIONAL REQUIREMENTS.

BY SUPT. C. E. SURDAM, PRES. N. Y. STATE TEACHERS' ASSOCIATION.

FIFTY years ago pulpits were practically accessible to all or to any who were faithful to defend tenet and creed. The lawyer carried his whole law library under his arm, was looked upon with suspicion, and the jury rendered its verdict, not according to the evidence, the rulings of the law, but according to their own ideas of justice. The doctor carried an entire pharmacy in his saddle-bags, looked at the tongue, guessed at the disease, and, on general principles, proceeded to bleed, blister and physic. The "Master" could read, spell, write, and cypher in the "rule of three," and being physically strong could generally preserve order. He did the best he could, and was generally regarded as the most important man in the district. In colonial days the master was also "Setter of Psalms" and "Comforter of the sick."

To-day no man can regularly gain admittance to the ministry of any church without special and thorough preparation at some theological institution, or without at least three years of biblical, theological, ecclesiastical, historical, and philosophical reading. The profession of theology includes many of the wisest, noblest and purest of men—men of broad culture, liberal minds, and big hearts—and they receive fair remuneration for their services.

The profession of law is inferior to that of theology in both literary and professional qualifications, but its ranks are well guarded, and those only can gain admittance to the bar who have been graduated at some law school, or have passed an examination before Supreme Court Judges, after three years study and training in a law office, and recently the stan-

dard has been raised so as to require an academic or high school education of all candidates.

The medical profession has undoubtedly outstripped the others in its onward march toward perfection, and to-day no person who cannot show a diploma from some medical school can practise or prescribe for any person or disease whatever. Their greatest men, too, are specialists; and recent attainments in surgery are marvels of professional skill.

In general terms, the three great professions require and obtain *thorough preparation, legal recognition, high social standing, and proper remuneration*. But what can we say of the profession of pedagogy?

Of the thirty-one thousand teachers in this state, only about one in twenty-four graduated at any normal or training school, or, in other words, were professionally qualified for teaching. This, however, does not include graduates of teacher's classes, of whom there are quite a large and constantly increasing number.

It is true that teachers have been very much improved by teachers' institutes and associations, and by educational papers and works on the philosophy of teaching; and upon those who avail themselves of these important helps we rest our hopes. Although they may have acquired much of their present ability at the expense of the children who have been intrusted to their care, we have for them no word of censure; for they meet the requirements of law and public sentiment, have continued to advance, and stand ready to take higher professional grounds when called upon to do so. But it is also true that there are thousands of teach-

ers who did not spend a dollar or a day in special preparation for the responsible office which they have assumed, and would not avail themselves of any of the means of improvement were they not compelled by law or public sentiment to do so. While everything around them moves on, they stand still or retrograde; and if the stern hand of justice should remove them from the profession to which they have contributed neither honour nor good repute, we would have for them no words of sympathy.

If the above be true we would present a decidedly shabby appearance alongside of the three great professions. As long as this state of things exists, how can we expect to obtain legal recognition, and to have the public schools, with all their sacred interests, placed under our control?

Rather may we expect, as now, to be examined by persons who know very little about the principles which we ought to practice; to have our work inspected by those who know less about it than we do; to be employed by trustees who may dismiss us from their service for cause or without cause; and when we urge politicians at home and in our Legislature to give us practical schoolmen for county and state superintendents, we may expect them to turn a deaf ear to our entreaties.

How shall teaching become a profession? Theology, law and medicine have attained their present enviable condition through the efforts of their own members, and we must find within ourselves the power to raise ourselves. Some of the obstacles in our way are: frequent changes and brief terms of service; the inability of the public, trustees especially, to properly discriminate between good and poor teachers; the indifference among teachers themselves, and the further fact that our ranks are practically open to all, without much

regard to present or previous conditions.

But the demand for broader qualifications and for protection from frauds and pretenders is coming up from all quarters. The question is being agitated at almost every meeting of teachers: Chairs of pedagogy have been established in the Universities of Michigan, Missouri, Iowa, Nebraska and Wisconsin. Every college in the land should have a department of pedagogy, so liberally endowed as to draw the ablest men into the educational field; and these colleges should furnish men of rare ability for institute conductors and normal school teachers.

Institutes should be for the discussion of new methods and advanced ideas, and normal schools should be much more numerous, and, as in Germany, should be training schools only. Supervision from the State down should be in professional hands and managed on civil service principles.

The teacher should be all that he now is and much more. He should be perfectly familiar with the subjects to be taught and all improved methods in teaching. He should know enough of mental and moral philosophy and psychology to understand principles and apply right methods. He should know that education is not a mere expansion of memory, but a symmetrical development of the whole child—body, mind and soul.

The spirit that guided Arnold, of Rugby, cannot die; and since and before the days when Pestalozzi laughed and wept, and played and prayed with the homeless, friendless waifs at Stanz, teachers have been found who loved the children. Love, deep and abiding, for the present and eternal welfare of our pupils, is our highest qualification, and must be our inspiration—our guiding star, and the sign by which we may hope to conquer.
—*New York School Journal.*

FLORENCE NIGHTINGALE.

NO woman in the nineteenth century has attained a wider or vorthier fame than Florence Nightingale, who departed this life May 11th, at Claydon House, Buckingham, England, after a long period of feeble health. Miss Nightingale was born in Florence, Italy, in 1820, but her youth was spent on the family estates in England. She was the youngest daughter of wealthy and highly cultivated parents, and had every advantage one could desire. Her father became her instructor in the classics and higher mathematics, and later she travelled extensively on the continent, and became proficient in the German, French and Italian languages. But while still a child at home the characteristics which marked her mature life were plainly manifest. She had great sympathy for human suffering, and was active in providing for its relief. She seemed to have inherited the spirit of her maternal grandfather, a member of Parliament, who was honoured for his intelligent philanthropy. Wherever she went, whether in England or on the continent, she visited the hospitals, asylums and infirmaries, and made them her study. Her interest in work of this kind induced her to visit the Deaconess Home of Pastor Fliedner, at Kaiserswerth, near Dusseldorf on the Rhine. Here this rich, beautiful, refined woman pursued the regular course of instruction in the work of a nurse, winning the highest commendation for her intelligence and thoroughness. Returning to England she gave herself and largely of her means to establish on a firm basis a tottering hospital for sick governesses in London.

