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THE CANADA

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ELECTIVE STUDIES IN AMERICAN COLLEGES.

BY PRESIDENT ELIOT, HARVARD COLLEGE.

THE adoption of what is called the elective or optional system of studies in the leading American colleges and universities, instead of a fixed and uniform curriculum, makes an epoch in the history of the superior education. The public has an interest in knowing what the improvements are which may reasonably be expected to result from allowing young men who have reached the age of about nineteen years, and have had a fair training in the subjects usually taught in secondary schools, to select their subsequent studies, with such help in making the choice as their teachers and natural advisers can give them.

The first improvement is experienced by the individual student; but when the gain to the individual is multiplied in the imagination by the whole number of college and university students, who year after year experience it, the total gain is seen

to be quite beyond statement or exact conception. Each student is enabled by judicious choice to avoid studies for which he has no taste or capacity, and to devote himself to those which he can pursue with pleasure and success. Using wisely this freedom, each student will work better, learn more, and gain more power than he would have done if he had been kept upon distasteful subjects. This proposition is just as true proportionally of the duller and lazier students as it is of the more intelligent, industrious and ambitious, and though it may be stated in few words, it contains the essence of the only true policy in university education.

The second improvement is felt by each class or section, considered as a whole, in every subject taught in the university. Let any class in any subject be rid of its reluctant, indifferent or inapt members, and the class is at once lifted to a higher plane of

instruction ; it works with far greater zeal and pleasure, and makes more progress. A good share of these advantages the elective system procures for every class in every subject.

The third great improvement is wrought upon and through the teachers. Under an elective system the instructors are strongly stimulated in their work by the interest which their classes exhibit, by the desire to attract good students to their respective subjects, and by the demand constantly made upon them for instruction ever ampler, more advanced, and better adapted to the needs and desires of their most ardent pupils.

Finally, the elective system of studies brings with it gradually many ameliorations of the old-fashioned college discipline. Students who are found capable of selecting their own studies naturally come to be trusted in other respects. Greater confidence will be manifested in their discretion, good intentions, and uprightness, and the relations between officers and students get to be based upon mutual regards instead of upon mutual distrust. With freedom comes responsibility ; with the relaxation of external restraints come self-control and self-reliance.

The elective system has been in operation, with some approach to completeness, from five to fifteen years in several Northern and Western colleges and universities, and at the University of Virginia, a system similar, in that the student chooses his subjects of study, though different in other important respects, has been in use ever since the foundation of the university. Some effects of the system have therefore been demonstrated by actual trial. Some interesting results have already been arrived at. Thus, experience has shewn that the students make choice of their studies in the great majority of instances with a good degree of forethought and discretion on grounds

of intrinsic worth or of adaptation to individual needs, and not for trivial reasons or with the purpose of avoiding labour. The good student is sure to make an excellent selection ; the dull or lazy student arranges his work in those directions in which there is for him the best chance of willing and profitable study ; and the average student, with the help of his instructors and friends, makes for himself a selection of studies which is more judicious than the college faculty could make for him with such knowledge as they are likely to have of his tastes, capacities and purposes—a much better selection, moreover, than any prescribed curriculum would be. Again, experience has proved that the working of the elective system exhibits no tendency to the extinction of the traditional college studies. The natural result of throwing open to choice many new studies is that the older studies are not pursued by so large a proportion of the students as formerly, but then they are pursued with far greater vigour and better results. The enlarged resort to classes in German, French, political economy, history, and natural history inevitably causes a diminished resort to the classes in Latin, Greek, and mathematics ; but these venerable subjects are nevertheless better taught, and are pursued with more energy and profit and to greater lengths than ever before. It clearly appears, on the other hand, that the great majority of students, exercising a free and wide choice of studies, will prefer the languages, metaphysics, history, and political science to any of the branches ordinarily called scientific. The scientific turn of mind seems to be comparatively rare among young men, at least in the present condition of the primary and secondary education. At Harvard University it is the subjects of mathematics and physics which shew the most serious decline, notwithstanding

the great facilities offered in those departments. Lastly, it is plain that by the steady expansion and improvement of the elective system the American college is to be gradually converted into a university of a new kind—not an English university, because it will not subordinate teaching to examining, or enforce any regulations by means of bars, gates, and fines; and not a German university, because the elective system does not mean liberty to do nothing, and no American university has absolved itself, as the German university has done, from all responsibility for the

moral training and conduct of its students; but a university of native growth, which will secure to its teachers an inspiring liberty and an unlimited scope in teaching, offer its students free choice among studies of the utmost variety, maintain a discipline adequate to the support of good manners and good morals, but determined by the quality of the best students rather than of the worst, admit to its instruction all persons competent to receive it, while jealously guarding its degrees, and promote among all its members a productive activity in literature and in scientific research.

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## CREDENTIALS.

BY DAVID BOYLE, ELORA.

FROM the nature of the circumstances that affect teachers and their calling, more especially with regard to the means and sources of supply, it is absolutely impossible for them to unite for purely business purposes, as doctors and lawyers do, or even after the manner of mechanics and tradesmen. Teachers' Associations are not guilds. The object or purpose of these gatherings—for they are not in any sense unions—may be said to be wholly of a public nature. Now and again, superannuation engages the attention of the profession at county and provincial meetings; but, as a rule, the time is chiefly occupied in the discussion of topics relating directly to school government and education—that is to say, to subjects the better understanding of which tends chiefly in the direction of giving the people increased value for the salaries they pay, or for any other moneys expended for educational purposes. No

attempt has ever been made by teachers in this country to form "a ring" for self-protection; and few things are more probable than that such an attempt would fail, not because the necessity for organization is not apparent, but for the reason already assigned—the peculiarity of circumstances. Not only are there scores of intermediate county model-school-teachers looking for situations at all times, but there is a host of itinerant incompetents, the nomads of the profession, who seldom remain in a position more than a year, removing elsewhere at the end of that time to some distant section, the trustees of which have been deceived in their choice by means of voluminous testimonials from ministers, ratepayers, former trustees—ay, and even from inspectors.

It might naturally be supposed that in course of time the eyes of engaging trustees would be opened to this fraudulent testimonial business, and

open, in many cases, they are; but Boards themselves are in a constant state of unrest, and it is somewhat difficult for new members to be convinced that credentials of a highly flattering description can by any means have emanated from the sources their signatures indicate, without containing at least some germs of reliability. Yet, that such is the case no one at all conversant with the subject will for a moment think of denying. In reply to every advertisement to fill a vacancy, scores of applicants furnish so-called testimonials almost *ad infinitum*, setting forth in superlative terms the eminent qualifications of Mr. or Miss So-and-so. In many cases, as already indicated, those employed on the strength of such recommendations prove the most miserable of failures. Wherever Boards of Trustees are of a permanent type, and their members have long worked together, the impression amongst them is, that the engagement of teachers is pretty much like drawing a ticket in a lottery. Now, next to, if not before, his professional certificate, a teacher's testimonials ought to be his most highly prized, because most dearly and deservedly won, *credentials*.

It should be as difficult to get credit from a clergyman for being "an excellent teacher" as it is presumably difficult to obtain an endorsement of one's qualifications for the post of churchwarden or elder. In the matter of Miss Namby or Miss Pamby, a recommendation is given just because she is a "nice person;" or, "It is such a pity to see her out of a situation;" or, "Well, poor thing! what could I do?" She has, in all likelihood, boarded with the chairman-trustee, or at any rate with one of the trustees, who, knowing her intimately as a lady, takes it for granted that she must be equally "nice" in school; but even if she isn't, he knows that "folks is jealous" because she boards

at his "place;" so, to spite "folks," as much as to please Miss Pamby, Mr. Scrubs gives her a first-rate "recommend!" Ah! but there are the inspector's testimonials! Yes, and it must be admitted that, as a rule, the recommendations that these gentlemen make are all they ought to be; but not seldom do papers appear, signed "P.S.I.," that would seem to have been granted more for the purpose of assisting teachers *out of their counties* than for the sake of advancing education without or within them.

Another misleading form of recommendation consists in the indiscriminate presentation-making so prevalent in some districts and sections. That this practice is contrary to law, without the consent of the trustees, avails nothing. It simply resolves itself into this:—Given that the fashion prevails, even the worst teacher has some friends, who, if only to spite those who are foes, "get up" the price of a walking-cane, a writing-desk, or a family Bible. The proceedings at the presentation, copied or cut from a newspaper, are not unfrequently made use of by the recipient when applying for a new situation.

Now, what we require, and what in our own interests we should demand, is the placing, in some way, of such restrictions upon the practice of giving recommendations and of making presents to teachers, as may enable those who get them, because they deserve them, to profit thereby to the fullest extent, and to prevent, as far as possible, the receipt of credentials by the undeserving, because incompetent, itinerant.

Confining our attention wholly to what even teachers sometimes call "recommends," it would appear as if the remedy lies altogether in our own hands. My suggestion is that we should use only testimonials in the form of affidavits, properly attested by a magistrate or commissioner. The

really good teacher will find no difficulty in securing by this means all he stands in need of; the thoroughly incompetent one will find it difficult or impossible to get any. Amid the ten thousand who willingly scatter their good opinions gratuitously, as at present, there are not many who would care to perjure themselves for the sake of benefiting even a friend. On the other hand, when any lady or gentleman feels conscious of deserving a testimonial, and wishes to procure one, care will be taken to have such only from persons competent to judge, few of whom will be likely to hesitate in taking steps to furnish what they must regard as both a duty and a pleasure to provide.

A little expense will, of course, ne-

cessarily be entailed upon the teacher, as it is not to be supposed that attested credentials can always be had free of cost. This, however, will only prove a means of enhancing the value of testimonials so procured, because one is not likely to pay for the administration of an oath to another whose opinion is scarcely worth having at any price. Again, the incompetent teacher will scarcely dare to ask for a sworn recommendation, knowing at the same time how strong are the probabilities of refusal.

Trustees, I need hardly add, will naturally place more reliance on the sober affidavits, say of six gentlemen, than on the unattested statements of twice that number, no matter how liberal may be their asseverations.

## WORDS—THEIR ABUSES, USES AND BEAUTIES.\*

BY A. H. MORRISON, GALT.

(Continued from page 23.)

**F**IRST look at the prominent part which onomatopœia plays in the construction of our word pictures. Pronounce the word *whip*, and the sound of the lash itself is heard descending through the air; *hush*, and the spirit of silence and propriety is evoked; *babble*, or *chatter*, or *prattle*, and the rapid half-articulate utterances of the child, or the eager conversation of some bevy of girls met together for social gossip, is graphically portrayed to the intellect; *ripple* or *gurgle*, and the rhythmic flow of waters is in one's ear as well as the mere word-sound; *buzz*, and the summer song of the bees is wafted from the ivy bloom; *whisper*, and the mental conception of rapt attention on the one hand, and eager, confidential, low-voiced utterance on the other, is trans-

mitted from mere fancy into actual fact; *rush*, and the wind of the charging squadron surges onward with the roll of the *r*, and the impetuous progress of the sibilant *sh*. Yes, in the articulation of words there is not only a conveyance of sound to the ear which custom has taught us to connect with certain invariable ideas or objects,—there is an actual representation by sound of the notions or objects themselves. There is a soul in words as there is in every other work of art, and these souls are in strange sympathy with our own. Let us, for curiosity sake, examine a few more of our word pictures, and establish, if possible, our conviction as to their absolute propriety. Does not the vivid *lightning* convey to your senses the idea of a quick, brilliant, lambent flame? Does not the broad sound *thunder* aptly illustrate the roll which follows

\* A Paper read at Berlin before the Waterloo County Teachers' Association.

the electric flash? Take the word *flash* itself, and compare it with *sound*—one short and one sharp, like the lightning's fork; the other broad and dull as the answering peal. *Querulous*,—is there not something peevish in the very sound? Is there not something sturdy and self-reliant in the word *bold*? *Defiance* has an aggressive tone. *Weak*—is it not a sickly sound? Is not *strong* robust and hearty? In *lean*, *thin*, *spare*, have you no visions of sheep-shanks, contracted chests, hollow eyes, Don Quixotes charging upon Rosinantes at skeleton wind-mills? *Robust*, *rotund*, *obese*, *fat*—do no Falstaffs rise before your mind's eye—no portly and circumspect Sancho Panzas on plethoric mules? *Fair*, *white*, *blonde*—is not want of colour depicted on the very articulation? *Dark*, *black*, *opaque*—is there not a sense of obscurity in the sounds? *Sharp*, I imagine, is a fine word to denote a keen edge; *blunt* describes admirably the dull blade or the unpolished speech; *little* seems itself diminutive; *big*, though a little word, is self-important and full; *mean* has a mean sound, but *honest* has a ring about it which begets confidence; *hiss* has a tone of derision or cunning, or hate, very unpleasant to the ear; but *hurrah* or *bravo* are resounding plaudits compressed into dissylla! les. *Ugly* is a word which has no euphony of sound to commend it; but *pretty*, *graceful*, *beauty*, *lovely*, *winsome*, *elegant*, are all typical of what they are intended to represent—each is “a thing of beauty and a joy for ever.” Notice the difference between *lightsome* and *sombre*, *sparkling* and *dull*, *sad sigh* and *cheery smile*; *home* and *mother* are synonyms for all that is peaceful and all that is holy in domestic life; *lady*, *girl*, *sky*, are verbal jewels of the purest water, set by a magic inspiration of articulate utterance in the golden garniture of our beautiful language; the first—a pearl—

pure and calm in its passionless enunciation, spotlessly fair, as the lady ever should be in mind and action; the second—*girl*—an opal, pure and fair, and bright, too, in sound, but with an ever-varying cadence, like the young nature it depicts, or like the gem itself, which changes its tints with every transient change of position; the last—*sky*—a diamond, an oval brilliant, sparkling and joyous, flashing under the sunlight of a glorious vocalisation. *Fitsful*, I imagine, is a word which, like *querulous*, admirably illustrates by sound the meaning intended to be conveyed by association. There is something erratic and Will-o'-the-wisp-like about its orthoepy, and always calls up to my mind the leaping of a dying flame, spasmodic and ghost-like, before it flickers out for ever. *Rally round* the colours, *sullen frown* of discontent, *murmur* of the sea, *muttering* of the distant thunder—is there not something in the articulation of each of these phrases which does more than convey by habit of association a bare sterile idea, or set of ideas, to the mind? Is there not something inherent in the words themselves which appeals to more than the outward ear? “An eternal fitness,” proclaiming that the word sounds and their meanings are in closer relationship than might at first be apparent to the unobservant listener. So with *spark* of *hope*, *day* of *doom*. What a contrast is here!—one short, bright and cheery; the other broad, sombre and desponding. Compare mentally these two passages: *Above, the laughing sky, sparkling with constellations; beneath, the sombre, shadowy precincts of the silent tomb*. In one all crisp, sibilant, bright and fresh as the dew of the May morn; the other labial and gloomy, fit representative of funereal thought. In the following passage, which I have constructed with a view to illustrate how onomatopœia influences the choice of word pictures, notice the sounds empha-

sized: "The crack of the rifle was followed by the whistle of the bullet, and its dull thud as it struck the victim, who sprang from his lair, rushed from the covert, gave a few immense bounds, and fell with a crash to gasp and sob and sigh away its life." Then again, I would ask you to judge of the comparative merits of two individuals by merely listening to the sounds of the words which convey to the mind through the ear the notion of their distinguishing characteristics. I will denounce one as a *poor, mean, vile, niggardly, miserly* wretch; I will dub the other a *good, honest, brave, generous, outspoken* man. Upon hearing the vocal delineations of the characters of these two figurative individuals, as I have articulated them, to which would you prefer to lend an imaginary \$5 bill? In concluding my illustrations on onomatopœia, I would ask you whether there is not something peculiarly soothing and refreshing about the mere utterance of the following: "I loved to roam through the cool grassy meadows, by the limpid waters, under the whispering leaves of the dewy evening?" On the other hand, is there not something irritating, oppressive, suggestive of perspiration and a thermometer at 100° in this: "I toiled along, footsore and weary, now grumbling, now lagging, now halting, down the hot, dusty, dreary road, beneath a burning sun set in a copper-coloured sky?" I cannot, of course, say whether your notions will exactly accord with mine on this subject; but, for my part, I do think that many words have uses apart from mere *arbitrary* form or sound.

I would like, in the next place, to say something of the influence which derivation exerts in the formation of words. Is the word *heliography*, which means literally sun-painting, or photography, a purely arbitrary word? Is it not rather a beautiful picture, a verbal photograph of the science it repre-

sents? It is derived from the Greek *helios*, i. e. sun, and *graphê* a painting; and what is a photograph but a sun painting? *Photograph* is itself a picture word—Greek *phos*, *photos*, light, and *graphê*. *Cabal*, again, is an instructive word, even apart from its derivation, which is a matter of dispute, meaning literally a small party united for some secret design. The story connected with this word must be fresh in your minds, and the names of Clifford, Arlington, Buckingham, Ashley, and Lauderdale live again with the mere pronunciation of the dissyllable in which their memories are embalmed. Take the word *dynamite*; you have all some idea of the latent destructive force compressed within a small mass of this dangerous material. Why was the name chosen to express the deadly explosive in preference to perhaps a simpler one? Because the Greek *dynamitus*, *dynamis*, denotes power, and power is the distinguishing attribute of the substance in question. Trench, in his "Study of Words," gives *dilapidate* and *caper* as examples of fine word pictures, and he could have chosen few more apt and striking. "Dilapidate"—Latin *de* from *lapis lapidis*, a stone—stone from stone—thus the ruin totters and tumbles; and what fitter, sadder, more eloquent word could have been chosen to illustrate the slow decay, the gradual fall, the final and utter prostration and dissolution of what was once erect and compact, and imposingly beautiful? So with "caper"—it means a sudden leap or skip. Now, every one who has watched a goat must have noticed the seeming involuntary and amusing gambols this animal indulges in. Well, the word admirably illustrates the erratic movements of the creature which in Latin is *caper*. One more illustration and I have done with derivation. What a beautiful word is "microscope." Let us trace it to its origin. First, however, what does the word



describe? An instrument which magnifies, which converts even a drop of water into a miniature *world* filled with life and movement. And what now does the word literally mean? Greek, *mikros*, little; *kosmos*, world. Could a fitter sign have been chosen to represent the instrument in question?

I would now like to consider shortly the beauties of words in composition. I allude to those particular beauties arising from the happy choice and felicitous combination of our word-pictures. I think that I have already sufficiently illustrated the beauties of words taken as mere words—that is, signs of notions. I have attempted to show their individual aptness, their peculiar fitness for the work assigned them. I have even lightly touched upon their graces in composition. What I have to do now is to dwell more fully upon the artistic effects resulting from apt combinations; such combinations, in fact, as adorn the pages of our best classical authors, that judicious, scholarly, perhaps inspired taste or faculty which prompts men of established reputation in letters to use none but the fittest words wherewith to express their meaning, the possession of which faculty is in fact the secret of their success as authors. There is not a writer of repute in our language, or indeed in any language, whose individuality of genius is not stamped on his compositions by some happy combination of words, which are the outpourings of a species of inspiration. These combinations, thus felicitously effected, convey something more than mere ideas; they awaken in us a keen perception of the beautiful; create an intense longing for the music of speech; and having roused the desire, they contain within themselves the means of gratifying it.

“A thing of beauty is a joy for ever:  
Its loveliness increases; it will never  
Pass into nothingness, but still will keep  
A bower quiet for us,” etc.

I quote from memory. Doubtless this sentiment could have been, and has been, expressed in other words by other poets; but it is Keats, and Keats alone, who has invested the thought with a charm peculiarly its own.

“When the hounds of spring are on winter's  
traces,  
The mother of months in meadow or plain,  
Fills the shadows and windy places  
With hiss of leaves and ripple of rain.”

Here is a beautiful example of alliteration and onomatopœia. As the soft, suggestive cadence of the concluding lines fall upon the ear, we see in fancy ghostly shadows chasing each other across the wrinkled surface of some hawthorn-bowered wayside pool, pursued by the errant wind, or hear the subdued rustle of the whispering leaves in their gentle dalliance with the fitful breeze, mingling with the quick, light patter of the rain-drops, as the spring shower sweeps through the grove.

One of the most beautiful and striking instances, to my mind, of alliteration and middle rhyme in the English language, is to be found in that exquisite fantasy, Coleridge's “Ancient Mariner :”—

“The fair breeze blew, the white foam flew,  
The furrow followed free;  
We were the first that ever burst  
Into that silent sea.”

Pope's celebrated couplet on the English hexameter must be fresh in the memories of many. Notice the crushed, dragging effect of the concluding verse :—

“A needless Alexandrine ends the song,  
That, like a wounded snake, drags its slow  
length along.”

Why, one almost sees the line, like the bruised and tortured reptile, writhing under the weird influence of the magic pen which gave it birth. Pope is a master of this art of according sound and sense. Here is the sound of a bow-string :—

"The string let fly,  
*Twang'd short and sharp like the shrill  
 swallow's cry."*

Again, slowness of motion depicted :  
*First march the heavy mules securely slow ;  
 O'er hills, o'er dales, o'er crags, o'er rocks  
 they go."*

Take Milton's oft-quoted—

"Brush'd with the hiss of rustling wings,"  
 and it does not need a very great effort of imagination to see the Satanic hosts winging their fell flight towards the council hall of Pandemonium. Milton, like Pope, is a master of onomatopœia ; here is harsh sound represented :—

"On a sudden open fly  
 With impetuous recoil and jarring sound  
 The infernal doors, and on their hinges grate  
 Harsh thunder."

So, when Satan is rewarded with a general hiss by his infernal legions, instead of expected applause,

"he hears . . . .  
 A dismal, universal hiss, the sound of  
 public scorn. . . .  
 He would have spoke,  
 But *hiss* for *hiss* returned with forked tongue :  
 . . . dreadful was the din of *hissing*, . . .  
 . . . thick swarming now  
 With complicated monsters head and tail,  
*Scorpion* and *asp* and *amphisbæna* dire,  
*Cerastes* horned, *hydrus* and *lops* drear,  
 And *dipsas*."

Gray's opening lines in the "Elegy"  
 are wonderful word pictures :

"The curfew tolls the knell of parting day,  
 The lowing herd winds slowly o'er the lea,  
 The ploughman homeward plods his weary  
 way,  
 And leaves the world to darkness and to me.  
 Now fades the glimmering landscape on the  
 sight,  
 And all the air a solemn stillness holds,  
 Save where the beetle wheels his droning  
 flight  
 And drowsy tinklings lull the distant folds."

Here are landscapes, and beings, and motions, and sounds, ay, and the witching hour itself, translated into sentences which speak as eloquently to us of rustic life and rustic surroundings as did the very sights and

sounds themselves appeal to the poet's inspired senses.

What an exquisitely soft and tender pathos there is in these lines of Byron, as, standing on the Bridge of Sighs, in Venice, he moralizes over the fall of the city :

"A thousand years their cloudy wings expand  
 Around me, and a dying glory smiles  
 O'er the far times when many a subject land  
 Look'd to the wing'd Lion's marble piles,  
 Where Venice sat in state, throned on her  
 hundred Isles."

I never heard Scott's

"Harp of the North, farewell, the hills grow  
 dark,  
 On purple peaks a deeper shade descending ;  
 In twilight copse the glow-worm lights her  
 spark,  
 i he deer half-seen are to the covert wending,"

but the misty outlines of the vanishing peaks rise before me, and the deepening twilight hour falls apace, and curtains with shadows the resting-place of wearied bird and beast, and the tender, sorrowful farewells of parting friends linger lovingly on my ear.

And so I might multiply instances. Let me conclude my quotations with two short extracts from Shakespeare's "Macbeth," which for unique, striking phraseology, exquisite sentiment, pathos and power combined, are unsurpassed in our language.

The first is an extract from the conversation between Lady Macbeth and her husband before the murder of Banquo. Macbeth speaks :

"There's comfort yet ; they are assailable,  
 Then be thou jocund. Ere the bat hath  
 flown  
 His cloister'd flight ; ere, to black Hecate's  
 summons  
 The shard-borne beetle, with his drowsy  
 hums,  
 Hath rung night's yawning peal, there shall  
 be done  
 A deed of dreadful note.

Lady M.—What's to be done ?

*Mac.*—Be innocent of the knowledge,  
dearest chuck,  
Till thou applaud the deed. Come, sealing  
night,  
Skarf up the tender eye of pitiful day ;  
And, with thy bloody and invisible hand,  
Cancel, and tear to pieces, that great bond  
Which keeps me pale !—Light thickens ;  
and the crow  
Makes wing to the rooky wood :  
Good things of day begin to droop and  
drowse  
While night's black agents to their prey do  
'rouse."

Again, when Macbeth hears that  
the Queen is dead :

" She should have died hereafter ;  
There would have been a time for such a  
word.—  
To-morrow, and to-morrow, and to-morrow  
Creeps in this petty pace from day to day  
To the last syllable of recorded time ;  
And all our yesterdays have lighted fools  
The way to dusty death. Out, out, brief  
candle !  
Life's but a walking shadow : a poor player,  
That struts and frets his hour, upon the stage,  
And then is heard no more : it is a tale  
Told by an idiot, full of sound and fury,  
Signifying nothing."

Ah ! the stream of language is a wonderful stream, for I have often loved to compare it to such, and I deem it an apt comparison. Tentative and coy in its earlier stages ; trickling gently from the tiny cleft of first articulate speech, and shyly lipping at its infant source ; shimmering here and glimmering there under the faint light of nascent inspiration ; whispering gleefully in the sunbeam's play, or darkling tenderly 'neath the twilight of sober thought or poetic melancholy ; anon fuller grown, with merry prattle, and gurgle, and rhythmic babble, fancy fed, it leaps and mantles over the caustic bed of humour, flashing and foaming with subtle feint of witty war, or frothing and bubbling with the glee of ready repartee ; still gathering volume and expressive force, it issues now into the open, gliding gently and rhythmically on with many a wind and graceful curve, through shadowy

vales of dreamy thought and soft expression, and ministered to by many affluents, for of such is this realm of poetic bud and bloom prolific. Thus ever-increasing as it flows, it emerges from among the flowers and enters once again a new region of sense and sound, where, with the menacing tone of the mountain cataract, it rumbles between cloud-capped peaks of lofty sentiment and apt felicitous utterance springing from giddy heights, and tossing aloft its spray in sparkling showers, rainbowed with the hues of an impassioned eloquence, or iridescent with the tints of a classic diction, till at length, full-fed and perfected, it surges onward in all the majestic plenitude of the father of the waters, sweeping apace with giant might through realms of doubt and bigotry, of wilful misapprehension and besotted opposition ; here smiting with irresistible force some adamantine rock of gross ignorance or cruel superstition, there shaking with its mighty voice of thunder some dread abyss where lurks the taint of covert vice, or crouches the misshapen form of monstrous irreligion, coursing through gloomy chasms and deep dark ravines, and laying bare to the glorious rays of universal and progressive intelligence the golden sands of philosophic lore and scientific research, ever widening, ever expanding, the while bearing richly-freighted argosies of accumulated lore onward through years, and epochs, and cycles—forever onward—to the broad bosom of that illimitable ocean of perfected wisdom which, unswept by temporal gale, unruffled by even a transient breeze of earthly misconception or scepticism, placid and profound, sleeps forever beneath the beams of the eternal sun.

And, in conclusion, let me say a few words anent the so-called spelling reform. I may be prejudiced ; some may style me antiquated in my no-

tions ; but I do most sincerely hope and pray that no Vandal hand may ever be permitted to mutilate the wonderful heritage of our written speech, the noble treasury of our nation's past thought and historic vicissitudes. They talk of a phonetic system of spelling. I say, alter our orthography and the first stroke of the baluster is levelled at our noble edifice of language, which must surely fall. Its halls may indeed be rebuilt, but where will be their frescoes? Its chambers may be re-furnished, but where will be their pictures? Its artistic glories will disappear, its historic associations will depart, every lineament of expressive grace must vanish, and but the poor, bare skeleton remain. Is not that noble structure which was built by our ancestors, and improved by ourselves, good enough for our inheritors? How shall we, the possessors and guardians and *lovers* of this ancestral legacy of inimitable expression, feel as we range over its desecrated threshold, and see every feature of the construction we cherished so fondly, swept away by

the unappreciative and merciless dictum of a volatile and cultureless *reform*—save the mark! Our beautiful word-pictures are to be marred; the veil of our temple rent; all that we deemed expressive, and fluent, and graceful in language, epitomised tales told by a sign, swept out of being; and what substituted? Dry, unmeaning Americanisms, whose main associations are those of inimical nationality, and whose sole recommendation is an uncouth and Yankeeified vesture, shimmering with the gloss of parvenu novelty, it is true, but, instead of the cunningly-woven silk of yore, fabricated of poor, poor homespun, of shapeless pattern and scanty cut, without a receptacle in which to conserve the guinea of a golden idea, or a pocket in which to lay aside one silver dollar of intelligent thought. In earnest, heartfelt appeal against any such absurd and unnecessary innovation I lift my humble voice. Let our language be spared to us in all its integrity, and the glorious history of its rise, its progress, and its perfections be perpetuated in and by itself.

A WRITER in the *Educational Weekly* declaims against infant "concert recitations," citing as examples of the false impressions such noisy repetitions often make, the case of the little boy who memorized (!) "Two lines meeting at a point" as "Two nines nigger on a point," and of the little girl who sang "Landy free knows Snotty Snag" instead of "Land of the free, knows not a slave." We can parallel these with instances that came under our own notice: thus, we knew a lad who sang "Hold the Fort," "Hold the Fork." Another gave, "To rebels of love your pigeons dry" for "To realms above your pintons try." Even the Multiplication Table is frequently fearfully mangled—*twice* and *twelve* become *twice* and *kwelve*. In schools where it is the practice to "teach"

the Counties and County Towns of Ontario on this wise, it is astonishing the names some places get. We have heard "Simkol countown Barrick," "Hold-a-man coun-town Kyuga," Wentowar coun-town Hanlan," "Grick coun-town Owingsoun" and "Yawr coun-town Tront." In fact there is hardly a name or any kind of word not liable to mispronunciation by this manner of conducting a class, and although for the sake of variety it may be well now and again to humour the little ones by allowing them to repeat in concert, great care should be used to avoid errors similar to those we have pointed out. Let any teacher who has pursued this system for a time, get his pupils to write the names down, and he will be as much amused as discouraged at the result.

## PRACTICAL TEACHING.

FROM CONTEMPORARY SOURCES.

## LANGUAGE LESSONS.\*

THERE is no subject in the much distended school curriculum, commonly called the course of study, which is receiving so much careful consideration from the leading educators as language lessons and composition. Judging from the results, after a continuous school course of a dozen years, certainly no subject still demands more thoughtful investigation.

In the whole range of human knowledge nothing is more desirable than a thorough acquaintance with the mother tongue, so that the thoughts can be expressed in a clear, concise, consecutive, and forcible manner. It is no ordinary acquirement to be able to wield a fluent pen, or in unpremeditated speech to give utterance to definite ideas, arranged in order so that whatever is communicated will be lucid and convincing. In a district, grammar, or high-school course, which of the various subjects (on the great arena of life) will most positively demonstrate the supremacy of intellectual strength and vigour? After the course in arithmetic has been finished, how much mathematics beyond that is required for the statesman, judge, lawyer, physician, merchant, mechanic? And yet to which of these persons is a command of language not of the utmost importance? With a continuous course in language from the first year in school, through the various grades, until graduation from the High Schools, what an immense

advantage there would be in culture—not to mention power and vigour of intellect—over present attempts at “harmonious and equable evolution of the human powers.”

On the part of regular drill masters and book-bound teachers there is little sympathy for this work. It is somewhat different for teacher and pupil from that in the exact sciences, or spelling, in which various steps and stages can be measured and estimated accurately by a per centum mark. In language there must be variety and versatility.

The numerous exceptions and peculiarities in our language are insurmountable to the younger children, but there is a period in mental development when such minute investigations and analyses afford excellent mental discipline and become indispensable—in other words, the so-called grammar has its proper place in a thorough study of English.

With the children below the Fifth Reader a text-book dealing with the technicalities of the language is an impediment rather than an advantage in preparing the mind for freedom in the proper use of speech, oral or written. The great outcry against grammar arises from the injudicious and stultifying procedure of attempting work in the lower grades that is suitable and appropriate for more mature intellects. It is not the fault of the grammar that there are so many exceptions to each rule established, but as these actually exist in the language, there is a proper time for their study.

With a graded course advancing

\* Abstract of a paper read before the Pedagogical Association, by J. Mickleborough, Principal of Cincinnati Normal School.

*pari passu* with the unfolding intelligence of the learner, the English grammar has its legitimate place; and instead of raising a hue and cry against technical grammar, it is more justifiable and commendable to charge home upon the blunderers who placed subjects in the course of study which should be relegated to those of more mature intellect.

A little attention to established principles of pedagogical science would have prevented the mistakes to which reference is made.