While the Crimean war was at its height and all England was watching the conflict with eager interest, it be-

came known that the Commissary and Hospital Departments were poorly organized and inefficient. The sickness and suffering and lack of care for the men in the field and camp aroused the people at home, who demanded better treatment for their husbands and brothers. It was a terrible story of waste and mismanagement. Florence Nightingale's hour had come. It was no sudden impulse. She was known to the Secretary of War as the one woman in England qualified for the work demanded by the people. Strange coincidence, the letter of the Secretary asking her on the part of the Government to form a corps of nurses for service in the Crimea and her letter offering her service to the Government to render whatever assistance within her power to ameliorate the condition of the soldiers were written on the same day. A few days later, accompanied by thirty-four nurses, she left London for the seat of war. The world looked with admiration on this company of women. Their success passed all expectation. She exhibited as great talent in organization and administration as devotion to the suffering. She won her way against official prejudice and obstruction. The men in the hospital kissed her shadow as it fell on their pillows, and rightly called her the "angel of the Crimea." After a year and a-half of work she slipped away and returned home without passing through London, that was busy preparing a royal welcome for her. But she did not lack honour, England's Queen giving the example. She used the nation's subscription of a quarter of a million dollars to found the Nightingale Home, a school for nurses at St. Thomas' Hospital, London.

Never of vigorous health, for many

years Miss Nightingale has been but little before the public, yet she has maintained her interest in charitable work and measures for the relief of suffering, which has been really her life-work. Several volumes from her pen, "Hospital Notes," "Notes on Nursing," and a volume for the Government on the sanitary state of the army in India, have had a large

circulation. They who remember the sweet yet determined face that the portraits of twenty-five years ago made familiar when her name was on every lip have found it difficult to think of her as an aged, broken woman of seventy. But we may picture her now as one crowned in the kingdom of God in heaven.—*Central Christian Advocate.*

AN IMPORTANT OMISSION.

BY B. C. MATTHEWS, NEWARK, N.J.

A PROMINENT educator, speaking of our educational system, recently said to the writer: "There is nothing in our curricula that will weigh a straw in helping our pupils into heaven." Another way of putting the same idea is, that everything in our curricula is as well adapted for the development of a rascal as of an upright man.

If this is true, an explanation must be found for the following facts: (1) that the average morality of the children in the schools is higher than that of those not in school; (2) that the great majority of rascals are in the uneducated classes. The explanation is found in the facts that the children in the schools come from good homes, are generally under church and Sunday school influence, and have good social surroundings. At school it is fair to suppose the teacher exerts an elevating influence. On the other hand, children not in school, are on the street or in the shops, places not conducive to good morals, and belong to homes where there is little regard for morals.

It is plain that this difference is not due to the branches taught in the schools. The study of these branches is in no sense a moral study, or a study of morals, or of how to be moral.

The processes involved are purely intellectual. When the "New Education" shall have secured the recognition that its most ardent advocates wish for it, matters will not be improved, so far as teaching ethics is concerned, for the character of the pupil will have been ignored in the "new" as it has been in the "old," except perhaps in the kindergarten, which promises something in the future. The advantage to character that the "old," has given, and the "new" will give, comes through the place in life which cultivated brains and skilled hands give to their possessor, not through anything in the curriculum of the "old" or the "new."

Our moral nature is so different and so distinct from our intellectual and physical, and even religious, natures that it must have special attention, if it is to be developed.

In this lies the salvation of the world.

If, ever since the dawn of Christianity, the state had always existed for its people, and had laboured to educate them instead of using them as creatures for slaughter, for satisfying the ambition of some Napoleon; if all educational forces had aimed at producing noble manhood, and true womanhood, instead of making brainy

heads and fair sort of bodies ; if the church had aimed at producing right (eous) men and women instead of shedding its heart's blood in fighting religious wars, the dark ages might have been avoided, or at least mightily mitigated ; and we fancy that prisons, penitentiaries, asylums, idiot homes would be fewer, the ravages of sin would be reduced to a minimum, the thousands of brothels could not find support, and the millions now spent on preventing vice, on controlling criminals, and on whiskey could be saved for making the wretched masses comfortable.

Thus far in the history of modern education the development of the intellect has been the dominating idea, though physical development has received attention—the development of character has been ignored. Examine the curricula of schools of all sorts, and you will not find one branch introduced primarily for the development of character, but all for the purpose of obtaining knowledge, mental discipline, or physical training. If moral or character training follows from the study of any subject, it is not because it was put in the course for that purpose, but because the nature of the subject is such that a student would necessarily imbibe some moral lessons.

Some may ask, is not moral philosophy taught in our higher grade schools and colleges? Yes! but not for the sake of making moral men and women, but that the student may know the theories about the existence of God, the freedom of the will, conscience, basis of morals, etc.

We are now in a transition period. In every teachers' convention of importance in our whole country during the last year, more or less time was given to the discussion of manual training.

Judging from the contents of educa-

tional journals and platform speeches, the educational world is running wild on this subject. The writer is a strong believer in carefully prescribed manual training in the schools, especially in the cities, and he does not wish to be understood as opposed to the movement ; but his appreciation of something higher impels him to ask the readers of *The Journal* whether, while the courses of study are being revolutionized for the sake of introducing hand training, there should not also be introduced one study, or at least a place be left for one which shall have for its primary and avowed object character training. I do not mean religion ; I mean every characteristic that enters into the constitution of a true manhood and a true womanhood.

Intellectual culture may give station to a few ; money may buy preferment for those who have political chicanery, or promote some to stations of temporary advantage ; manual training will certainly give position to many, but all these can not do as much for the masses as the possession of right character ; hence the necessity of providing in our schools for its development. If you say our schools are not for this purpose, I reply : "Then the purpose is wrong, and the people can make the purpose of the schools what they wish it to be."

We have inherited from antiquity and the dark ages too great a reverence for arithmetic and grammar. Limit and relegate to their proper places these studies, and spend one quarter of the time now wasted on trying to make noble men and women, and we will soon get out of the shadow of the dark ages. This is not an impracticable scheme. This article was not written to tell how this can be done, but simply as a suggestion that there is a defect, which ought to be remedied.

—*School Journal*.

GEOGRAPHY.

THE ST. CLAIR TUNNEL.—This great work was commenced one year ago. After starting an average progress of sixteen feet per day was made until the shields met under the bed of the river. The distance traversed was 6,000 feet. The material through which the shields passed is principally soft blue clay interspersed with pockets of gravel, coarse sand and quicksand. Boulders were sometimes encountered, but they were usually small; occasionally, however, they were so large as to require to be broken in order to facilitate their passage through compartment apertures of the shields. To accomplish this a resort was had to the drill and the wedge; by this means they were soon reduced and thus carried to the rear. Under the river bed the clay was found to be much softer and more easily excavated than in the approaches from either side.

When the tunnel had progressed each way to the bank of the river, air locks or diaphragms of solid masonry were constructed. These were placed at the banks of the river on a line with the water edge, and built in such a manner as to withstand a very heavy air pressure. Persons proceeding into that portion of the tunnel which underlies the river must necessarily pass through the air-locks.

Some difficulty was experienced at the outset on account of the disinclination of men to subject themselves to the extra air pressure made necessary in order to secure the safety of the work; but, as a rule, no inconvenience resulted from its use. Especially is this true of the American end of the tunnel, where the pressure during the progress of the tunnel until the meetings of the shields did not exceed seventeen pounds to the

square inch. On the Canadian side large pockets of quicksand and gravel were encountered, and as a consequence a much greater pressure was required to keep back the water, without which this great work would have fallen short of successful achievement. Therefore, for several days a pressure was kept up which slightly exceeded twenty-eight pounds to the square inch. The one thing essential as a measure of safety is to be gradually introduced into the pressure and then to be gradually released from it. If this rule is ignored the results are often serious and sometimes fatal.

Directly under the angle of the bank on the Canadian side of the river is the lowest dip or depression of the tunnel. At this point will be located the pump which is designed to relieve the tunnel from surplus water which may from any cause find its way to the tube. The maximum depth of water over the tunnel is forty feet and the minimum depth of clay over the tunnel under the bed of the river is eight feet. The rock summit lies less than seven feet in some places from the great iron tube. Thus the depth of the clay from the bottom of the river to the top of the rock was just sufficient to leave a margin of from seven to ten feet between the top of the tunnel and the water, and about the same distance at intervals on an average betwixt the bottom of the tunnel and the summit of the rock. Taking into consideration the quality of the clay and its comparative freedom from dangerous deposits of gas, its depths under the river and above the rock, its softness and other valuable characteristics, it is doubtful if a more favourable location for the construction of a tunnel could be found. Indeed, if the dis-

tinguished engineer who was entrusted with the construction of this great work could have had a choice as to the composition, consistency and quality of the clay through which the great shield was to be forced, he could not have selected any quality of soil better adapted for the purpose. Most of the distance under the river, the clay was as soft as putty prepared for use in glazing.—*From an account by Consul Pace, of Sarnia.*

THE REGULAR GROWTH OF LONDON.—One of the most singular facts (says the *Pall Mall Budget*) about the increase of London is its general

unswerving regularity. It may be roughly taken that every month about a thousand houses are added to the greatest city in the world. In August of this year, 765,577 houses had to be supplied by the water companies with water. In September, that number had increased to 766,797. In August of last year, 754,464 houses had to be supplied with water or 11,113 below the number in the same month of this year. In September of this year, the companies had to supply 10,976 more houses than in September of 1889. The chief extension of London at present is towards the north and north-west.

NOTES FOR TEACHERS.

ANCIENT SCOTTISH WEIGHTS.—The most ancient of the weights used in Scotland were known as "tron" weights, and the prefix "tron" applied to certain old portions of Scottish towns appears to refer to the public places where these weights were kept for the use of merchants and others. Thus we have the Trongate in Glasgow, the Tron Church in Edinburgh, etc. The "tron" pound was not a well-defined weight, but varied from 21 to 28 oz. avoirdupois.

FINALLY, there is the true teacher—a man who has been trained to teach as well as taught to learn—a man whose heart is in a work undertaken of choice, not of necessity. For him the drudgery of his first teaching days (and drudgery there must be) is indeed a stepping stone to higher things. He cannot but succeed, because the one object of his desires is to excel in the profession he has chosen as a life-work, and not as a *dernier ressort*. He possesses a natural gift, and he knows it. He steps upon the lowest rung of the ladder with the

determination to ultimately reach the topmost, in spite of every obstacle, and he *does* reach it. *O si sic omnes.*—*The Private Schoolmaster.*

TELEPHONE connection is to be established between London and Paris by a line that, judging by theory, should give better results than are usually obtained over much shorter overhead wires. New overland lines of four copper wires are being built from London and Paris to the coast by the English and French Governments, and they will unite in laying a cable to connect the land lines. The result will be two complete metallic circuits between the two capitals. A similar line between Buenos Ayres and Montevideo, 180 miles, is now in successful operation.—*Philadelphia Ledger.*

STEEL TIES FOR RAILWAYS.—The life of a wooden tie is only six years. Hence it suggests that the roads should spare the timber, which is being exhausted, and use metal ties. These

are used to a considerable extent by railways in Europe, Australia, India, and some South American countries. In all there are said to be about 30,000 miles of railway track thus constructed. Germany has 9,000 miles of metal-tie track. In the tropical parts of Australia metal ties are a necessity, the white ants quickly destroying those of wood. They are made in England, are 6 feet 3 inches long, 12 inches wide, and $2\frac{3}{4}$ inches deep, with grooves for the rails. They cost \$65 a ton on shipboard. Mr. James, a resident engineer, says: "The steel ties are exceedingly strong; they stand well in the track and keep a good line. To one travelling on an engine the road seems as elastic as if the line was laid with wooden ties. The contractors are highly pleased with them. They give no trouble when laid, and the cost for maintenance is very much lighter than with wooden ties." In Queensland the experiments with metal ties have been so satisfactory that the railway commissioner has condemned the further cutting of timber for ties, and has recommended the home manufacture of steel ties. On one line steel ties made like inverted troughs without

ends are used without ballast. The ground is ploughed and the soil tamped in and around the ties. After various experiments the Government contracted for 100,000 steel ties of heavier pattern than that previously used. These ties weigh 84 pounds apiece. They are made of steel plates 5 feet 9 inches long, 18 inches wide and $3\text{-}16$ ths of an inch thick. These plates are bent into the form of troughs with open ends and are laid upside down. After the bending they are given a twenty minutes' bath in a composition of asphalt and coal-tar, heated to 300° . With a coating of this composition the metal ties are very slowly affected by water. These ties are laid in the soil. The confidence in such a road-bed is shown by running trains at twenty-five miles an hour at times when the flood water is over the tracks. In the Argentine Republic, where timber is scarce, steel railway ties are already largely used, there being 3,500 miles of such railway.* The ballast is black earth, and grass is allowed to grow between the rails and over the ties, which covers the dust in dry and prevents washing in wet weather.—*Milwaukee Sentinel.*

PUBLIC OPINION.