For the first half-year in school, under the influence of a kind and sympathetic teacher, the children should be encouraged in the freedom and natural vigour of speech, rather than intimidated by constrained efforts at formal correctness. Corrections should not be made so as to become repressive, but gently and gradually the children should be led to make statements in a better form. It would be well to remember that *no one has a right to use a word until he has earned the right to use it.*

The right to use a word depends upon our knowledge of its meaning, ability to spell, etc.

After this introduction to school life, in all the exercises the children should be required to express their thoughts in full sentences, and when incorrect, the error should not be allowed to pass uncorrected. The corrections should be made by the pupils if possible, otherwise by the teacher. In many instances children have learned ungrammatical expressions at home; these require the constant attention of the teacher, so that after many repetitions the correct form will eventually take the place of the erroneous.

"The pupil's ability to use good language does not depend upon his knowledge of grammar, but upon his having *heard* good English, *read* good English, and *practised* good English."

If these two points are carefully watched, (1) correcting that which is wrong in the language of the children, (2) requiring them to use full sentences, expressed in simple language, a great advance will be made. But if the instruction of the children of the lower grades is conducted according to the routine laid down in grammars, there will be classifying words into parts of speech, telling properties of each, committing to memory exceptions innumerable, and learning the stupendous fact that *each* is a *distributive*, *pronominal*, *definitive* adjective.

But continue the work by memorizing ten classes of adverbs and singing the list of prepositions, etc. After all this is taught, now test the ability of the children to build, construct, frame sentences that shall clearly, accurately clothe the thought which is to be expressed. Failure must inevitably be the result. It is true that the Fifth or Sixth Reader students will be able to analyze sentences placed before them, *but there is no power in the proper use of language.* The *power* to use language is the grand central idea to be kept in mind in giving instruction in language. It would seem that in this subject the tree is placed with its branches in the earth, and its roots in the air. The memoriter work is now followed by analyzing or tearing to pieces or dissecting the sentence. Will a boy learn to skate by naming the parts of a pair of skates, as runners, clamps, screws, heel, toe, etc., or by analyzing and telling how one part is related to another? Will a little girl learn to sew by picking out the stitches, and taking one part of a garment from another?

Is a boy to learn to skate?—let him skate.

Is a boy to learn to swim?—let him swim.

Is a child to learn to write?—let it write.

Is a child to learn to speak or write correctly, and with ease?—let it use the language and express its ideas in full sentences.

As in skating there will be faltering and falling; in swimming the head goes under the water; so in sentence-building there will be imperfections, yet these errors will be profitable by requiring more carefulness in future attempts. This work should be oral as well as written. In the early years of school life, before the introduction of the text-book, much valuable instruction may be given, and much real education in language may be accomplished. The object, then, in this paper, is to present a plan of work for these lower grades in our schools that shall be in conformity with the unfolding intellectual capacities of the children, so that mental development and ability to use language shall advance side by side. As the mind grows—develops—so shall the *ability to use* language fluently increase.

There must be no neglect in having language-culture keep pace with the intellectual growth, and, on the other hand, no hot-house process of trying to stimulate the young mind beyond its natural activities, and then complain because there is no fruitage after many months of toil and years of waiting. Boys sometimes go into the orchard, and, after stoning, clubbing, and much shaking, a few apples of poor quality are obtained. Wait until the time of proper development, and then a little effort will usually be rewarded with abundance of luscious fruit.

Teachers are obliged to cudgel, shake and rake the brains of the youngsters, and in despair exclaim, *failure, failure*, in this work of technical grammar. Fellow-teachers, wait for more maturity, and then with proper effort the richest results may be yours, or rather your pupils!

Actions are particularly noticed by children, and reproduced by them in their plays. Who has not seen children play school, and observed how accurately the teacher's eccentricities have been portrayed. Since the children voluntarily make these observations and reproduce them, let the reproduction consist in narrating what was done in suitable language. Suppose the Principal came into the room and said "Good morning" to the teacher, and the teacher said "Good morning, sir," and he then said "*Good morning, children;*" and the teacher offered him a chair, and he said "No, thank you," and left the room. This was intended for a lesson, and the children were requested to listen, and watch carefully, and then tell what was said and done in the order of occurrence.

Children cannot generally talk about things in the abstract; hence, in talking about familiar events, select such as can be presented to the children, and upon which observation can be made there and then. *Clear perceptions* must precede the attempts at expression of them. *Ideas before words* is an old but valuable maxim.

Language is thought made visible; hence both the oral and written forms are essential to this manifestation of thought. But it may be asked, why take the narrative composition rather than the descriptive? I answer (1) because it follows more directly the development of the childish mind, as we observe it in its unrestrained activities. (2) "The narrative is easier both to compose and to comprehend than is description." (Bain's Rhetoric, page 166.)

In this work the child is allowed to express its conscious experiences. When the teacher advances beyond this, and requires the pupil to repeat his words, it is simply compelling the little six-year-old to wear the teacher's overcoat.

## SOMETHING ABOUT GRAMMAR.

To preface the something which we wish to say about grammar, we are going to tell a true story. If we were writing blank verse we would call it "an ower true tale," but since we are only editing plain prose we will call it a very true story, or, a too-too true story, if you prefer the æsthetic phraseology.

To begin: There was once a boy whom, for convenience' sake, we will call John Smith. This boy had a teacher, whom, also for convenience, we will call Miss Jones. Now, John was not one of Miss Jones' brightest pupils, neither was he one of the dull-est. He was not particularly fond of study; still, under the stern pressure of necessity, or a strong reason of any kind, he would apply himself diligently and well. He himself was always desirous of excusing any remissness on his part in school work, by referring to his pronounced utilitarian principles. "There's no use in learning that," he would say. But if he could be made to see the use to which any branch of knowledge could be put by him, he would apply himself to it with an ardour which was most encouraging.

Now, Miss Jones, one fine day, decided that it was time for the class in which John Smith was, to begin the study of grammar. We will exonerate Miss Jones from part of the responsibility for this folly of thrusting a class of lads headforemost into an abstruse and difficult study for which they had had no preparation; it was the decision of the School Board, and the Board had but adopted a graded outline whose wooden proportions had been chiselled out by a so-called magnate, assisted by a school-book agent; the pair astutely imagining that to make the plan of study resemble their own heads as nearly as possible would be the very crowning glory of success.

John Smith and his companions felt, but did not understand, what a brilliant move was accomplished, when the somersault from mental arithmetic landed them, without injury to life or limb, in the midst of the study of grammar. The boys undertook the work with expressions of disgust that augured ill for their good scholarship in it. Miss Jones was undaunted, however; she had taught boys grammar before. The work was not pleasant, she acknowledged; it was too much like giving them castor-oil or rhubarb. But she had done both, and she knew that if she could get the boy's mouth open she could empty the medicine into it, and blow it down his throat, if necessary. So, if she could get his mental receptacle opened, she could pour in the grammar lesson, and by some means worry it down. But when she came to a boy who would not open his mouth, then, indeed she was nonplussed.

John Smith proved to be one of the troublesome ones. He had objected to undertaking the study to begin with, and he only took his place in the class under protest. He sat with black and lowering brow all through the first recitation, while Miss Jones explained—with as much vivacity as she could get up on so dry a subject—the different names and offices of the parts of speech. It is possible that had some preliminary language lessons prefaced this sudden plunge into the chilly waters of grammar—some lessons showing the boys that the aim and use of the study were to give them an intelligent mastery of their own tongue rather than to store their minds with a list of (to them) useless, meaningless definitions and rules, the objections of our hero might have been forestalled, and his dark countenance would not now have warned Miss Jones of an impending battle.

On the second day the battle began. John Smith, when the grammar



class was again called, refused to take his seat in it. He had not learned his lesson, and what was more, he never meant to learn it; he hated grammar; he could not see any use in it; he would not be made to study it. Miss Jones expostulated, but in vain. She coaxed, she scolded, she threatened, she punished, by all penal modes permitted to her; all in vain. She called in the aid of pater and mater Smith. The latter had resigned all authority over young John before he was out of frocks, and could now only coax, bribe and weep, no one of which methods made any impression upon the obdurate youth. Pater Smith commanded, but was not heeded; he resorted to the birch, which he used with cruel force. But his son was gifted with some of that tenacity of purpose which made the great original John Smith so illustrious, and the argument of the birch rod moved him not a whit. Then came the School Board, who threatened the boy with expulsion. This did no good, for John would not yield to any one now. The threat of expulsion was carried out, and John bore his books away from the school in triumph. Though forced to retreat from the field of action, he felt that he was victor in the fight.

What was the end of the story? Well, matters were compromised with mater and pater Smith without much difficulty, after all. John ran loose on the streets for a while, but tiring of this—for he was not an idle boy, naturally, but a boy whose energies needed direction—he found a place as errand boy in a grocery, where he gradually rose until he became head clerk, and is likely to own the business some day.

He has often regretted that his school days were so suddenly cut short, though he will not admit that his position on the question of grammar was wrongly taken. And yet he

has been known to wish that he knew more about his language, for he confesses that the task of writing a letter is an herculean one to him, and never undertaken except under the pressure of the direst necessity.

What is the moral of this tale? you ask. We said it was to be something about grammar, did we not? and our story is too long to permit us to make of it much more than a moral, or a homily, if you prefer the latter word.

There must be some reason why so many young persons perfectly despise the study of grammar; some reasons why so many would, like John—though they are not brave enough to risk it as he did—rather be whipped and driven from school than be compelled to study it. Grammar is a dry study in itself, we must admit. There is little to awaken interest in its long list of definitions and rules; and yet we have seen a class of boys and girls all alive with interest of the keenest sort, during the recitation on the declension of adjectives. Grammar may be dry, but not more so than other studies, and the cause for the general dislike toward it on the part of young people is more because of the dull, lifeless mode of teaching it, than because of the inherent dulness of the subject. Indeed, the subject, if you go into the heart of it, is not dull at all, but full of the most delightful interest.

Grammar encloses within itself, as the nut-shell encloses the kernel, all the rich mysteries of the study of language. Make the children see this. Show them that they never can understand their beautiful English tongue, that they never can use it effectively and well, if they do not understand the mechanical part of it—its grammar. Teach them that by learning grammar they are learning to use the most effective instrument that has ever been given into the charge of mankind. Is not the poet's

declaration, that "the pen is mightier than the sword," assented to throughout the civilized world? And can any man, whatever his native abilities, wield this mighty weapon effectively without knowing the force of those other weapons employed through it—which alone make the pen strong—the weapons of words? By combining the study of the technicalities of our language—which we call its grammar—with the study of its innate treasures, we shall never have complaints from our boys and girls that grammar is a detestable study, or that they perfectly hate it.—*Ex.*

#### KEEPING CHILDREN AFTER SCHOOL.

THIS is a very objectionable practice, not rendered any the better by the fact that it is so common. The Courts of one or more States have decided that it is illegal when done against parental instructions to the teacher, or, indeed, without clearly evidenced parental assent. State Superintendents have, in many cases, held it to be allowable, but that does not vindicate it. On all sides we hear or read complaints of parents against it. Most frequently these complaints are against that class of teachers who should be most exempt from this fault—primary teachers. The practice is a fashion. It has been in use so long, that with an immense number of teachers it has come to be regarded as a necessary thing. For all this, it never was anything but a very reprehensible practice, and as useless as it is blameworthy. If a little child fails to give attention, if he plays when he should be studying, if he whispers or makes any objectionable movement, down comes the penalty upon him—he must stay after school. We know of a teacher, not a thousand miles from where these lines are indited, who uses no other pun-

ishment. She has reduced keeping her children in to an "exact science." At least, the children have an exact knowledge of what the command to "stay after school" means, by the nature of the offence for which it is required. She has a schedule of prices, as it were, for the various school-room peccadilloes: whispering, so many minutes after school; shuffling the feet on the floor, so many minutes; failing in a recitation, so many more; and so on. The schedule has been read to the children so many times, that they know it even better than the teacher, and we think they generally employ the season of their penance watching the clock. They frequently remind her that "time's up," if she fails to notice the moment when, according to the schedule, the penitential period should be closed.

This seems to be making an absurdity of the practice of detaining children after school; but it is not certain that it is a bad thing. There is less harm done by making the fashion absurd—which may lead to its ultimate abolition—than there is by adhering to it with all the seriousness and solemnity with which men cling to a sacred rite. Better to give up the fashion altogether. We do not think that our children are in further need of confinement. Six hours a day in a close, ill-ventilated room, where every breath takes in a rank poison to lungs and blood, is about as much as the young system can bear. Probably many adhere to the "keeping in" practice from an idea that a certain class of offences must be punished, and they have no other convenient mode of punishment, since corporal punishment has been crowded out. But if a teacher has not the moral force to govern without punishments, or the pupils are not amenable to love and reason, it might be even better to resurrect the long-buried birch (never the ferule), than to resort to this

system of imprisonment. Intellectually and morally, as well as physically, the child gains much less than it loses. And often the parents who need the child's services are inconvenienced. The teacher, too, is rendered more irritable, and the entire school suffers as a consequence.—*E.x.*

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#### ROUTINE.

ONE of the important duties of teachers is to avoid falling into a rut of formal routine. This is hurtful both to themselves and to the children. To themselves, because it leads them into a habit of lifeless teaching certain to be ultimately fatal to their success; to the children, because it leads them to think that their study has no purpose beyond enabling them to go through their recitations creditably. Children are very prone to fall into the idea that they only study to recite. So many words to be learned from the text-book and held in mind long enough to be repeated, and that is all, they fancy, that need be expected of them. But the true, conscientious teacher knows that his pupils can make no true progress until he has taught them to study the *subject* as well as the book. And he knows that to do this effectively he himself must work independently of the book, using it simply as an instrument to aid him, not as a crutch absolutely needed to enable him to walk. The routine teacher is always bound to his book, and without it is like the lame man without his crutch; or perhaps, to alter the simile, like a vessel without a rudder; for he makes no progress, though he may seem to be advancing. The avoidance of routine is quite essential to true progress in teaching. The children must be taught the practical value of the lessons they are learning; taught that they learn in order to become wiser and better men and wo-

men, not merely for the sake of getting over each day's recitation. To accomplish this the teacher must give instruction by topics rather than by the strict order of the book, and himself labour diligently to acquire, for his own use, all the knowledge he can find outside of the book. Every new idea will aid in making the recitation interesting, which is a great help. A routine recitation is always dull.

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#### OLD TIME SCHOOL DAYS.

"Please, sir, will you mend my pen?"

WE haven't been inside of a school-house for a good many years, and, musing upon the past, we wonder if a scholar ever sings out to the teacher, "Please, sir, will you mend my pen?" They used to, when we were a boy; and the teacher always carried a particularly sharp penknife, so as to be able to comply with the request. It had a white handle, and we used to think we would like one just like it. To be able to make and mend quill pens was one of the essential qualifications of a teacher in the district school, in the days when our young ideas were instructed in the target practice. Wanting in this, it would have been useless for a candidate for a teacher's position to have applied to the "Board" for an opportunity to board round.

It was a genuine pleasure to watch one of those old pedagogues make a pen. He would put his glasses on, and opening his penknife, carefully feel the edge. Then he would reach down and strop the blade dexterously a few times on his well-worn calfskin pumps—for they all wore pumps in the school-room in those days. They had to, to save their boots, poor fellows. Then selecting a quill from a bunch in his desk, tied up with a scarlet ribbon, he would cut off a portion of the feathered end to make it the desired

length, trim it a little, and then, with one swift and dexterous scoop of the knife, give shape to the pen. In three more rapid motions the slit is made in the end and the point formed.

The teacher used to remain after school-hours to make and mend pens for the writing-class, and "set" copies in their copy-books. Occasionally a pupil more ingenious or imitative than the rest learned to make his own pens, but this was rare.

We noticed that the pens of the big girls needed repairing oftenest, and the teacher took a great deal of pains in mending them. There is a good deal of human nature even in a school-teacher. But pen-mending is all out of date now. No one uses quill pens any more, except occasionally an old-fashioned attorney or doctor who still clings to the practice of his youth—which is all the practice some doctors have, by the way.

If some editors were writing this, they would sigh and ask where those old pedagogues who used to mend the quills of my youth are? And where are the boys whose copy-books were defaced with pens that persistently and maliciously "splattered?" and where, tell us, are the big girls whose pens had to go into the dry-dock so often for repairs? It does no particular good that we know of to propound these inquiries, and if we should, echo would only make its usual and unsatisfactory answer—"Where?"

The pedagogues are mostly dead. We met one of them the last time we visited the old stamping-ground. The eye that made us tremble had grown dim and lustreless; the form that loomed up in such a formidable manner when he produced his ferule and ordered us to advance into the middle of the school-room to receive our regular dressing down, was bowed and shrunken; and the locks that were

black as midnight when we first knew him had become white as the driven snow. We felt kindly towards the old master, but when he addressed us we were singularly conscious of feeling a little of that awe with which he impressed us as a child.