THE *School Journal* (New York) sees in these summer schools the dawning of a new era. So do we. The teacher of the future must be trained; he must know what he has to impart and the nature of the child he has to educate; but these needs will not be met by summer schools of six weeks' duration. The summer school is better than nothing at all; but the knowledge and training required by a teacher are not to be picked up in an annual picnic on Mount Nebo. If America wishes to improve her schools she must have

Training Colleges that are colleges in reality and not merely in name.—*The School Journal* (London).

GOOD education depends more upon the cultivation of the moral qualities than the mere intellectual qualities, and the difference between those who succeed and those who fail is in nine cases out of ten the effect rather of moral qualities than of intellectual qualities. It is because there is not the determination of will to succeed that success is not reached. It is necessary to lay stress upon this,

because in prize-giving we are apt to think that intellect alone is rewarded, whereas other things are far more valuable and important. There is a sense in which the giving of prizes seems to be an encouragement not to the best boy or girl, but to the sharpest, cleverest, and quickest, though that is not all. The qualities which make a man a thoroughly good citizen, a good subject of the Queen, and fully capable of taking part in life, which make him respected, trusted, and valued in after years, are not tested, and could not possibly be tested by an examination. — *The Bishop of London.*

ARCHDEACON BLUNT'S paper at the Church Congress on "Reverence for the Holy Spirit in Young People and Children" was full of valuable suggestions. He called attention to a remark recently made that "the child, as an object of public solicitude and of social obligations the most sacred, is entirely a modern discovery." No one conversant with Plato's Dialogues would accept this remark as perfectly accurate, but there can be no question that the claims of childhood have received an amount of recognition in modern times never conceded to them in days gone by. Special measures have been employed to protect children from cruelty and to restrict child labour. Children's health, happiness, education and recreations are cared for as they never were before. Children's hospitals, orphanages, homes, reformatories and industrial schools are multiplying daily. We have an art society for providing their schools with pictures and engravings;

we have science lectures for their holidays delivered by the ablest men of the day; we have excursions into the country for our street arabs. We have special services for children in our churches; we have Bands of Hope to keep them from the snare of drunkenness; we have guilds to assist them in leading godly lives. What is the outcome of it all? Well, we believe that the rising generation is, on the whole, better than the generations that preceded it. It is something to make children happy. We must not forget that to make a child happy to-day is, as Sydney Smith said, to make him happy twenty years hence. We must not expect too much at once from the objects of our care. They will not be finished theologians or perfect saints. What we have to do is to teach truths suitable to their powers of apprehension, enlighten their conscience, direct their affections, train their wills, and, above all, form in them good habits. There is one other thing we have to do, and that is to wait patiently for results. Habits are growths, and healthy growth is almost invariably slow. — *The School Guardian.*

THE proposal of the Rev. Stopford A. Brooke to purchase Dove Cottage as a national memorial to Wordsworth, has met with gratifying success. Of the total sum of £1,000 required, about £660 has already been subscribed. Admirers of the poet who wish to contribute should send their contributions to the hon. treasurer, Mr. George L. Craik, 24 Bedford Street, Covent Garden. — *Publishers' Circular.*

WALKING-STICK PLANTATION IN ENGLAND. — In two parts of the kingdom at least, many acres are devoted to no other purpose than the raising of wood for the walking-stick market. In Gloucestershire, beech, ash, thorn, hazel and oak are to a great ex-

tent grown for this purpose; and in the Channel Islands, a certain variety of cabbage is regularly trained with a view to its being transformed into walking-sticks by a process of stripping off each leaf as it appears, and finally drying and hardening the stems. —

EDITORIAL NOTES

THE CANADA EDUCATIONAL MONTHLY bids all its readers a Happy New Year. In July of this year Canadian teachers will meet their brethren, the members of the National Teachers' Association of the United States of America. This meeting will make 1891 memorable in the educational history of Canada. We hope our friends will see to it, that the year is happy as regards this assembly of the English teachers of America.

THE editor of this magazine has been asked by several mathematicians teaching in schools and colleges to form an organization similar to those now existing of Classical, Science and Modern Language Teachers. For this purpose he wishes to have the names and addresses of all mathematical teachers in Ontario. It would expedite the business in hand if each one would also state the best time for holding the first meeting. Address the editor of this magazine.

THE CHRISTMAS MEETINGS.

THE Christmas vacation of 1890 will be memorable in the history of education in this province on account of the important meetings of High School and College men held at the Normal School and University in Toronto. The attendance was fair and representative and good work

was done at all the meetings. The different associations—modern language, science and classical—held a conference on the evening of December 30th, which it is hoped will have important results. A pleasing feature was the large number of college men who were present. It is long since there has been a gathering of educators, both recruits and veterans, characterized by so much freedom, enthusiasm and professional spirit.

THE IDEAL TEACHER.—“In regard to knowledge, he must, of course, be master of his work. But knowledge is not all. There may be knowledge without power—the ability to inform without the ability to stimulate. Both go together in the true teacher. A power of character must underlie and enforce the work of the intellect. There are men who can so rouse and energize their pupils, so call forth their strength and the pleasure of its exercise, as to make the hardest work agreeable. Without this power, it is questionable whether a teacher can really enjoy his vocation; with it, I do not know a higher, nobler, more blessed calling than that of the man who, scorning the “cramming” so prevalent in our day, converts the knowledge he imparts into a lever, to lift, exercise, and strengthen the growing minds committed to his care.”—*Prof. John Tyndall.*

“I KNOW how far high failure overleaps the bounds of low successes.”—*Lewis Morris.*

THE solution of the great problem of the world's history was found in Christianity. And even now, when the spirit of scepticism and analysis appears to have changed everything, we have no other historic belief.—*Edgar Quinet.*

YOU may read books of natural science, especially those written by the ancients—geography, botany, agriculture, explorations of the sea, of meteors, of astronomy—all the better if written without literary aim or ambition. Every book is good to read which sets the reader in a working mood. The deep book, no matter how remote the subject helps us best.—*Emerson.*

SCHOOL WORK.