The old schoolmaster was a rough one in his day; but he usually had a rough set of boys to deal with in the country school over which he was called to preside. The first day he assumed control frequently had to decide whether or not he was master of the situation. His proportions were critically measured by the big boys, and his manner closely observed. Any indication of physical or moral weakness would be detected and taken advantage of whenever opportunity offered. We have seen contests for supremacy carried on between masters and scholars on the floor in a bloody way. The master was nearly always victorious; yet we remember one instance where he was pitched headlong out of doors into the snow and the key turned on him. The trustees tried to sustain him, but he was compelled to give up the school.

The next one who came, warned by the fate of his predecessor, repressed all indications of insubordination with great severity. We have seen him hurl a heavy walnut ruler across the school-room at the head of a boy who was whispering. And his favourite way of accelerating the movements of a tardy scholar was to catch him by the collar and drag him over the seats. The boys never tried to run that teacher out of the school-house, but he had to stand a long lawsuit for beating a boy with undue severity. We presume that race of schoolmasters has entirely died out, or if it is perpetuated at all it is in the wild districts of the Far West.—*Cincinnati Saturday Night*.

## THE HOPE OF THE AGE.

THIS, according to the *Educational Journal of Virginia*, rests more with the common school than with anything else. We copy a part of the article referred to, and commend its forcible sentences to any teachers that lightly estimate their responsibilities:—

“The reign of physical government is coming to an end. The many will not much longer be controlled by the few under any form of government. Then the great question is, how are the many to be guided? The answer is easy, though the execution may be difficult. It is by educating each individual, not simply in letters and figures, but in right habits, moral and industrial, and in right principles, moral, social, and civil. There must be a kingdom established in each breast, controlled by conscience, enlightened by a systematic training in the written doctrines of practical ethics, political economy, law and government. The superior mission of the Church and of the family is not forgotten when we say that the sort of education of which we now speak can be given in the common schools, and nowhere else! This is the only instrumentality which can be made to include all the people, and which can be depended on to give the sort of instruction specially required for the public safety. And if it be done properly, it will be effective. The masses will become survivors of every right principle; the grand army of law and order; the embodiment of justice, and peace and patriotism; the grandest monument ever thrown around the homes, the property, and the government of any country. The rich must be taught that poverty has rights as well as property—that oppression must cease; and the poor must be taught where their rights begin and where they end. It must be shewn to every child that by the very princi-

ple on which alone society can exist, every form of communism is as foolish as it is villainous, and that a destructive mob should be treated like an irruption of wild beasts. How can an ignorant, uninstructed multitude know what ought to be done, in those bewildering crises when hunger and passion, and bold example tempt them to wild extremes? And how can they ever know unless they are taught? and where can this teaching be given except in the schools? and how can the proper teaching be given there as long as the schools are so narrow in their teachings—are stinted for the means of a bare subsistence, and treated with uncultured, untrained teachers? To stint the public school interest in any of its departments, of supervision, normal education, teachers' salaries, school apparatus, or subjects of instruction, is the veriest madness. To do this is to dry up the very fountains of hope, and to leave the future of society to the very blackness of darkness. If society will not listen to the voice of the prophet, it will be *driven* to see that what is wanted for its salvation is *right knowledge* among the people, and that this can come only through the public schools, and by means of teachers of the highest order, selected and trained with the utmost liberality, and crowned with universal love and honour.”

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 CLEAR AND CORRECT DEFINITIONS.

THERE is a good story, which has been often told, it is true, but has not yet lost its pith and point, of a young freshman in college, who was under examination. “What is ratio?” asked the professor. “Ratio is proportion,” replied the freshman. “Well, what is proportion?” was the next query. “Proportion is ratio,” was the ready answer. “Well, what are

both together?" inquired the professor, determined to get some intelligent reply from the young man. "Excuse me," said the youth, "I can *define but one at a time!*" and the professor had to acknowledge himself beaten.

There is one principle in defining which is the most important, viz., that the definition shall convey a clear idea of its own meaning. Otherwise it is unworthy of the name of definition. Teachers find themselves required to define words very often. They should see to it that the definitions they give are not only correct, but so clearly expressed as to be really understood. Often the teacher may use the exact words of the book; for we are happy to say that there are some text-books which offer most excellent, carefully-expressed definition. In others, however, the work of defining is done in a very slipshod, hasty manner—so poorly that it would be impossible for the pupils to gain clear and accurate ideas from them unless aided by the teacher. Look after this matter. Examine each text-book that you use with diligent care, and if any definition seems to you blind or misleading, correct them by some better authority. Write the substituted definition on the board, and see to it that *all the class* learns it, and not the one given in the book. It is not a bad thing for children to learn definitions. On the contrary, it is a very good thing for them, for it helps them to learn the art of concise and accurate expression. Some teachers ignore the words of the book, and let children make their own definitions. This seems to us the height of foolishness. For how should a child, who knows nothing at all of a subject, be as well able to define it as a scholarly man, who has given years of study to it and to kindred subjects? Besides, the child has a very limited knowledge of language, while the man may be complete master of his tongue, recognis-

ing the finest shades of meaning that words can convey. Do we usually expect as fine work from the tyro in the draughtsman's art—the one who has handled the tools but a few months—as from him who has turned out skilled work with them for years? Quite as foolish does it seem to us to accept a pupil's bungling definition of an allegation or proportion, or of the precession of the equinoxes, and permit him to think it as useful for his purposes of subsequent study, or as conducing as much to his present understanding of the subjects, as the polished and comprehensive definition of the book. This has been framed in the first place by a man who knows pretty well *what* he wants to define; then it has been pruned and polished to remove unnecessary words and ideas. It ought to be, and it usually is, the very best presentment of the idea that the pulpit could have; it is certainly a better one than his uneducated comprehension could formulate.—*The Present Age.*

#### A SWARM OF BEES.

B hopeful, B happy, B cheerful, B kind,  
 B busy of body, B modest of mind,  
 B earnest, B truthful, B firm and B fair,  
 Of all Miss B Haviour B sure and B ware.  
 B think ere you stumble for what may B fall,  
 B true to yourself and B faithful to all;  
 B brave to B ware of the sins that B set,  
 B sure that one sin will another B get.  
 B watchful, B ready, B open, B frank,  
 B manly to all men, whatever B their rank;  
 B just and B generous, B honest, B wise,  
 B mindful of time, and B certain it flies.  
 B prudent, B liberal, of order B fond, [yond;  
 B uy less than you need B fore B uying B  
 B careful, B ut yet B the first to B stow.  
 B temperate, B steadfast, to anger B slow.  
 B thoughtful, B thankful, whate'er may B  
 B justful, B joyful, B cleanly B side; [tide,  
 B pleasant, B patient, B fervent to all,  
 B best if you can, B ut B humble withal;  
 B prompt and B dutiful, still B polite,  
 B reverent, B quiet, B sure and B right;  
 B calm, B retiring, B ne'er led astray,  
 B grateful, B cautious of those who B tray.  
 B tender, B loving, B good and B nigh—  
 B loved shalt thou B, and all else B thine!

## UNIVERSITY REFORM.

BY A GRADUATE.

THE period of the year has arrived when, owing to the necessity of electing senators for Toronto University, a brief and fitful interest is taken in the affairs of that institution. Would-be senators issue cards full of glowing promises of University reform; promises, in nine cases out of ten, to be forgotten as soon as the desired honour has been obtained. The present time then seems opportune for calling the attention of the educational public to some reforms urgently needed in connection with both the University and University College.

A special report of a Committee of the Senate, recently published, embodies some proposed reforms, showing that the somewhat apathetic body has a faint recognition of the fact that much remains to be done to bring the University and University College into harmony with the general spirit of educational progress. After all, there is but a faint recognition, for many reforms pressing themselves on public attention are not even referred to, whilst the measures proposed for the increase and extension of the influence of University College, are not such as warrant the belief that any really liberal measure would find acceptance at the hands of our indolent and conservative Senate. It would be unjust, however, to use indiscriminate censure, as there are a few brilliant exceptions to the general character of the University Senator; and no doubt many of those who refuse to take a step in advance are

actuated by motives *at least* honourable. The reforms which I wish to advocate, and for which I desire to bespeak attention, are as follows:— (1) An increase in the staff of University College. (2) The reduction of the Arts course from four years to three. (3) The abolition of Government Scholarships. (4) University provision for the education of ladies. (5) The abolition of Upper Canada College, and the transference of its endowment to the University. (6) Increased care in the selection of Examiners.

1. That an increase in the staff of University College is highly desirable, if not absolutely necessary, has long been evident to all students of that institution. The subjects of Political Economy and Jurisprudence, including Constitutional Law, have been totally neglected in the class-room. It is scarcely necessary to point out that no well-ordered and progressive University can afford to neglect these branches of a liberal education. It is true that there have been examinations held in these branches, but of teaching there has been none. At various times there have been rumours of the proposed appointment of a professor in Political Economy, but such intentions, if they ever existed, have never been carried into effect. The reason of such neglect is apparent from the report, already referred to, of the Committee of the Senate. The necessary funds for the maintenance of a professorship were not at the disposal of the University authorities. Not only

has the University College suffered from a want of funds for its efficient support, but many other things in connection with the University, notably the Library, have felt the evil effect of a scant endowment. At length the injury inflicted upon higher education, by not extending a liberal support to University College, has become so apparent, that the Senate has been moved from its wonted inertia, and we have a proposal, issuing from that venerable body, not only to add lecturers in Political Economy and Jurisprudence to the staff of the College, but also to furnish to the over-worked departments of Mathematics, Classics and Science assistance, in the shape of tutors holding fellowships. If I cannot congratulate the Senate on the wisdom of its proposals, I can at least give them the credit of good intentions. Let us examine these proposals. In the first place, it is proposed to pay \$800 per annum to lecturers in Political Economy and Jurisprudence. Now, what competent man can be secured for \$800 per annum? The evident intention, then, is to appoint lecturers from among the many talented and learned graduates frequenting Toronto and vicinity, and who, while fitting themselves for some other profession, give the remnant of their time to the task of instruction. This is no unlikely supposition; the history of University College is full of such events. Perhaps, however, men already fixed in their professions, and having a *penchant* for Politico-Economic questions, may be induced to open their stores of hidden wealth, and once or twice a week pour forth their treasures into the undergraduate mind. Whether right or wrong in my suppositions, there can be no doubt that it is intended to employ temporary lecturers, and not permanent professors. To any such scheme I strenuously object. University College has already suffered

more than enough from the employment of incompetent and half-educated tutors. It is needless to specify, but every graduate has in his mind an instance of one or more of these uncultivated, would-be professors. Probably no subject requires deeper and more accurate thought than Political Economy, and certainly no subject stands as much in need of a skillful expounder. If we consider the excited state of public feeling on questions of trade, it is increasingly important that the subject of Political Economy should be in the hands of a man at once able and judicious. Almost the same remarks are applicable to the subject of Jurisprudence, which, however, requires wider reading and deeper thought. Permanent professors, then, are required—men of wide reading; men accurate and profound in their thinking, and gifted with the power of clearly elucidating their subjects.

Closely connected with this is the proposal to establish fellowships. The spirit prompting this proposal cannot be too highly commended. Recognizing the need of a more perfect culture than the ordinary undergraduate course affords, the Senate desires to offer inducements to promising students to continue their studies after graduation. At the same time it is intended to utilize those holding fellowships, by employing them in the work of tuition in their respective departments of study. This scheme has much to recommend it: but two objections present themselves. One is that the resources of the University cannot at present bear it. An institution so poorly endowed as Toronto University cannot afford to spend money on fellowships. The second objection is, that in many cases the teaching of the fellows would be almost valueless. The reason is obvious to those acquainted with the gen-



eral character of the young graduate. It is worthy of notice that the additional teaching power is to be bestowed upon departments already pretty well supplied with professors and tutors. It provokes a smile to hear of the over-burdened professors of Mathematics and Science, when it is recalled to mind that at least one of these overworked gentlemen finds ample time to indulge in employments, lucrative indeed, but wholly disconnected with his professional duties. Certainly more teaching power is required in some of these departments: it is not to be obtained by the addition of further indifferent material; but by the adoption of a scheme that would relieve the professors of University College of a disagreeable portion of their duties without injuring the prestige and standing of the College.

2. The scheme, not a new one, that I propose is the reduction of the Arts Course of University College from four years to three. There is no necessity for employing the time of professors, at once so capable and accomplished, as those of University College are supposed to be, in teaching the subjects of the first year. Time was when the High Schools and Collegiate Institutes did not undertake work higher than was necessary for Junior Matriculation; but that time has passed. There are a large number of schools now which regularly prepare candidates for Senior Matriculation and First Examination. The success attending the efforts of these institutions is a satisfactory guarantee that the task of preparing candidates for the first year's examination might be safely entrusted to them. The scheme would work well in two ways. It would enable the professors of University College to perform their duties with greater thoroughness, and at the same time raise the standard

and increase the efficiency of our Secondary Schools. It has been objected that the majority of High School masters would refuse to teach the work of the first year. Granted; still there would be a number of institutes, now preparing candidates for Senior Matriculation, only too well pleased to have the numbers in their classes increased. There is no more difficulty in teaching a class of twenty than a class of five, and the increased spirit of emulation which would result from enlarged classes would operate beneficially to all concerned. It is also worthy of consideration whether the additional grant to Collegiate Institutes should not be made to depend, partially at least, on their ability and willingness to undertake the work of the first year in Arts.

3. To increase the revenues of University College, the Senate recommends an increase of fees. But to increase the fees and retain the scholarship system, is to tax the majority of the students for the benefit of the minority. At a late meeting of Convocation, a resolution against the continuance of scholarships was passed. This resolution, one of the few of a practical kind emanating from the small body, by courtesy called Convocation, should meet with the hearty approval and firm support of all friends of the University. Had the University ample revenues so that the present grant of over \$5,000 a year in scholarships would not impair its resources, no serious objection might be taken to the scholarship system; but with ever-narrowing means, and the urgent need of more professors, to say nothing of a library deficient in the most important respects, the grant of so much money each year to a few fortunate students is a deliberate waste of public property. Scholarships may furnish some inducement to excel,

but they certainly dampen the ardour of those who, from causes beyond their control, have no chance of winning a prize. It is not, however, necessary to discuss the advantages and disadvantages of the scholarship system. Let it be granted that scholarships are useful and desirable, it will scarcely be contended that they are as important to the interests of a liberal education as a good staff of teachers. Between the retention of scholarships and an improved teaching staff, the decision must be given in favour of the latter. The amount now annually given away in scholarships would nearly suffice for the maintenance of two additional chairs. If scholarships must be retained, let them be the outcome of the generosity and public spirit of the wealthy Alumni of the University. The denominational universities have made an appeal to the public for assistance with great success; why should the friends of a non-sectarian institution be less liberal? State-endowed institutions, I regret to say, have never been able to command the generous and loyal support so freely accorded to those based upon the voluntary principle; and in one respect, at least, Toronto University is not the exception that proves the rule.

4. The question of adequate provision for the higher education of women still seeks a solution. True, some progress has been made in overcoming the difficulty, but the condition of affairs can hardly yet be deemed satisfactory. A step in advance was taken when local examinations by the University were introduced, and still further advance was made when the University examinations and scholarships were thrown open to men and women alike. Since then, two of our Universities, to their credit be it written, have thrown open their class-rooms to women. But University College, supported as it is

out of public money, bars her doors against female intrusion. The dread of the President of University College, that alarming and injurious results might be produced by the co-education of young men and women, causes that ascetic moralist and strict disciplinarian to refuse admission to such dangerous intruders as young women seeking a more advanced knowledge of Classics and Modern Languages. The co-education of the sexes is viewed differently by different educational authorities, and public opinion can hardly be said to be fully formed on the subject. But when it comes to be a matter of co-education or no education, when the choice has to be made between throwing open the class-rooms of University College to women and the denial of a training fitted to enable them to pass the examination of the University, hesitation there should be none. And this is the question at issue just now. In the absence of any public provision for the separate education of women in the higher branches of a liberal education, there is no option between co-education and separate education. There are men, supposedly liberal in their views, who view with distrust any efforts tending towards the higher education of women, and, sad to relate, such men find their way into our legislative halls, where they gravely discuss the evils resulting from an intellect advanced beyond the knowledge of the rudiments of cookery and the art of nursing babies.