MATHEMATICS.

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

UNIVERSITY OF TORONTO.

JUNIOR MATRICULATION, 1890.

ARTS—ALGEBRA—PASS.

Examiner—A. R. BAIN, LL.D.

(Solutions by I. J. Birchard, Ph.D.)

NOTE.—Candidates for Scholarships are to omit questions 1 and 11. For all others (whether for Pass and Honours or the Junior Leaving Examination) any nine questions will constitute a full paper.

1. Divide $\frac{a-1}{a} + \frac{b-1}{b} + \frac{c-1}{c} - 1$

by $2 - \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$

Prove that $x^n - y^n$ is divisible by $x - y$ for all positive integral values of n , and utilize the theorem for determining whether $x^n + y^n$ is or is not divisible by $x - y$.

From the result obtained by dividing $x^3 - y^3$ by $x - y$ write out the quotient of $(a - 2b\sqrt{c+d})^3 - 125(a+d)^3$ by $(a - 2b\sqrt{c+d} + d) - 5(a+d)$.

1. $\frac{a-1}{a} + \frac{b-1}{b} + \frac{c-1}{c} - 1$

$= 1 - \frac{1}{a} + 1 - \frac{1}{b} + 1 - \frac{1}{c} - 1$

$= 2 - \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right)$

consequently the quotient required is 1.

By common division

$$\frac{x^n - y^n}{x - y} = x^{n-1} + \frac{y(x^{n-1} - y^{n-1})}{x - y}$$

which shows that when $x^{n-1} - y^{n-1}$ is divisible by $x - y$, $x^n - y^n$ is also divisible; i.e., if the theorem is true for any particular value of the exponents, it is also true for the next higher integral value. But it is true when the exponents are 1, ∴ it is true when the exponents are 2, and ∴ when they are 3, etc.; thus it is universally true.

Put $a + b = m$, $(c + d) = n$; rearrange equations and we get

$$m^2y - n^2x = \frac{2m^3}{n} - \frac{f(n^3 - m^3)}{mn}$$

$$ny - mx = 2m$$

multiply first equation by m the second by n^2 , and

$$(m^3 - n^3)y = \frac{2m^4 - f(n^3 - m^3) - 2mn^3}{n}$$

$$= \frac{(2m + f)(m^3 - n^3)}{n}$$

$$y = \frac{2m + f}{n} = \frac{2(a + b) + f}{c + d}$$

Similarly $x = \frac{f}{mn} = \frac{f}{(a + b)(c + d)}$

$x_n + y_n = (x^n - y^n) + 2y^n$; $x^n - y^n$ has been shown to be divisible by $x - y$, and $2y^n$ is not divisible, ∴ $x^n + y^n$ is not divisible by $x - y$.

Second solution:—For x write y then $x^n - y^n = y^n - y^n = 0$, but $x^n + y^n = y^n + y^n = 2y^n$; therefore $x - y$ is factor of the former but not of the latter. (H. S. Algebra, Arts. 273 275.)

In the quotient of $x^3 - y^3 \div x - y = x^2 + xy + y^2$, substitute for x and y the values $(a - 2b\sqrt{c+d})$ and $5(a+d)$; then $(a - 2b\sqrt{c+d})^3 + 5(a+d)(a - 2b\sqrt{c+d} + d) + 25(a+d)^2$ is the required result.

2. Factor (1) $3ac(d - c) + 3cb(3c - 3d) + 3ab(c - d) + a^2(d - c)$.

(2) $x^3y + x^2yz + x^3z - xy^3 - zy^3 - xzy^2$.

2. (1) $3ac(d - c) + 9cb(c - d) + 3ab(c - d) + a^2(d - c) = (d - c)(3ac - 9bc - 3ab + a^2) = (d - c)(a - 3b)(a + 3c)$.

$$\begin{aligned} &x^3y + x^2yz + x^3z - xy^3 - zy^3 - xzy^2 \\ &= xy(x^2 - y^2) + yz(x^2 - y^2) + zx(x^2 - y^2) \\ &= (x^2 - y^2)(xy + yz + zx). \end{aligned}$$

3. Simplify (1) $\frac{x(y + z - x)}{(x - y)(x - z)}$

$$+ \frac{y(z + x - y)}{(y - z)(y - x)} + \frac{z(x + y - z)}{(z - x)(z - y)}$$

(2) $\frac{a^n + b^n}{a^n b^n} - \frac{a - n - b - n}{a^n b^n} + \frac{(a^{\frac{n}{2}} - a^{\frac{n}{2}})(b^{\frac{n}{2}} - b^{\frac{n}{2}})}{a^{\frac{n}{2}} b^{\frac{n}{2}} + a^{\frac{n}{2}} b^{\frac{n}{2}}}$

3. (1) L. C. M. of Dens. = $(x - y)(y - z)(z - x)$; then numerators of result $\frac{y(z + x - y)}{(y - z)(y - x)} + \frac{z(x + y - z)}{(z - x)(z - y)}$

tions are $x(y-z)(y+z-x)$, $y(z-x)(z+x-y)$, $z(x-y)(x+y-z)$. Expanding the first of these expressions we get $x(y^2-z^2)-x^2(y-z)$ from which the others may be written; then arranging in two groups $x(y^2-z^2)+y(z^2-x^2)+z(x^2-y^2)-\{x^2(y-z)+\text{etc.}\}=2(x-y)(y-z)(z-x)$. The required result is therefore $-z$.

(2) Multiply numerator and denominator of the first fraction by $a^n b^n$ and the second fraction by $a^{\frac{n}{2}} b^{\frac{n}{2}}$, we get

$$\frac{a^n b^n (a_n + b_n) - (b^n + a_n)}{a^{2n} b^{2n} - 1} + \frac{(a-1)(b-1)}{a^n b^n + 1}$$

$$= \frac{(a_n + b^n)(a^n b^n - 1)}{a^{2n} b^{2n} - 1} + \frac{(a^n - 1)(b^n - 1)}{a^n b^n + 1}$$

$$= \frac{a_n + b^n + (a^n - 1)(b^n - 1)}{a^n b^n + 1} = 1.$$

CLASSICS.