The stale arguments of the despot, that learning and intelligence unfit one for the practical duties of life, and cause the vulgar herd to be discontented with their lot, are furbished anew, and presented under slightly altered forms, to do service against the expansion of the intelligence of women. "There is nothing new under the sun;" and the proverb is

daily exemplified when the views and sentiments of the Middle Ages find acceptance in the last quarter of the nineteenth century. It is not my intention to discuss the benefits of a higher education for women; what I desire to do, is to urge that the lectures of University College should be accessible to women; or, if that is impossible, in consequence of the prudery of the President, that provision should be made for their separate education. How can this be done without an additional grant of public money, it may be asked. This leads me to another urgent reform.

5. The existence of Upper Canada College for the special benefit of Toronto and a few mushroom aristocrats has been condemned by public opinion. It owes its present precarious tenure of life to the tender care and patronage of the Minister of Education. His effort to render popular and efficient an institution, based upon injustice to the other institutes of the Province, must end in failure: Upper Canada College is doomed to speedy extinction. The question then arises as to the best mode of utilizing its large endowment. Various methods have been proposed, such as giving an additional grant to the High Schools and Collegiate Institutes, transferring the endowment to the University, and lastly, the establishment and maintenance of a Ladies' College, where the branches of a University education would receive adequate attention.

If co-education is not to be allowed in University College, then I would advocate the establishment of a Ladies' College, to be maintained out of the funds derived from the abolition of Upper Canada College. To my mind there is no serious objection to conducting the education of young men and women in the same classroom; and certainly there would be a considerable saving of public money

if the plan could be successfully carried out. The improvements and reforms that could be accomplished, were the endowment of Upper Canada College transferred to the University, would do much to strengthen and popularize our Provincial Hall of Learning.

6. The last subject calling for attention is one of a more delicate nature—I refer to the appointment of University examiners. When the Senate, acting upon correct principles, decided to appoint examiners from those in no way connected with the teaching of the candidates, they, perforce, lost the services of the most competent and experienced men. No one not experienced in teaching, and thoroughly conversant with his subject, can make a good examiner. The two requisites of a good examiner, then, are experience and knowledge. To these I might add judgment, but judgment will come from experience. Tried by this standard, what must be thought of the class of examiners appointed by the Senate? Young men, fresh from college, and engaged in pursuits far removed from academical work, obtain positions as examiners to eke out a slender income. Middle-aged men who have well-nigh forgotten the little they knew, do service year after year. Crotchety individuals, impressed with the sense of their own originality, air their hobbies at the expense of luckless undergraduates. It is unfortunately too true that personal influence has, in more cases than one, determined the choice of an examiner. I am not at all ignorant of the fact that the scanty remuneration allowed by the Senate to an examiner renders it difficult to procure the services of first-class men. But I cannot believe that a sufficient amount of care is exercised in the selection of that body. There are men on the Board of Examiners, for

the year 1882, wholly incompetent, through a want of experience and the necessary culture. When it is considered that an appeal against the decision of the examiners is practically useless, and that grave injustice has been done, in not a few cases, through the carelessness and incompetence of some examiners, the great importance of choosing the best men available must be evident. The present system of appointing raw youths, deficient in experience and culture—graduates whose knowledge is encased in the rust of years of mental inactivity—tends to degrade the University in the eyes of educationists.

I have in a very brief and imperfect fashion presented these subjects for University reform. The little

interest taken in University matters by the bulk of the graduates is not creditable to their intelligence or public spirit. A few men, living in Toronto and vicinity, constitute the majority of the attendants at Convocation. The proceedings of that body are not calculated to inspire the lover of true education with hope of much progress. Unfortunately, the bulk of those who meet to discuss University affairs are not men possessed of a practical knowledge of educational matters, and the result is fruitless discussion, and resolutions having more reference to forms of procedure than to the true purpose of University education, viz., the development and strengthening of the higher faculties of the mind.

#### A BILLION DISSECTED.

A CURIOUSLY interesting letter appeared in the London *Times* a few months ago from Mr. Henry Bessemer, under the heading "A Billion Dissected." The writer tries to convey to the ordinary mind some idea of what a billion is—"a modest 1, followed by a dozen ciphers. [This is by the English notation—a million millions, or 1,000,000,000,000. In this country we use the French system, which reckons a thousand millions, or 1,000,000,000, as a billion. The English reckoning seems to be the more strictly correct.] He does this by means of illustrations drawn from familiar objects of thought and sight. The result is such as will surprise many. Attention is thus called to a billion as a measure of time, distance or weight. When we speak, for example, of a billion of seconds, we perhaps suppose that since the commencement of our era such a number had long since been measured out. Arithmetic shows us, however, that we have not passed *one-sixteenth* of that number in all these long, eventful years—for it takes

just 31,687 years, 17 days, 22 hours, 45 minutes and 5 seconds. A billion of sovereigns would extend, when ranged side by side in piles of twenty feet high, so as to form two parallel walls, a distance of 2386½ miles; or if placed on the ground so as to form one continuous chain by each sovereign touching the one next to it, such a chain would encircle the earth 763 times. The weight of the same sovereigns would be 6,975,447 tons. As to altitude, we are informed that a billion sheets of the *Times* "superimposed upon each other, and pressed into a compact mass, would reach to a height of 47,348 miles." Most readers who follow such statements as these will be disposed to agree with Mr. Bessemer that "a billion is a fearful thing, and that few can appreciate its real value;" and that "as for quadrillions and trillions, they are simply words wholly incapable of impressing themselves upon the human intellect." And yet one cannot help suggesting, what are even these baffling conceptions as to time compared with eternity? We may well use such a word with awe!—*Ex.*

## UNIVERSITY WORK.

## MATHEMATICS.

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

## UNIVERSITY OF LONDON.

MATRICULATION, JANUARY, 1882.

## ARITHMETIC AND ALGEBRA.

*Examiners*—Dr. John Hopkinson, M.A.,  
F.R.S., and Benjamin Williamson, Esq.,  
M.A., F.R.S.

1. Simplify

$$\frac{\{(r_1^3 - r_1^2) \frac{1}{2} - (s_1^2 - r_1^2) (r_1^2 + \frac{1}{2})\}}{(\frac{1}{2} - \frac{1}{2})^2 - \frac{3}{8}}$$

2. Express  $\sqrt{\frac{9.864 \times 0.01234}{0.005678 \times 0.00008765}}$  as  
an ordinary decimal fraction correctly to  
three significant figures.

3. Express  $\sqrt{\frac{0.428571 \times 0.7714285}{0.285714 \times 0.0571428}}$  as a  
vulgar fraction, reducing to its simplest form.

4. If a farmer lays two tons of lime on an  
acre of land, how many grammes is that per  
square metre? Express the result correct to  
the nearest integer.

[Assume—One metre =  $39\frac{3}{8}$  inches; one  
kilogramme =  $2\frac{1}{2}$  lbs.; and one ton = 2,240  
lbs.]

5. Six terms are in Arithmetical Progression,  
and also in Geometrical Progression,  
and their sum is 54. What are they?

6. Resolve into factors

$$x^6 - 1 \text{ and } x^4 + 10x^3 + 35x^2 + 50x + 24.$$

7. Simplify

$$\frac{x^3 + (a+b)x^2 + (ab+1)x + b}{bx^3 + (ab+1)x^2 + (a+b)x + 1} \text{ and}$$

$$\frac{x^3 + y^3 + z^3 - 3xyz}{x^4 + y^4 + z^4 - 2x^2y^2 - 2y^2z^2 - 2x^2zy^2 + y^2z^2 + z^2x^2 + x^2y^2}$$

8. Find the ratio of two numbers, the

arithmetic mean of which is five-fourths of  
the geometric mean.

9. Suppose that gold is worth fifteen times  
as much as silver, and that silver is worth  
one hundred times as much as copper. Find  
the proportions of the metals in a certain  
coin worth 4s., having given that a coin with  
double as much gold, the same quantity of  
silver, and five times as much copper, would  
be worth 7s. 9d.; a coin having five times as  
much gold, the same silver, and twice as  
much copper, would be worth 19s.; and,  
lastly, that a coin with the same gold, double  
the silver, and one-half the copper, would be  
worth 4s. 3d.

10. Divide £100 between three men, five  
women, four boys, and three girls, so that  
each man has as much as a woman and a  
girl, each woman as much as a boy and a  
girl, and each boy half as much as a man  
and a girl.

## NATURAL PHILOSOPHY.

*Examiners*—Prof. W. G. Adams, M.A.,  
F.R.S., and William Garnet, Esq., M.A.

[Not more than *eight* questions are to be  
attempted, of which at least *two* must be  
selected from section A.]

## A.

1. State Newton's Second Law of Motion.

Two bodies whose masses are 31 ozs. and  
33 ozs. respectively, suspended at the two  
ends of a thin string passing over a smooth  
pulley, are allowed to move freely for three  
seconds. What will be the velocity acquired,  
and what will be the space traversed, by each  
body?

2. A half-ton shot is discharged from an  
eighty-one ton gun with a velocity of 1620  
feet per second. What will be the velocity  
with which the gun will recoil, if the mass of  
the powder be neglected?

Will the gun or the shot be able to do

more work before coming to rest, and in what proportion?

3. A number of forces act at a point in different directions. Explain how to determine their resultant in magnitude and direction.

Forces  $P$ ,  $2P$ ,  $3P$  and  $4P$  act along the sides of a square  $ABCD$ , taken in order. Find the magnitude, direction, and line of action of the resultant.

4. What is the centre of gravity of a body? How would you determine experimentally the position of the centre of gravity of a thin plate?

Weights of 1 lb., 2 lbs., 3 lbs. and 4 lbs. are suspended from a uniform lever 5 ft. long at distances of 1 ft., 2 ft., 3 ft. and 4 ft. respectively from one end. If the mass of the lever is 4 lbs., find the position of the point about which it will balance.

5. Explain how to find the relation between the power and weight on a screw. A screw whose pitch is  $\frac{1}{2}$  in. is turned by means of a lever 4 ft. long. Find the power which will raise 15 cwt.

Describe the differential screw.

#### B.

6. Distinguish between the whole pressure and the resultant pressure of a fluid upon any surface, and state under what circumstances they are equal to one another.

The base of a triangle is 1 ft. in length, and the altitude of the triangle is 10 inches. What will be the pressure on the triangle when it is immersed with its vertex at the surface of the water, and the middle point of its base 4 in. below the surface—atmospheric pressure being neglected, and the mass of a cubic foot of water being taken to be  $62\frac{1}{2}$  lbs.?

7. A Nicholson's Hydrometer, when loaded with 200 grains in the upper pan, sinks to the marked point in water; a stone is placed in the upper pan, and the weight required to sink it to the same point is found to be 80 grains; the stone is then placed in the lower pan, and the weight required is 128 grains. Find the specific gravity of the stone.

Explain how you would determine the specific gravity of a solid lighter than water.

8. The top of a uniform barometer-tube is 36 inches above the surface of the mercury in the tank. In consequence of the presence of dry air above the mercury, the barometer reads 27 inches when it should read 28.5 inches. What would be the true pressure if the reading of the barometer were 30 inches?

What is the difference between the behaviour of this barometer and that of a second barometer in which the depression is due to the presence of water and aqueous vapour, instead of dry air, above the mercury?

9. The volume of a balloon and its appendages is 64,000 cubic feet, and its mass, together with that of the gas it contains, is 2 tons. At what rate of acceleration will it begin to ascend, if the mass of a cubic foot of air be 1.24 oz.?

10. What is the index of refraction of a transparent medium?

What is the position of *minimum deviation* for a prism? Describe and explain the appearance presented when the image of a window is looked at through a prism with its edge vertical.

11. Given the focal length of a lens, show how, by a geometrical construction, to find the position and magnitude of the image of an object whose distance from the lens is given.

An object whose length is 2 inches is placed 6 inches in front of a convex lens whose focal length is 4 inches. What is the length of the image?

12. Distinguish between a real image and a virtual image. Explain the action of a convex lens when used as a magnifying glass. Is the image seen by the eye real or virtual?

How would you determine the focal length of a convex lens if sunlight were not available?

#### PROBLEMS IN ARITHMETIC.

By W. S. Ellis, B.A., Mathematical Master, Cobourg Collegiate Institute.

I. How much change should a man receive who has bought the following articles, and

given a \$10 bill in payment :—4 lbs. butter, at 17 cts.; 12 yds. cotton, at 9 cts.; a knife, 35 cts.; 5 yds. cloth, at  $62\frac{1}{2}$  cts.; 11 lbs. nails, at  $3\frac{1}{4}$  cts.?

*Ans.* \$4.38.

II.  $\frac{3}{4}$  of one number is the same as  $\frac{7}{8}$  of another. What fraction is the first number of the second?

*Ans.*  $\frac{1}{2}$ .

III. If 14 cubic inches of lead weigh as much as a bar of iron  $1\frac{1}{2}$  inches square and 12 inches long, and if iron be  $7\frac{1}{2}$  times as heavy as water, how many cubic inches of lead will weigh as much as a cubic foot of water?

*Ans.* 119 $\frac{1}{2}$ .

IV. The price of butter per lb. is just double the price of eggs per doz. Find the price of each when it costs \$1.26 to buy 56 eggs and  $4\frac{3}{4}$  lbs. of butter.

*Ans.* 18 cts. and 9 cts.

V. Find the product of 821634 and 2972. Prove that your result is correct by "casting out the 9's," and demonstrate the principle on which the proof is based. Would the principle of the proof hold equally well if any other digit than 9 were used? and, if so, would the details of the operation differ in any respect from what they are when 9 is employed?

VI. There are four numbers between 25 and 135 whose G.C.M. is 13, and L.C.M. 910. What are they?

*Ans.* 26, 65, 91, 130.

VII. Find the products of (a) 2657 and 126, (b) 268327 and 2499, (c) 515 and 485 by any short methods you can.

VIII. Show clearly why  $\frac{1}{2} \div \frac{1}{3} = \frac{3}{2}$ .

IX. When one decimal is exactly divisible by another, show that, if any decimal places occur in the quotient, their number will be equal to the difference between the number in the divisor and in the dividend; but if no decimal places occur in the quotient the number of zeros coming after the significant figures will be equal to this difference. What must be the conditions fulfilled by divisor and dividend that each case may be true?

X. A man bought a watch and chain in New York, and on coming into Canada he smuggled the chain, but had to pay a duty

on the watch amounting to  $\frac{1}{4}$  of its cost. He afterwards sold both watch and chain at a gain of  $\frac{1}{3}$  on their whole cost, and thus gained \$34 on the price paid for them in New York. What was that price?

*Ans.* \$60 and \$20.

XI. At 10 cts. per yd., what will be the cost of fencing a plot whose length is to its breadth as 5 is to 3, and its area 960 square yards?

*Ans.* \$12.80.

XII. A silver plate 6 inches in diameter is melted and cast into medals, each one inch in diameter, and half as thick as the plate was. How many medals were obtained?

*Ans.* 72.

XIII. At 25 cts. per square foot, what will be the cost of gilding a right cylinder 2 feet high, the radius of the base being 8 inches?

*Ans.* \$2.79 $\frac{1}{2}$ .

XIV. Find the volume of the largest sphere that can be cut out of a right cone, the radius of the base being 10 inches and the slant height  $10\sqrt{5}$  inches.

*Ans.*  $236 + \dots$  cubic inches.

XV. The length of a reservoir is to its breadth as 5 : 3, and its breadth to its height as 4 : 3. What are its dimensions, its capacity being 103,000 gallons?

*Ans.* 40, 24, and 18 feet respectively.

## CLASSICS.

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

NOTE.—All communications upon School Work in this Department must be sent to the Editor of it, not later than the 5th of each month.

### EDUCATION DEPARTMENT, ONTARIO.

"INTERMEDIATE" LATIN, JULY, 1881.

PART I.

CICERO, in *L. Catilinam*, II., Cap. xiii.

Translate :

Atque hæc omnia sic agentur, Quirites, ut res maximæ minimo motu, pericula summa nullo tumultu, bellum intestinum ac domesticum, post hominum memoriam crudelissimi-

mum ac maximum, me uno togato duce et imperatore, sedetur. Quod ego sic administrabo, Quirites, ut, si ullo modo fieri poterit, ne improbus quidem quisquam in hac urbe pœnam sui sceleris sufferat. Sed si vis manifestæ audaciæ, si impendens patriæ periculum me necessario de hac animi lenitate deduxerit; illud profecto perficiam, quod in tanto et tam insidiioso bello vix optandum videtur, ut ne quis bonus intereat, paucorumque pœna vos jam omnes salvi esse possitis.

(1) Mark the quantity of the penult in *Quirites, intestinum, improbus, possitis*.

(2) Distinguish between *quisquam* and *ullus*. In what sort of sentences is *quisquam* used?

(3) Give the derivation and meaning of *Quirites*. With what is it contrasted?

(4) What idea is implied by the participle in—*dus*? Does *optandum* convey that idea here?

(5) Parse: *Sedetur, sufferat, deduxerit*.

(6) In what year of the city of Rome were these orations delivered, and what was Cicero's age at the time? State where and before whom each was delivered.

(7) Mention various ways of expressing purpose, giving examples in Latin.

(8) State when the gerundive is preferable to the gerund, and when the gerund must be used?

#### ANSWERS AND NOTES.

##### Translation:

And further, all this will be done in such a way, Romans, that the most important matters, with the least commotion, the most pressing dangers, with no tumult, an intestine and civil war, the most cruel and the most momentous since the memory of man, shall be settled with me, in the dress of peace, the sole general and commander. And this war, Romans, I will so manage that, if it can in any way be done, no man, not even a bad one, in this city shall suffer the penalty of his crime. But, if the violence of manifest audacity, if the danger hanging over fatherland shall of necessity have moved me from this tenderness of heart, I will certainly ac-

complish that which, in so great and so dangerous a war, seems scarcely proper to be expressed in hope: no good man shall perish; and that you all may now be able to be saved by the punishment of a few.

(1) Ī, ī, ō, ī.

(2) *Quisquam* and *ullus* [for *unulus*, dim. of *unus*] are both used when *all are excluded*. (a) *Quisquam* is used in the singular only, and as a substitute; never as an adjective, except with personal nouns (*e.g.*, *scriptor*, *hostis*, *civis*, *homo*); and in Cicero, personal nouns of multitude (*e.g.*, *ordo*, *genus*, *hominum*, *legatio*). (b) *Quisquam* or *ullus* is used in negative sentences, in questions where the answer, "no" or "none" is expected, and after "than" and "scarcely." After "without" "any" is *aliquis* in a negative, *ullus* in a positive sentence.

NOTE.—(a) Cicero's practice is thus stated, using *scriptor* for the noun: *Nom.*—*Quisquam* (not *ullus*) *scriptor*. *Gen.*—*Cujusquam* (not *ullius*) *scriptoris*. *Dat.*—*Cuiquam* (not *ulli*) *scriptori*. *Acc.*—*Quenquam*, or *ullum* *scriptorem*. *Abl.*—*Ulo* *scriptore*: *once only*, *quoquam* *homine*. (b) "The use of the indefs. *aliquis*, *quisquam*, *ullus*, is very various, and must be learned from the *Lexicon* or from practice. The choice among them often depends merely on the point of view of the speaker; and they are often practically interchangeable. The differences are, with few exceptions, those of *logic*, not of *syntax*."

(3) *Quirites*, originally the inhabitants of the Sabine town, Cures. After the Sabines and Romans had united into one community, under Romulus, the name of *Quirites* was taken in addition to that of *Romani*, the Romans calling themselves, in a civil capacity, *Quirites*, and, in a political and military capacity, *Romani*.

(4) The gerundive (ending in *-ndus*) has as an adjective the meaning *ought* or *must*.

NOTE.—The participle in *dus* has two distinct uses: (a) The Predicate (participial or adjective use, in which it is always *passive*; (b) the Gerundive use, in which it is always *active* in meaning, having for its apparent object the noun with which it agrees in form. In the present instance the participle expresses *propriety*: "we could hardly wish for so much," for our wishes are generally bounded within the limits of what is possible."



(5) 3rd s. pres. subj. pass., sedo, are, avi, atum; 3rd s. pres. subj. act., *suffero, ferre, sustūli, sublātum*; 3rd s. pf. subj. act. *dedico, dre, xi, ctum*.

(6) A.U.C. 691; æt. 43. First, before the Senate (November 8th) in the temple of Jupiter Stator. Second, before the people (November 9th) in the Forum. Third, before the people (December 3rd) in front of the Temple of Concord. Fourth, before the Senate (December 5th) in the Temple of Concord.

(7) The purpose of an action is expressed in Latin in various ways; but never (except rarely in poetry) by the simple infinitive, as in English. The sentence, *they came to seek peace*, may be rendered: (a) *Venerunt ut pacem peterent* (final clause with *ut*). (b) *Venerunt qui pacem peterent* (final clause with relative). (c) *Venerunt ad petendum pacem* (rare) (gerund with *ad*). (d) *Venerunt ad petendam pacem* (gerundive with *ad*). (e) *Venerunt pacem petendi causa* (gerund with *causa*). (f) *Venerunt pacis petendæ causa* (gerundive with *causa*). (g) *Venerunt pacem petituri* (fut. particip., not in Cicero). (h) *Venerunt pacem petitum* (former supine).

NOTE.—(a) The most general way of expressing purpose is by *ut* (negatively, *ne*), unless the purpose is *closely connected with some one word*, in which case the *relative* is more common. (b) The gerundive constructions of purpose are usually limited to short concise expressions, where the literal translations of the phrase, though not the English idiom, is, nevertheless, not harsh or strange. (c) The supine is used to express purpose only with verbs of *motion*, and in a few idiomatic expressions. (d) The future participle, used to express purpose, is a late construction of inferior authority.—(*Allen and Greenough*.)

(8) When the gerund would have an object in the acc., the gerundive is generally used instead, agreeing with the noun, and in the case which the gerund would have had. See answers above, (7) (c) and (d). When the English gerundive in *-ing* is *emphatic*, use the *gerund* in Latin. Hence, translate in the sentence, "Themistocles rendered the sea safe by *chasing the pirates*," *praedones consectando* not *praedonibus consectandis*.

NOTE.—Gerund, e.g., *agendum* (subst.) *doing*. Gerundive, e.g., *res agenda*, a thing to do.

The gerund and gerundive are nouns with *-o* stems, the gerund being, in form, a neuter substantive; the gerundive an adjective. They are used in all cases, but the gerund is used in the singular number only.

The gerund, like the infinitive, shows its verbal nature in having its object in the acc. or in the dat., not in the gen. case, and in being qualified by adverbs, not by adjectives; it shows its substantival nature in its own construction. As compared with the gerundive, it is chiefly found when the verb from which it is formed is intransitive, or, though transitive, is used without the object being expressed with it.

The gerundive is confined to transitive verbs, and is usually substituted for the gerund of such verbs when the object is expressed. The object is then attracted into the case of the gerund, and the gerund, taking adjectival inflexions (then called the gerundive), is made to agree with it in number and gender. But the gerundive is not used where indistinctness would arise from the change of the object's case.

The oblique cases of the gerund and gerundive are used to supplement the infinitive, i.e., they are used where the infinitive, if it has case inflexions, would be used in oblique cases.—(*Roby*.)

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## MODERN LANGUAGES.

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

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### ENGLISH.

#### QUESTIONS IN ENGLISH.

Selected from London University Matriculation Papers by J. Douglas Christie, B.A., Coll. Inst., St. Catharines, Ont.

1. How is the absence of case-endings supplied in English? State and illustrate the effect of this absence on the general structure of sentences. Give examples of words still in use which retain traces of older case-endings.

2. State the principal rules of English syntax.

3. What is "to" in the following expressions:—"To-morrow;" "And all to break his head;" "Early to bed;" "Go to, now;" "Such a to-do."

4. Give some examples of defects and of excess in the English alphabet.

5. Give some rules which will be helpful in guarding against common errors in the use (1) of relative pronouns; (2) of "shall" and "will;" (3) of the words "than" and "as."

6. Explain the origin and exact use of the articles in English. Give reasons for and against including the article among the parts of speech.

7. Discuss the meaning of the syllable *self*. Give reasons for determining whether it should be regarded as a noun or as an adjective.

8. Tell what you know of the introduction of the genitive form *its*.

9. Give rules for the right use of the subjunctive in English, with examples.

10. Give some account of our alphabet, with reference both to its history and to the classification of the sounds it represents.

11. Tell the history of the use of *to* before a verb in the infinitive.

12. How are distinctions of gender marked in English? What remains are preserved of obsolete terminations to indicate the feminine?

ENGLISH QUESTIONS FOR "INTERMEDIATE" CANDIDATES.

1. Give a classification of English nouns. Reduce the parts of speech to the smallest possible number.

2. State the origin and describe the force of the following prefixes and suffixes:—Re, ness, kin, for, tion, dis, our, pre, ster, sub, pur, ful.

3. In what cases are the several words italicised?—This cost five *shillings*. He was offered a *pension*. He died as a *Christian*. He lived a *saint*. And all the *air* a solemn *stillness* holds. The investment yielded me large profit. He was paid a *shilling*. I

taught him *Latin*. That is a house of *mine*. *Who* runs may read. There is no man here *but* honours me.

4. Why is the *infinitive* mood so called? Show in how many ways the infinitive may be used.

5. Distinguish, etymologically, between *sensitive* and *sensible*; *ye* and *you*; *confess* and *profess*; *verity* and *veracity*; *ingenious* and *ingenuous*; *tense* and *time*; *swear* and *forswear*; *seem* and *besem*.

6. Describe and illustrate the different ways of marking gender in English nouns.

7. What is the construction of English impersonal verbs?

8. Give rules for the formation of plurals in English. Mention some nouns which have (1) no singular; (2) no plural; (3) two plural forms with different meanings.

9. Enumerate and distinguish the various uses of the words *but* and *since*.

10. Classify adverbs, prepositions, and conjunctions.

11. Distinguish between *which* and *that* as relatives.

12. Distinguish between weak and strong verbs. Is this an exhaustive classification? If not, show what other classes of verbs exist.

FRENCH.

FRENCH QUESTIONS.

Prepared by T. H. Redditt, B.A., St. Catharines Collegiate Institute.

IDIOMATIC USE OF FRENCH PRONOUNS.

1. Translate into French:—

Your advice is not wanted.

(1) When does "on" take an article before it? Give examples.

(2) Why is *L'on* generally used?

(3) Account for the admission of the article before *on*.

2. Translate into French:—

"Does she suit you?" "Suit? no, that is the wrong word. I am smitten with her."

(1) Give derivation of *en*.

(2) Show from analogy that the adverbial origin of *en* is no objection to its being used for persons.

3. Exemplify the use of *en* in rendering the following passages into French:—

(1) I wish to perform all that is due you from me. Gratitude makes that a duty.

(2) Nothing more would be necessary to excite suspicion.

(3) I was right, as we both agreed.

(4) Don't blame me for the consequences.

(5) Let no more be said to me about it. There is too much already.

4. Give derivation of this word, and show its use in the following sentences:—

(1) The safety of us all is at stake.

(2) Do not think of it.

(3) You will be able to do nothing in this.

(4) There is nothing to reproach you for—nothing, I am sure.

5. Translate:—

Jamais je n'eusse consenti, si l'éclat de l'honneur, à quoi seul je m'attache, m'eût paru s'obscurcir de l'ombre d'une tache.

(1) Explain the use of *quoi*.

(2) Translate into French: (a) He is well off. (b) It is of little consequence. (c) What more?

6. Translate:—

J'ai perdu cinq francs, dont j'ai bien des regrets.

(1) Give derivation of *dont*.

(2) Is *dont* correctly used here? Explain.

(3) Translate into French:—

In a conversation, the subject of which still vexes me, you asked what property I would offer my wife.

#### GERMAN.

##### DECLENSION OF GERMAN PROPER NOUNS.

By T. H. Redditt, B.A.

The rules generally observed in the declension of proper nouns are fairly stated in Aue's German Grammar, secs. 154-165. However, the Germans themselves do not agree on all points. Thus, we find both "Leopold Joseph's von Bulow Deukmal," and "Leopold Joseph von Bulow's Deukmal," the latter being the favourite mode. So, too, we have: die Goethe, die Goethens, and die Goethes; die Bacons and die Bacone, die Sapphos and die Sapphon. Heyse, in his German Grammar, adds *e* to foreign

proper nouns in *on*, in the plural, and makes the plural the same as singular in German proper nouns in *e*. It may be laid down that, as far as practicable, proper nouns follow the same rules as common nouns in the formation of the plural. Thus, (1) feminines take *n* in the plural; (2) masculines in *el*, *en* and *er* remain unchanged; (3) masculines in *e* and *st* (of more than one syllable) take *n* in the plural. It must not, however, be forgotten that many proper names form their plural by adding *s* to the singular, especially when the adoption of the above rules would give rise to any harshness or uncouthness in pronunciation. As an exercise on the above troublesome subject, the following examples, to be rendered into German, are subjoined:—

The Iliad of Homer. Virgil's *Æneid*. Cowper's Works. I prefer Pitt to Fox. Mariana's vivacity. Flora's gentleness. The patriotism of Brutus. The life of the poet Klopstock. Emperor Napoleon's campaigns. Admiral Nelson's battles. A. W. von Schlegel's writings. The portrait of Lewis Godfrey de Golz. The reign of George the First, King of England. The heroes of Greece. Fifty years before the birth of Christ. The Homers, the Newtons, the Schillers, the Schlegels, the Minervas, the Corinnas, the Heynes. We have seen Dr. Henry Feder. I have bought Mr. Leiser's works. Have you told it to Carlyle? Kant's house. Diana's Temple. Moritz's Travels. St. Catharines Collegiate Institute. Will you give this book to Flora? The Schneiders have come. No one praised Cato.

#### SCIENCE.

GEO. DICKSON, M.A., AND R. B. HARE, PH.DR.,  
HAMILTON, EDITORS.

#### CHEMISTRY.

First Class Teachers—Grade C.

Examiner—E. Haanel, Ph.Dr.

Answered by M. Dippel, Hamilton Collegiate Institute.

I. "It can be demonstrated that the flame of a Bunsen gas lamp becomes non-lumi-

nous, whether the gas allowed to mix with the coal gas in the long tube of the lamp be common air, carbon dioxide or pure nitrogen." Show that this fact is *not* in harmony with the received theory, accounting for the nature and structure of flame.

*Ans.*—The candle or gas flame consists of three parts: the area of non-combustion, of partial combustion, and of complete combustion. The luminous part of the flame lies in the region of partial combustion. The luminous power of the flame, according to the received theory, is due to the presence of particles of solid carbon in an intensely ignited condition in the flame. In the Bunsen burner it is said the gas draws up air with it through the holes at the bottom of the burner, and becomes so thoroughly mixed with the oxygen of the air, that complete combustion can take place at once throughout the entire flame. But carbon dioxide and pure nitrogen do not at all support combustion, as may be seen by bringing a burning candle into a vessel containing the gases. The non-luminosity of the flame of a Bunsen burner, when nitrogen or carbon dioxide are allowed to mix with the gas, cannot be owing to the complete combustion of the gas, seeing that nitrogen and carbon dioxide do not support combustion.

II. "At 26° C. the density of nitrogen tetroxide approaches 46. How should the formula for this compound be written to correspond to this density?"

*Ans.*—If at 26° C. the density of nitrogen tetroxide approaches to 46, its formula, to correspond to this density, must be written  $N_2O_4$ .

The molecule of all gases, simple or compound, occupies two volumes. If one volume of nitrogen tetroxide, representing the density, weighs 46, the molecule must weigh  $46 \times 2 = 92$ . But in the nitrogen tetroxide, the molecule weighing 92, the proportion of oxygen atoms to nitrogen atoms being as two to one, there must be two atoms of nitrogen,  $14 \times 2 = 28$ , united with four atoms of oxygen,  $16 \times 4 = 64$ ,  $28 + 64 = 92$ .

III. "Required to prepare nitrogen monoxide from ammonium nitrate:

(i.) Write out the equation representing the reaction occurring in its preparation.

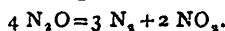
(ii.) Name the chief properties of the gas.

(iii.) State what precautions must be observed in preparing this gas when intended to be used for inhalation."

*Ans.*—(i.)  $NH_4NO_3 = N_2O + 2H_2O$ .

(ii) *a.* Physical properties. Gas colourless, odourless, possessing slightly sweetish taste, condensible to a colourless liquid at  $-99^\circ C.$ , and to a transparent solid at  $-115^\circ$ ; soluble in water, one volume of water at  $0^\circ$  dissolving 1.305 volumes of the gas.

*b.* Chemical properties. It supports combustion almost as readily as oxygen, relighting a glowing splint. Sulphur is extinguished unless burning brightly; burning brightly, it burns with a peculiar pink-edged flame. Phosphorus burns with almost as great brilliancy in this gas as in oxygen. The red fumes that make their appearance are due to the great heat which resolves a small portion of the nitrogen monoxide into nitrogen and nitrogen tetroxide.



Its non-absorption by pyrogallate of potash and its non-forming of red fumes with nitric oxide, NO, distinguish it from oxygen.

iii. The gas must be passed through solution of iron sulphate,  $FeSO_4$ , to entirely free it from the presence of NO before it is used for inhalation.