J. FLETCHER, B.A., Toronto, M.A., Oxon., Editor

NOTES ON CICERO, IN CAT. III.

§ 8. *Prætores virum f.* The gallant prætor, C. S. (Brad., § 224).

Qui effertet.—To bring out. Quis, final (Brad., 502).

Ex ædibus.—Ædes in sing., temple: in pl., house.

Si quid telorum e.—All the arms that were.

Introduxi, i.e., in senatum.

Fidem publicam. Gk. ἄδεια.—Assurance of safety, promise of pardon, which could be given by the Senate as the Roman executive.

Ut . . . uteretur.—Urging him to avail himself of the assistance of slaves. This Catiline had refused to do.

Quam primum.—As soon as possible. Quam with superl., intensive; Gk. δῆν.

Quemadmodum . . . erat. In accordance with their plan and the division of the city they had made. (*Describo*, write down; ∴ map out.)

His urbanis.—Here in the city.

Lentulo C. S.—Et omitted as usual (*asyn-deton*).

§ 9. *Pedestres sibi.*—That the conspirators would have no lack of infantry.

Sibi confirmasse.—Had assured them (*i.e.*, the envoys).

Fatis Sib.—The Sibylline books, bought originally by Tarquinius Superbus from the Cumæan Sibyl. They were burnt in B.C. 83 (when the capitol was burnt) but soon restored. They were in charge of a special board, and were consulted in public emergencies.

Haruspices.—Etruscan soothsayers who foretold the future by the entrails of victims sacrificed. They were in low repute.

Regnum et imperium.—Sovereign power. Hendiadys. Cf. *Timor et anxietas*, anxious fear; *vi et armis*, by force of arms.

Fatalem.—Destined by Fate.

Virgnum.—The Vestal virgins, priestesses of *Virga* (goddess of the hearth). The nation was regarded as one family, and the shrine of Vesta as the national hearth. It was the duty of the Vestals to keep the fire in the shrine of Vesta eternally burning. This symbolized the eternal existence of the nation. For neglect of duty or violation of their vow of chastity they were liable to severe punishment, being in the latter case buried alive. The allusion in the text is unknown.

Capitolium.—Strictly the temple of Jupiter Capitolinus (burnt B.C. 83, in the Marian troubles), but usually applied to the whole Capitoline slope, including both temple and citadel.

§ 10. *Saturnalia.*—Festival on Dec. 17 in honour of Saturnus, god of seed-sowing (*satio*). It was a period of unrestrained festivity, and perhaps the prototype of the modern carnival.

Ne longum sit.—To be brief.

Tabellæ.—Wooden tablets, smeared with wax, on which letters were usually written with an iron pen (*stilus*). They were tied together with a linen thread (*linum*), and the knot sealed with wax.

Sese—facturum.—In or. recta: *Faciam quæ vestris legatis confirmavi.*

Sibi recepissent.—Had undertaken to him (*sibi*) to perform. "Upon themselves" would probably have been *ipsis*. (See, however, Brad., 353.)

Qui . . . respondisset.—Qui concessive (Brad., 511). Though he had, a little before, managed to make some sort of answer.

Tamen.—In spite of all.
Bonorum f. studiosum.—A fancier of arms of fine workmanship.
Debilitatus atque a.—Lit. : Crippled and cast down. Tr. : Was crushed and overwhelmed after the reading of his letter.
Est vero.—You well may. It is, indeed, etc.

Quæ quidem.—That, if anything could.
Revocare.—To have called you back (Brad., 198).

§ 11. *Eadem ratione.*—In the same way.
Si . . . vellet.—Virtual or obl. (Brad., 448). If he expressed any desire to speak upon the matter, I gave him the opportunity.
Negavit.—Declined.

CLASS-ROOM.

LADY OF THE LAKE.

I. Canto 5, stanza 4.— Explain clearly meaning of "Moves. . . . laws?"

Do we govern ourselves according to the rules and restrictions that apply to a poor working-man?

Parse "enough," line 17, same stanza; also "but," line 5.

"Enough" is a predicate adjective, completing the predication of the verb "is" understood.

"But" an adverb, qualifying the numeral adjective "three."

II. Stanza 7, same canto:—What is the meaning of "softened" in "softened vale"? "True," last line but one?

"Softened" may possibly refer to the effect of light and shadow on the vale, or, more probably, to the effect of cultivation upon the formerly desolate place.

"True" means "deserved."

III. Parse "needs" and "but," 4th line from the bottom of stanza 25, canto 5.

"Needs" is a verb, subject "It" understood, and "but" an adjective, meaning "only" and referring to buffet.

IV. How do you account for the vast popularity of Scott's poems?

The clearness, simplicity, and vigour of the style.

The merits of the story and the attractiveness of the characters. The noble thoughts—patriotic and other—which are expressed.

The fact that the poems appeal, not to a limited class, but to the whole community.

The descriptions of nature and of well-known places, found in the poems, add to their popularity.

EDUCATION DEPARTMENT, ONTARIO.

DECEMBER EXAMINATIONS, 1890.

High School Entrance.

ENGLISH GRAMMAR.

Examiners.—John Seath, B.A., D. Fotheringham.

NOTE.—All candidates will take questions 1, 2, 3, 4, and 5, and either 6, or 7. A maximum of five marks may be allowed for neatness.

1. Classify, as far as possible, the words in the following extract, as (a) names, (b) words that take the place of names, (c) words that assert (or state), (d) words that modify (or qualify), (e) words that connect, (f) words that admit of a change of form to express a difference of meaning, and (g) words that admit of a change of form to express a difference of relation:

"Oh, let me stop here," cried he to his companions; "for father Toil will never dare to come to meet us." [22]

2. Analyze fully *any two* of the following:

(a) Mid the dark-browed firs and cedars
 Her livelier colours shine,
 Like the dawn of the brighter future
 On the settler's hut of pine.

(b) One moment wai, thou holy man.

(c) Ah, whence this mercy, Lord? [12]

3. Classify and give the relation of all the clauses in *either* of the following:

(a) Again I looked at the snow-fall,
 And thought of the leaden sky
 That arched o'er our first great sorrow,
 When that mound was heaped so high.

(b) If you continue your observations you will not fail to notice that the speed of its disappearance depends upon the character of the day when the experiment is made. [12]

4. Parse the italicized words in the following:

The *Genius* making me no answer, I turned about to address him a second time.

Wolfe applied himself to watching the north shore. [20]

5. Correct the errors in any four of the following sentences, giving in each case the reason for the correction :

(a) Not one in fifty of these writers express themselves right.

(b) He was drove that hard he soon threw up his situation.

(c) Of the two, he has thought Jack the youngest.

(d) He don't think we will have snow to-day.

(e) His brother thought there isn't any one so tall as him. [16]

6. Give the other principal parts of *burst*, *borne*, *lay*, *swim*, *dye*; the corresponding singular or plural of *theirs*, *know*, *fish*, *motto*, and the corresponding masculine or feminine of *maiden*, *countess*, *tailor*, *his*. [18]

7. Classify fully the pronouns and the adverbs in the following list: *what*, *where*, *each*, *their*, *thus*; and inflect for person and number, in the Active Conjugation, the Conditional and the Potential verb-phrases of *freeze* and *sit*. [18]

HISTORY.

NOTE.—Candidates will take any four questions in I, and any two in II. A maximum of five marks may be added for neatness.

I.—British History.

1. Explain, as fully as you can, how it has come about that the power of the Sovereign is now less than it was three centuries ago. [12]

2. What makes an event important in history? Give a full account of what you consider the two most important events in the reign of George III, showing why they are important. [12]

3. Give an account of the "Great Rebellion," stating its causes and its results. [12]

4. What is meant by the "New Monarchy"? What led to its establishment, and what to its overthrow? [12]

5. Name the Tudor Sovereigns in order, explaining how they were related to one

another; and give as full an account as you can of the last one of them. [12]

6. Write full notes on any four of the following: (a) The Act of Settlement. (b) The Test Act. (c) Petition of Right. (d) Union of Great Britain and Ireland. (e) Union of England and Scotland. (f) The literary men of the reigns of the Georges. (g) Thomas à Becket. [12]

II.—Canadian History.

7. Narrate the principal events connected with the discovery and early settlement of Canada. [14]

8. Explain, as fully as you can, the causes that led to the conquest of Canada. [14]

9. Explain the steps by which the Dominion of Canada obtained complete control of the North-West. [14]

10. Write explanatory notes on any four of the following: (a) The "Patriots' War." (b) The Clergy Reserves. (c) Reciprocity with the United States. (d) Federal Union. (e) Legislative Union. [14]

GEOGRAPHY.

Examiners.—D. Fotheringham, J. E. Hodgson, M.A.

NOTE.—Any five questions may be taken. A maximum of five marks may be added for neatness.

1. Name and describe the circles upon the globe connected with the measurement (or limitation) of time, of seasons, of zones, of hemispheres, of ocean travel. [15]

2. Name the natural and the manufactured products used in Ontario from each of the other provinces, and the products each receives from Ontario in exchange. [15]

3. Explain the position held by any five of the following Canadian officials, their duties, and how each is appointed:—Reeve, Mayor, Warden, Speaker, Premier, Lieutenant-Governor, Governor-General. [15]

4. Make a map of N. America as large as a sheet of foolscap will admit, showing the boundaries and giving the names of the countries, and of the provinces of Canada. Also locate and name the principal mountain chains, rivers, and lakes. [15]

5. On the map required in question four, trace accurately the Canadian Pacific and Grand Trunk Railways with their principal branches; and on these lines locate and name all Canadian and American cities situated thereon. [15]

6. A person going from London (England) to Melbourne (Australia) might take one of three routes. Describe accurately the best and give your reasons for preferring it to the others. [15]

7. Where and what are Belle Isle, Midland, Dufferin, Manitoulin, Canso, Haliburton, Juan de Fuca, Labrador, Sault Ste. Marie, Brampton? [15]

ARITHMETIC.

Examiners.—Thomas Pearce, J. E. Hodgson, M.A.

NOTE.—Candidates are to take the first question and any six of the others. A maximum of five marks may be allowed for neatness.

1. Write down the following statement of six weeks' cash receipts; add the amounts vertically and horizontally, and prove the correctness of the work by adding your results:

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
	\$ c.					
1st.	84 56	74 68	57 92	78 81	51 27	73 28
2nd.	73 55	65 43	81 47	86 57	74 23	36 19
3rd.	91 32	47 62	90 54	64 93	83 57	75 64
4th.	64 39	54 98	76 41	71 46	54 39	46 37
5th.	57 95	49 17	42 86	92 78	67 44	85 16
6th.	78 19	63 58	59 29	63 69	96 08	79 31
Total.						

(No marks will be allowed for this question unless all the work is correctly done.)

2. A person sold A $\frac{3}{4}$ of his land, B $\frac{1}{2}$ of the remainder, C $\frac{1}{3}$ of what then remained, and received \$50 for what he had left at \$60 per acre. Find the number of acres he had at first [14]

3. A grocer bought 6 cwt. of sugar for \$52.10, he used 65 lbs. himself and sold the rest so as to make $1\frac{1}{8}$ cents per lb. profit on the whole quantity. How much per lb. did he sell it for? [14]

4. A starts from Kingston to walk to Belleville, a distance of 45 miles, at $3\frac{1}{2}$

miles an hour, and B starts from Belleville 3 hours earlier at $2\frac{1}{2}$ miles an hour. Where do they meet, and how far will B be from Kingston when A arrives at Belleville? [14]

5. A note for \$162.50, with interest at $5\frac{1}{2}$ per cent., was given on January 14th, 1889, and paid on November 28th, 1890. What was the amount paid? [14]

6. A certain hall 60 feet long is to be carpeted. It is found that by stretching the carpet lengthwise, any one of four pieces, width respectively $\frac{3}{4}$ yd., 1 yd., $1\frac{1}{4}$ yd., and $1\frac{1}{2}$ yd., will exactly fit the hall without cutting anything from the width of the carpet. If the narrowest piece, worth \$1.10 per yard, be chosen, what will it cost to carpet the hall? [14]

7. I bought a bush farm, 180 rods long by 96 rods wide, at \$12.50 per acre. I paid \$14.75 per acre for clearing and \$1.35 a rod for enclosing the whole farm with wire fencing. Taking into account that I sold the wood for \$1160 and ashes for \$17.20, how much has the improved farm cost me per acre? [14]

8. A loaned B \$120 for 1 year and 8 months and received as payment in full at the end of that time \$130.25. What rate per cent. interest did B pay? [14]

9. A farmer sells a merchant 30 bushels of wheat at 90 cents per bushel and makes a profit of 20 per cent.; the merchant sells the farmer 5 yds. of broadcloth at \$3.60 per yd., 16 yds. of calico at 8 cents per yd., and 44 yds. of cotton cloth at 13 cents per yd., and makes a profit of 25 per cent. Which gains the more by the transaction and how much? [14]

COMPOSITION.