IV. "As the result of certain experiment it was found that 50 litres, measured at  $5^\circ C.$ , and 758<sup>mm</sup> P., of a mixture of oxygen and ozone, containing 18 per cent. of the latter, when allowed to bubble through a solution of hydrogen dioxide, were just sufficient to completely decompose it. Calculate from these data the quantity of hydrogen dioxide present in the original solution."

*Solution.*—50 litres of oxygen and ozone at  $5^\circ C.$  and 758<sup>mm</sup> P. become at  $0^\circ C.$  and 760<sup>mm</sup> P.,

$$\frac{50}{1} \times \frac{273}{278} \times \frac{758}{760} = 48.97 +$$

In 100 grammes of mixed gases there are 18 grammes of ozone and 82 grammes of oxygen.

But 24 grammes of ozone occupy 11.2 litres.  
 $\therefore 18 \text{ " " " " } \frac{11.2}{24} \times \frac{18}{1}$   
 $= 8.4 \text{ litres.}$   
 and 16 " oxygen " 11.2 litres.  
 $\therefore 82 \text{ " " " " } \frac{11.2}{16} \times \frac{82}{1}$   
 $= 57.4 \text{ litres.}$

8.4 litres of ozone and 57.4 litres of oxygen make 65.8 litres of mixed gases; these 65.8 litres of mixed gases contain 18 grammes of ozone; hence 65.8 litres of mixed gases contain 18 grammes of ozone, 1 litre of mixed

gases contains  $\frac{18}{65.8} \therefore 48.97$  litres of mixed

gases contain  $\frac{18}{65.8} \times \frac{48.97}{1} = 13.39$  grammes of ozone +  $\text{H}_2\text{O} = \text{H}_2\text{O} + 2\text{O}_2$ . 48 parts by weight of ozone decompose 34 parts by weight of hydrogen dioxide. 48 parts of ozone decompose 34 parts of  $\text{H}_2\text{O}_2$ . 1 part

decomposes  $\frac{34}{48}$ . 13.39 parts decomposes  $\frac{34}{48} +$

$\frac{13.39}{1} = 9.48$  grammes  $\text{H}_2\text{O}_2$ .

(To be continued.)

## SCHOOL WORK.

SAMUEL McALLISTER, TORONTO, EDITOR.

### HAMILTON CITY SCHOOLS.

PROMOTION EXAMINATION PAPERS,  
DECEMBER, 1861.

#### ARITHMETIC.

##### Second Grade.

I. Find the sum of  $34567 + 279 + 8937 + 46 + 543 + 40 + 82341$ .

II. Find the difference between  $8765498 - 321$  and  $12349834764$ .

III. Add together: Four hundred and two, 75436, 49, 64730, nine hundred and seventy.

IV. How much is  $9876543 - 4387 - 398 - 47$ ?

V. How much is  $47987639278$  plus  $3967 - 49876542$ ?

VI. How much is  $47635 + 834 + 6 \times 763 + 63987 + 4$ ?

VII. How much is  $8463 + 3648 - 976 - 85$ ?

VIII. Find the difference between  $3456 + 84$  and  $632 + 98$ .

IX. How much is  $47635 + 834 + 98763 + 59 + 4 + 6395$ ?

##### Third Grade.

I. How much is  $9876543 \times 987$ ?

II. Subtract  $8376 + 9437$  from  $5689 \times 8$ .

III. How much is  $98 \times 76 \times 43$ ?

IV. Multiply  $46325 + 53627$  by 49.

V. Multiply the difference between  $9871 - 23456$  and  $678932174$  by 7.

VI. How much is  $847 \times 94 \times 68$ ?

VII. Subtract  $63 + 72$  from  $63 \times 72$ .

VIII. Add together  $763 \times 4$ ,  $632 \times 9$ ,  $834 \times 7$ .

IX. How much is  $98347 - 3469 + 27986 - 3975 - 426 - 48$ ?

##### Fourth Grade.

I. How much is  $9876 \times 9876 \div 198$ ?

II. How much is  $64 \times 78 \times 37 \times 98$ ?

III. How much is  $813456 \div 9$  subtracted from  $834 \times 796$ ?

IV. Find the sum of  $1728 \div 9$ ,  $8271 \times 9$ ,  $7281 + 9$ ,  $1287 - 9$ .

V. How much  $6789 \times 6789 \div 396$ ?

VI. Divide the product of  $987 \times 789$  by the sum of 67 and 89.

VII. How often is 674 contained in  $987 - 6543212 - 2123456789$ ?

VIII. How often is  $938 - 769$  contained in the product of  $859 \times 764$ ?

IX. Find the sum of  $8937 \div 9$ ,  $7035 \div 7$ ,  $4872 \div 8$ ,  $6356 \div 4$ .

##### Fifth Grade.

I. How much is  $9876 \times 9876 \div 1967$ ?

II. How many acres, etc., in  $9876543218$  square inches?

III. How many miles, etc., in  $9876578654$  inches?

IV. How many cords, etc., in  $9876546756$  cubic inches?

V. How often is  $269126 \div 13$  contained in the product of  $9368$  and  $74$ ?

VI. Reduce  $976$  ac.  $13$  sq. po.  $5$  sq. yds.  $39$  sq. in. to square inches.

VII. Reduce  $9876$  cubic yds.,  $13$  cubic ft.,  $1349$  cub. in., to cubic inches.

VIII. How many tons, etc., in  $98765432-123$  drams?

IX. Reduce  $9163$  miles  $7$  perches  $2$  feet  $11$  inches, to inches.

*Sixth Grade.*

I. How much is  $(19$  ac.  $29$  sq. po.  $117$  sq. in.  $+ 83$  ac.  $19$  sq. po.  $8$  sq. ft.  $83$  sq. in.)  $\times 96$ ?

II. How much is  $98764 \times 98764 \div 46789$ ?

III. How many cords, etc., in  $9876543-212$  cubic inches?

IV. Multiply the difference between  $19$  miles  $5$  fur.  $39$  per.  $10$  in., and  $1$  mile  $17$  per.  $3$  yds.  $11$  in., by  $47$ .

V. How many acres, etc., in  $987 \times 63946$  sq. in.?

VI. What is the difference between  $8433 \div (17 - 8) \times 47$  and  $639 \times 487$ ?

VII. Divide the sum of  $73$  ac.  $2$  roods  $17$  sq. in., and  $173$  ac.  $30$  sq. po.  $119$  sq. in., by  $69$ .

VIII. How many tons, etc., in  $76$  tons,  $17$  cwt.  $8$  oz.  $15$  drs., plus  $678906743$  drs.?

IX. How many miles, etc., in  $678 \times 45678$  inches?

*Seventh Grade.*

I. How many acres, etc., in  $976 \times 98764$  sq. in.?

II. Find the L.C.M. of  $13$ ,  $23$ ,  $49$ ,  $89$ ,  $737$ .

III. How many cords, etc., in  $7698 \times 46-789$  cubic inches?

IV. How many times is  $176$  ac.  $13$  sq. in., contained in  $1167$  ac.  $3$  rds.  $14$  sq. p.,  $3$  sq. yds.?

V. Reduce  $876\frac{1}{2}$ ,  $74\frac{1}{3}$ ,  $417$  and  $67\frac{1}{2}$ , to

improper fractions, and then to a common denominator.

VI. Find the G.C.M. of  $9876546$  and  $45-66789$  (the work to be put on paper).

VII. How much is  $76$  times  $39$  miles  $31$  poles  $4$  yds.  $11$  in., divided by  $67$ ?

VIII. How often is  $23$  miles  $7$  inches contained in  $893$  miles  $5$  yds.  $8$  inches?

IX. How much is  $98764 \times 98764 \div 46789$ ?

*Eighth Grade.*

I. Find the sum of  $\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ .

II. How many acres, etc., in  $876$  ac.  $\div 29$  plus  $9376 \times 87$  sq. in.?

III. Paper the walls of a room  $17$  ft.  $4\frac{1}{2}$  in. long,  $13$  ft.  $5\frac{1}{2}$  in. wide,  $16$  ft. high, at  $4$  cts. per square yd.

IV. Carpet the same room with carpet  $26\frac{1}{2}$  in. wide, at  $87\frac{1}{2}$  cts. per yd.

V. How much is  $96$  times  $718$  miles  $3$  yds.  $11$  in., divided by  $69$ ?

VI. Reduce  $91\frac{1}{2}$  of  $\frac{7\frac{1}{2}}{24}$  of  $\frac{89}{91}$  of  $37\frac{1}{2}$  to a mixed number.

VII. How many cords, etc., in  $9876 \times 98-764$  cubic inches?

VIII. How often is  $131$  ac.  $113$  sq. in. contained in  $1113$  ac.  $131$  sq. in.?

IX. How much is

$$\frac{3 \text{ miles } 3 \text{ in.}}{2 \text{ miles}} \times \frac{\text{£ } 5 \text{ } 17 \text{ } 6}{\text{£ } 4 \text{ } 13 \text{ } 8} \times \frac{\text{\$ } 8}{3} ?$$

*Ninth Grade.*

I. How many cords, etc., in  $437\frac{1}{2}$  times  $689\frac{1}{2}$  cubic inches.

II. Find the sum of  $\frac{89}{96}$ ,  $\frac{73}{89}$ ,  $\frac{91}{97}$ .

III. Simplify  $\frac{1\frac{1}{2} - \frac{1}{2} \text{ of } \frac{1}{2}}{\frac{1}{2} \text{ of } \frac{1}{2} + 5\frac{1}{2}} \div \frac{1}{2}$

$$- \left\{ \frac{3\frac{1}{2}}{7} + \frac{2}{10\frac{1}{2}} - \frac{5}{18} \text{ of } \frac{4}{7} \right\} \cdot \frac{4}{7}$$

IV. How many acres, etc., in  $\frac{1}{2}$  of  $11$  ac.,  $11$  s. p.,  $11$  sq. in., plus  $\frac{1}{2}$  of  $7\frac{1}{2}$  acres?

V. Paper the walls of a room  $19\frac{1}{2}$  feet long,  $16$  ft.  $7\frac{1}{2}$  in. wide,  $18\frac{1}{2}$  ft. high, at  $5\frac{1}{2}$  cts. per sq. yd.

VI. Carpet the same room with carpet  $27\frac{1}{2}$  in. wide, at  $62\frac{1}{2}$  cts. per yd.

VII. Reduce  $17\frac{1}{2}$  miles to the fraction of  $684 \times 946$  inches in its lowest terms.

VIII. Reduce to a mixed number  $29\frac{1}{4}$  of  $4\frac{3}{7}$  of  $59\frac{2}{3}$  of 86.

IX. How often is 876 acres, 117 sq. in. contained in 6789 ac. 71 sq. in. ?

GRAMMAR.

*Fifth Grade.*

I. Define Grammar.

II. Name the four divisions of Grammar, and define Orthography.

III. Define letter, syllable, noun, and sentence.

IV. Define noun and verb.

V. Make lists of the nouns and verbs in the following sentences :—1. One day a farmer named Bernard, having finished his business at the market-town, found some hours at his disposal. 2. He had often heard of Mr. Longhead as a man of the highest reputation. 3. Having found his way into his presence, after numerous other clients had departed, he was asked to take a seat.

VI. Make lists of the vowels and consonants in the following :—

Their long, hard gallop, which could tire,  
The hounds' deep hate and hunters' fire.

*Sixth Grade.*

I. Make lists of the vowels, diphthongs, and silent letters in the following :—

“ They wrapt the ship in splendour wild ;  
They caught the flag on high,  
And stream'd above the gallant child,  
Like banners in the sky.”

II. Divide the following words into syllables :—Cautionary, transportation, attentively, consummation, musician, contemplation, eternity.

III. Tell the number and gender of the nouns in the following sentences :—Birds fly. John studies. The spectators rewarded him well. A beautiful goldfinch had strayed from its cage. A barking sound the shepherd hears.

IV. Make lists of the nouns, adjectives, pronouns, and verbs in the following sentence :—In this way they soon killed as many buffaloes as they could carry in their

carts, and one of the hunters set off in chase of a calf.

V. Write the singular and plural of leaf, coach, stomach, potato, wolf, journey, hoof, staff, canto, cliff.

VI. Write the masculine and feminine of father, hart, nephew, uncle, emperor, count, man-servant, nun, queen, stag.

VII. Define gender, number, and etymology.

*Seventh Grade.*

I. Define noun, verb, adverb, preposition, adjective, and pronoun.

II. Give the gender, person, number, and case of the nouns in the following sentences ; mention the verbs, and say whether transitive or intransitive :—1. Their life was a constant struggle. 2. In summer there is perpetual sunlight. 3. Have you seen John's hat ? 4. Well, Jasper, you'll spend the night with us. 5. Have you come from Toronto, friend ? 6. The day being fine, we took a long walk.

III. Make lists of the nouns, adjectives, pronouns, verbs, adverbs, and prepositions in the following sentences :—1. The huge forests of North America are being gradually destroyed by the woodman's axe. 2. First he gazed nestly at a huge, thick blanket.

IV. Divide into noun part and verb part :

1. For a few seconds there was deep silence. 2. By the 1st October the ice round the brig was a foot and a-half thick. 3. Have you come from Toronto, friend ? 4. The rain having ceased, we started. 5. Upon one of the green islands already mentioned the Indians erected his hut.

V. Give the singular and plural of son-in-law, fisherman, German, Frenchman, flag-staff, nuncio, penny, index.

VI. Give the masculine and feminine of author, master, widower, lass, countess, belle, testator, monk.

*Eighth Grade.*

I. Define preposition, conjunction, adverb, interjection, and syntax.

II. Compare the following when they ad-

mit of comparison :—Fore, out, English, perfect, few, sad, late, bad.

III. Parse fully the nouns, adjectives, pronouns, and adverbs in the following sentences; mention the verbs, and tell whether transitive or intransitive :—1. A large Newfoundland dog, her only companion, sprang to meet us. 2. There were three men there. 3. Thank you, big chief. 4. The rain having ceased, we went to the hunter's camp.

IV. Decline the pronouns—he, thou, mine, hers, its, us.

V. Separate the following sentences into simple and complete subject and complete predicate :—1. Are there many of you? 2. What ship did you belong to, boy? 3. Thus perished Sir Humphrey Gilbert, to the end resolute in an honest and godly purpose. 4. From an early period there appears to have been a herd of wild cattle upon it. 5. Provisions running short, both crews were put on short allowance.

VI. Give the singular and plural possessive of child, lady, German, John, chimney, muff, alley, ally.

VII. Give the masculine and feminine of lion, marquis, nephew, songster, duke, drake, bride, nun, master, lass.

VIII. Give six nouns used in the plural only.

*Ninth Grade.*

I. Parse : The friar, horrified at the act of impiety, urged his countrymen to revenge the insult offered to the Deity.

II. Analyze : 1. Now was displayed that devoted loyalty. 2. On entering the fatal gates the Inca, forgetful of his usual gravity, exhibited the utmost curiosity. 3. Where am I to find your religion? 4. Come here, John.

III. Write the past tense, present participle, active and past participle of choose, lose, loose, singe, catch, fall, forsake, judge, ruin, expel, bring, seem.

IV. Write the third singular of all the tenses in the indicative mood, passive voice, of the verbs catch and drive.

V. Define, etymology, infinitive mood, passive voice, and past perfect tense.

VI. Parse the verbs in the following sen-

tences :—1. He was walking. 2. You will be seen by him. 3. He can do the work. 4. He might have been followed by me. 5. He might become rich. 6. He does run fast.

VII. Classify the phrases in the following sentence :—In the year 1670 the French authorities in Canada built a fort on the Detroit river, for the double purpose of trading with the Indians and of opposing a barrier to their progress eastward.

COMPOSITION.

*Fifth Grade.*

I. Write this over again, and put the capitals in their proper places :—

and thus, honest john, though his station was humble, passed through this sad world without even a grumble; and i wish that some folks, who are Greater and Richer, would copy john tompkins, The Hedger and Ditcher.

II. Make five simple sentences, beginning and ending properly.

III. Make a sentence about each of the following things :—A pencil, a slate, a book, a hat, and a cap.

IV. Put nouns with the following verbs :  
 \_\_\_\_\_ fly. \_\_\_\_\_ run. \_\_\_\_\_ sing.  
 \_\_\_\_\_ walk. \_\_\_\_\_ neigh. \_\_\_\_\_ plays.

V. Put capitals in the following sentences :—

when i arrived, william spoke to me.  
 henry the eighth was king of england.  
 he came from scotland.  
 james and john study hard.

*Sixth Grade.*

I. Write six simple sentences about "Winter."

II. Make simple sentences upon the following words :—War, sleep, cotton, steamboat, the elephant, the tiger, fishing, wheat, Hamilton.