Examiners.—J. E. Hodgson, John Seath, B.A.

NOTE.—All candidates will take question 1 or 2, question 3 or 4, and both questions 5 and 6. A maximum of five marks may be allowed for neatness.

1. Substitute phrases or single words for the italicized portions of the following sentences:

(a) I am hopeful *that he will soon get better.* [3]

(b) He did this *to the end that he might* convince me [3]

(c) Repeat *what you have said*. [3]

(d) I understand *what you are saying*. [3]

(e) Tell me *where you live*. [3]

(f) *While he is here*, we shall have no peace. [3]

(g) He toils hard *that he may become* rich. [3]

2. Rewrite the following sentences, changing the verbs that are in the Active Conjugation (Voice) into the Passive, and those that are in the Passive, into the Active :

(a) The dead were refused burial. [3]

(b) The merchant promised the boy a new coat. [3]

(c) They painted the board green. [3]

(d) James was proclaimed King of Scotland. [3]

(e) The boy laughed at his mistake. [3]

(f) I must peruse these tidings alone. [3]

(g) A good farmer is proved by the steady improvement in his crops. [3]

3. Give, in your own words, an account of the knight's horse as contained in the "The Bell of Atri."

4. Substitute an equivalent expression for each of the italicized portions of the following:

"I gazed with *inexpressible* pleasure on these happy islands. At length, said I, 'Show me now, I beseech thee, the secrets that lie hid under those dark clouds that cover the ocean on the other side of the rock of adamant.' The Genius *making me no answer*, I turned about *to address myself to him* a second time, but I found that he had left me. I then turned again to the *vision* which I had been so long *contemplating*; but, instead of the rolling tide, the arched bridge, and the happy islands, I saw nothing but the long hollow valley of Bagdad, with oxen, sheep and camels *grazing* upon the sides of it." [21]

5. (a) Write in proper form a friendly letter, giving (1) an account of the manner in which you spent the last summer vacation; (2) a description of the school building where you attended last; (3) an invitation to your friend to visit you during the approaching holidays. [26]

(b) Draw on your paper the outline of an envelope and write in it (as for the post office) a suitable address for the letter referred to in (a). [4]

6. Rewrite the following sentences in the form of a paragraph :

The days were not lost. They were spent in work. Briant made it his duty to look after the young boys. He did this because it was his nature to care for the helpless. The boys were well cared for. The weather was getting colder and he made them put on warmer clothes from the stores found in the seamen's chests. Many alterations had to be made in order to make the clothes fit. The clothing was intended for grown men. During this time some of the boys were off among the rocks amusing themselves. Others remained to examine the tailoring operations. The boys took the matter quite lightly although exposed to hunger and cold. They were always hopeful of a speedy return to their homes. [28]

DRAWING.

Examiners.—D. Fotheringham, Thomas Pearce.

NOTE.—Only two questions are to be attempted.

1. Draw in perspective a common chair, three inches in height, as seen below the level of the eye. [13]

2. Make a drawing of a stovepipe, at least one-half inch in diameter and six inches in length, with an elbow at the top; showing the horizontal circular lines on it as seen on and above the level of the eye. [13]

3. Make a circle having a perpendicular diameter of three inches. Divide the circumference into six equal parts by using a semi-diameter to measure both ways from each end of the diameter. Draw oblique diameters by joining opposite points of section. Join by straight lines the ends of the perpendicular diameter with the more remote ends of the other diameters. Join the less remote ends of the diagonal diameters by horizontal straight lines. Strengthen with ink all lines not being diameters from the circumference to the first point of intersection. [13]

CONTEMPORARY LITERATURE

THE *Overland Monthly* for December contains a paper on Californian history of value to its readers. The short stories are interesting and numerous.

No higher compliment can be paid to the *Nursing Record*, than the interest and pleasure that nurses take in it. Timely notes on improvements are always to be found, nothing is small enough to be despised in nursing.

CAPT. KING occupies almost all of the December *Lippincott* with one of his interesting military novels. What is left of the magazine contains not a few good poems, and among articles, one on "Types in Fiction."

CANADIAN Christmas numbers are a decided success this year. The *Dominion Illustrated* holds a high and well merited position. Great care has been given to the reading matter and the illustrations are equally good. Special mention should be made of "Rosalie," which is a work of art.

THE instalment of the House of Martha in the *December Atlantic* shows some of Stockton's best work. The unforgotten Mr. Pepys has surely handed down some of his charm to one of his admirers, Margaret Christine Whiting, who chats pleasantly about the diarist's wife. 1891 will bring in the *Atlantic*, short stories by Rudyard Kipling and papers by Parkman and Lowell.

THE December *Popular Science Monthly* opens with "Early Steps in Iron-making," one of a valuable series on American Industries. Prof. Hertz contributes an article concerning his recent discoveries in electricity. Other interesting papers worthy of mention are the "The Bore of the Amazon," "Prairie Flowers of Late Autumn" and "Animal Life in the Great Desert."

THE Christmas number of the *Illustrated London News* is one of the best issued this year. The pictures are artistic and have a pleasant flavour of Christmas. The reading matter is remarkably good—"Only a Shadow," by Christie Murray and Henry Hermann; and the astonishing Mr. Kipling in

one of his very best humours relates how Mrs. Hankshee sits out.

BOOKS FOR TEACHERS AND STUDENTS.

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Virgil. Æneid VIII. A. Calvert, M.A.

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Xenophon. Anabasis. (For beginners.)

W. Welsh, M.A., and C. G. Duffield, M.A.

Xenophon Anabasis IV. E. D. Stone, M.A.

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