III. Fill up the following sentences, making them simple :—Your brother \_\_\_\_\_. The wind \_\_\_\_\_. The king \_\_\_\_\_. The boy \_\_\_\_\_. Croquet playing \_\_\_\_\_. His father \_\_\_\_\_. The weather \_\_\_\_\_. The summer \_\_\_\_\_.



IV. Write these sentences over again, and make the nouns plural:—The boy runs. The king was angry. The man comes. The dog barks. The wind blows.

V. Fill up the blanks in the following:—When I \_\_\_\_\_ about \_\_\_\_\_ old, as I was \_\_\_\_\_ to school one \_\_\_\_\_, a groundhog ran into a \_\_\_\_\_ in the path before \_\_\_\_\_. I \_\_\_\_\_ now I will have \_\_\_\_\_ fun.

VI. Write the date of a letter, and sign your name, and punctuate it.

*Seventh Grade.*

I. Give a short description of the street-car, telling what it is, how it is drawn, what it is used for, its great usefulness.

II. What kind of a sentence is each of the following?—Come here. Did he come here? He came here. How fast he runs!

III. Write three simple exclamatory sentences and three simple interrogative sentences.

IV. Re-write the following, correcting any mistakes you see:—

footprints that perhaps another  
saleing ore lifes solemn mane  
a forlorne and shipwrecked brother  
seeing may take hart agen.

V. Fill up the blanks in these sentences, making them simple:—He sat \_\_\_\_\_ to rest. The boy was found sitting \_\_\_\_\_. He \_\_\_\_\_ visited America. The king \_\_\_\_\_ led his army \_\_\_\_\_. The scream was \_\_\_\_\_ piercing.

VI. Write a short letter to your friend, telling him or her what subjects you have been examined on, and when you think the examination will close, and whether you think it hard or easy so far.

*Eighth Grade.*

I. Combine the following sentences into one simple sentence:—The river overflowed. The river was the Thames. The banks were overflowed. It was in November. It was on the 15th of that month. On both sides it was overflowed.

II. Separate the following simple sentence into at least five simple sentences:—On the 25th August, 1819, Watt, the great improver

of the steam-engine, died at his seat of Heathfield, near Birmingham, in the eighty-fourth year of his age.

III. Write four compound sentences about "Winter."

IV. Write two simple declarative sentences, two simple imperative sentences, two simple exclamatory sentences, and two simple interrogative sentences.

V. Complete the following sentences, making them compound:—Men may come \_\_\_\_\_. The way was long \_\_\_\_\_. The wind rose to a storm \_\_\_\_\_. He wished to depart \_\_\_\_\_. The moon rose \_\_\_\_\_. The ship was dashed on the rocks \_\_\_\_\_. Either the storm must cease \_\_\_\_\_. He neither returned the money \_\_\_\_\_.

VI. Write a letter to your cousin, telling him or her how you spent your last summer's holidays. Draw an envelope and address it.

*Ninth Grade.*

I. Combine the following sentences into one simple sentence:—Leonidas died. Leonidas was a king. He was king of Sparta. Three hundred of his countrymen died with him. They died like heroes. It was at Thermopylae they died. They died to defend their country. They were defending their country against the Persians.

II. Combine the following into a compound sentence:—In Paris the Templars had got possession of a tract of land. This tract was equal to one-third of the whole city. They covered it with towers. They covered it with battlements. Within the fortress they lived a life of ease.

III. Change the following simple sentences into compound sentences:—1. Robinson Crusoe was very much surprised at seeing the print of a man's foot on the sand. 2. Overcome with fatigue, the weary traveller sank down to rest.

IV. Re-write the following sentences, keeping them in their order, and changing the voice of each verb:—Cortez was recalled to Spain by the King. He had treated the natives cruelly. Those whom he had left behind treated them cruelly. He found a

native army in the field on his return. The war was continued by them.

V. Correct any mistakes in the following: they considered themselves too be justified in this by the oppression of the Mexicans and Indians by Spanish rulers and quiteing their consciences by thus assuming the characters of avengers and dispensers of poetick justice they never embarked upon an expedition without publickly offering up prayers for success nor did they ever return laden with

spoils without giving thanks for their good fortune.

VI. Write a compound sentence containing one verb in the progressive form and one in the emphatic form.

VII. Write a short composition on the "cow," telling what you can about the following things: usefulness; its flesh, skin, horns, hair, bones, milk, calf and its skin.

(To be continued.)

## CONTEMPORARY LITERATURE.

### PRESIDENT GARFIELD AND EDUCATION.

By B. A. Hinsdale, A.M., President of Hiram College. Boston: James R. Osgood & Co. 1882.

THIS deeply interesting little book gives a full account of the late President's most active and successful career as a school teacher, and subsequently as president of his Alma Mater, Hiram College, Ohio. It is written by one who knew him well, and who is now his successor at that institution. Hiram College was founded in 1850 by the "Disciples of Christ," a Church which under that modest title taught as their main doctrine what will meet large acceptance from most Christians outside the ranks of ecclesiastical Reaction, and what Carlyle called "Spectral Puseyism born of the Night," that "the Bible has been in a degree obscured by theological speculations and ecclesiastical systems. Hence their religious movement was a revolt from the theology of the schools, and an overture to men to come face to face with the Bible. They believed, also, that to the holy writings belonged a larger place in general education than had yet been accorded them; accordingly, in all their educational institutions they have emphasized the Bible and its relative branches of knowledge. This may be called the distinctive feature of their schools." How very naturally does this seem to follow from the admitted principles of any and every Church of Protestant Chris-

tians! Yet how is it that no one tries it? It is a rarely exceptional thing to find a man or woman, a girl or boy, who has anything like a thorough knowledge of the Bible. All honour to the "Disciples" for making this a "distinctive feature" of their educational system. For, as Principal Grant observed the other day in his lecture on Joseph Howe, what a vast educational power is the Bible, viewed merely in that light, and quite apart from its religious value; and the Bible was taught at Hiram as the Book of Books ought to be taught—as all books ought to be taught—carefully, lovingly and intelligently, not as if Christian people were cramming for a general competitive examination on the Day of Judgment.

To Hiram College young Garfield came as a student in the third term of the institution, and his own twentieth year. He came poor in everything except intellectual powers and moral faculties. Having early lost his father, he had acquired the secret of self-help. For his first two terms he was the College janitor—lighting fires, sweeping rooms, and ringing the College bell. A house is still pointed out in Hiram, the clap-boards of which he planed in one of his vacations. He had learned the lessons which certain shoddy schools are daily making it difficult for Canadian students to realize—that of the supreme worthiness of all honest work. But he did not fall into the mistake of putting

intellectual below mechanical work. If planing clap-boards and ringing bells made men great, as Mr. Hinsdale well says, the road to greatness would be easy enough. Young Garfield worked hard and long at many studies, giving special attention to a far-reaching course of classics—Greek and Latin—as also to English literature. He had the advantage of having teachers appointed for their learning and capacity to teach; not, as seems to be our destiny in Ontario with every educational appointment, because they were either foreign aristocrats or subservient hacks of partisan journals.

It is noteworthy that one of the most valuable aids to Garfield's intellectual development was the existence at Hiram College of co-education in its fullest and freest form. In one of his speeches when President of the United States, Garfield said :

"I am glad to say, reverently, in the presence of the many ladies here to-night, that I owe to a woman, who has long since been asleep, perhaps a higher debt intellectually than I owe any one else. For her generous and powerful aid, so often and so efficiently rendered; for her quick and never-failing sympathy, and for her intelligent, unselfish and unswerving friendship, I owe her a debt, for payment of which the longest term of life would be short."

This was in January, 1881. Alas! the term was to be short indeed. The lady referred to was Miss Almeda Booth, a fellow-student, and, to the honour of our Normal School wiseacres be it recorded, a student boarding in the same house with young Garfield. Together they explored an extensive field of classical learning—"Xenophon's Anabasis" in one term, the "Memorabilia" in the winter and spring terms of 1852-53. They did not fall in love; but Garfield found the true and tender, noble and devoted wife, whom England and America have learned to honour, in a young lady pupil.

We commend this admirable little book, the literary form of which is a credit to Hiram College, to all Canadian teachers. We are glad to be able to give even this brief account of its contents for the benefit of that

class of teachers—it is the one to which Garfield belonged—who are too poor to buy books. For the benefit of these, it is the aim of the EDUCATIONAL MONTHLY to be constantly on the watch for the higher class of educational literature, and to take some pains to give a full analysis of such excellent books as that now reviewed.

THE VERBALIST. By Alfred Ayres, author of "The Orthoepist." New York: D. Appleton & Co.; Toronto: N. Ure & Co. 1882.

THIS unpretending but most useful little book should stand ready at hand as a work of reference for everyone engaged, professionally or otherwise, in literary composition, especially on this Continent, where solecisms and vulgarisms are so apt to creep into our speech and writing from the cant of trades, the more racy expressions of doubtful correctness that float about, even in good society, and, worst of all, from that slang of the criminal and uneducated proletariat which too many newspapers think can be made to do duty for wit. The work is clearly and pointedly written, and with sufficient sense of humour to make the book amusing as well as improving. One is startled at finding many expressions, familiar enough in use with educated people, as incorrect. We give an instance at random from page 151: "PROPOSITION.—This word is often used when *proposal* would be better, for the reason that proposal has but one meaning, and is shorter by a syllable. 'He demonstrated the *proposition* of Euclid, and rejected the *proposal* of his friend.'"

GUIDES FOR SCIENCE-TEACHING. COMMON MINERALS AND ROCKS, by William O. Crosby. Boston: Ginn, Heath & Co., 1881.

THIS is the twelfth volume of a series issued under the auspices of the Boston Society of Natural History, and "intended for the use of teachers who desire to practically instruct classes in Natural History." The subjects are treated from the mineralogical standpoint, and the localities referred to are chiefly in the New England States. The volume is as pleasantly written as the nature of the subject will permit. It covers, in a general way, the whole ground, and must prove highly useful for the purpose intended, especially where it is possible to visit and study the collection of specimens made by Mr. Crosby in the Museum of the Boston Society.

EDITORIAL NOTES.

EGERTON RYERSON.

(Obit Feb. 19, 1882.)

So soon in the year Death has cast a great shadow over the land, and the educational world, of this Province at least, is called upon to mourn the loss of one who was long its centre and its life. The work which was given Egerton Ryerson to do, that he has accomplished; and his nigh fourscore years of toil and endeavour are now rounded to their close, with the seal of a nation's honour and the docket of public acceptance. Dr. Ryerson's death, although not unexpected, will awaken a throb of sorrow in every household in Ontario; for where a youth goes from it to the vocations of life, in most instances he owes his equipment for that work to the genius and forethought of the founder of our school system.

On the theatre of his own special field, it may truly be said, that Dr. Ryerson's labour eclipses that of every worker the country has had in its service; and what that labour was, in finding the bed-rock on which to rear the fabric of education his hand and brain subsequently toiled so long and successfully to upraise, few save those "fallen by the way" are likely ever fully to realize. In saying this we are not unmindful of important services to the State rendered by other toilers, when it was yet night in the land, and the ministry of law, medicine and the gospel had scarce begun to diffuse its myriad civilizing influences. Of the formative period of our country's history, no one may speak slightingly of even the humblest effort to put stone upon stone, in raising the edifice of the nation's institutions, or in paving the highway of its material progress. But varied and helpful as were these services, they pale before the work Egerton Ryerson sought to do, and which a long and active life was consecrated

in accomplishing. In his career he has figured in many spheres of public activity, but the one in which he has left an imperishable memory, the great commonwealth of our schools will forever perpetuate.

The personal history of Dr. Ryerson and his family has not a few points of interest to attract one; but these will find many historians, and we need not here dwell upon them. Yet their narration would shed much light on the character of the man who sought and followed the vocation he has made illustrious. That he had a mission in life, and felt impelled to prepare himself for it, the scene, while he was yet a youth, with his unsympathetic father, is a proof. His young, eager life early responded to the spirit of the times, and he equipped himself for the fray with a determination that overcame all obstacles. In this spirit he pursued his education at the Hamilton District Grammar School, and whatever his deficiencies he assiduously supplied by private reading and study. Ere long he became an eloquent preacher and a vigorous controversialist. The times growing stormy, he soon learned to be a forcible writer and an able debater. Serving the Church he then essayed to serve the State, and though he was not always happy in this, he ever fought with vigour and the approval of a good conscience. Years pass, and we find him filling with acceptance the editorial chair, and, later on, the presidency of a college. In 1844 he was installed as Chief Superintendent of Education for the Province, and here his life-work began, and the broad avenue was opened out which was to lead the youth of the country to every arena of the State. In this sphere he passed a life full of service, and his great administrative ability and unwearied assiduity have earned for him that distinction which intelligent zeal and

long and faithful labour merit and is sure to receive, wherever the interests of public instruction and popular enlightenment are spoken of in a cultured and appreciative community. That the founder of a national school system should have a remarkable grasp of its affairs, is a circumstance which may seem to call for little comment; but Dr. Ryerson, beyond his vigorous executive, had so intuitive a perception, not only of the contemporary but the remote concerns of education in Ontario, and could so instantly devise wise things to further the interests of the schools and those engaged in them, that one is prepared to find that his administration possessed every element of success, and that it won for the school system the praise of many lands. Looking at his work over the interval between the present and the period of his superannuation, many things recur to the mind to attest the value of his services to the country, and to emphasize the loss education sustained in his retirement. His failure, in later years, to read the progressive signs of the times, in regard to matters connected with his Department, may be said to be the one circumstance which in any degree qualifies enthusiastic commendation of the man and his work. But after so long a service, that he should brook no check on official autocracy, and chafe under consultative control, is perhaps little to be wondered at. Yet, that he and his staff unwisely assumed an attitude of hostility towards necessary reforms, and showed but scant courtesy to those who wished to save education from degenerating into a merely official system, are matters which it may be wholesome to remember. While we recall these incidents of the past, we at the same time acquit the subject of this notice, in the course he took in regard to these controversies, from any motive but that of unwillingness to see the Department made the object of criticism, and the desire to be loyal to those with whom he had long been associated. But behind his ardour for controversy, and despite its oft-times bitterness, there was a large, human heart, and a geniality of presence and manner which won for

Dr. Ryerson the respect of his opponents, and the love and reverence of thousands of his countrymen. In his contact with the profession, courtesy, it may be said, never received an abrasion, and the teacher found in him ever a friend, and the humblest was always sure of his rights. Throughout the country none could better quicken local energy in educational work; and the school-houses of the Province are standing monuments to his enthusiasm and zeal. If the grave has closed upon his form, his work remains; and the memory of Egerton Ryerson will long continue the best incentive to advance it!

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#### THE LATE INSPECTOR MARLING.

As sudden as it was sad was the news that spread over the Province conveying intelligence of the death of Mr. S. A. Marling, M.A., High School Inspector, which occurred on the evening of the day that closed the career of the venerable ex-Chief Superintendent of Education. To his many friends, among High School Masters particularly, the announcement of the decease of this most estimable gentleman must have come with appalling suddenness, as we know that it brought a sorrow to, and made the heart ache of, everyone of those who knew and had relations with him. Mr. Marling was a true gentleman, a man of very pleasant and winning manners, and was universally beloved by the profession. He lived in a lofty moral altitude, and exercised an influence for good wherever he went. One who knew him well writes of him as a kind husband, a loving and sympathetic father, an affectionate brother and son, and a firm friend. He was enemy to no man, but ever manifested that charity which is the fulfilling of the law, and that spirit of brotherhood which maketh all men kin. He was a man of large sympathies, of blameless life, and a Christian in heart and conduct. He will be much missed in the schools, and the Minister loses in him a faithful and conscientious servant, ever discreet in his contact with the profession, and always interested in and loyal to his

work. He was, moreover, a ripe scholar; an excellent classic and a good linguist. As an examiner he was scrupulously fair and judicious. His papers, both for the University and the "Intermediate," were models of the art of questioning, and were alike acceptable to the teacher and helpful to the student. His call to go hence was without warning, but it no doubt found him prepared, and the answer "Adsum!" came unflinchingly from his lips. And now, faithful soul,

" . . . doubtless, unto thee is given  
A life that bears immortal fruit  
In such great offices as suit  
The full-grown energies of heaven."

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#### THE MINISTER'S REPORT.

COURTESY demands our acknowledging Mr. Crooks's attention in sending us copies, at the no doubt earliest convenient opportunity, of the Education Report for the years 1880 and 1881. But could the Minister have striven to furnish us with advance sheets when the chief organ of his party received them, our obligation to him would have been greater, and our readers might have had in the present number an abstract of the important Blue-book. Mr. Crooks, we trust, will not think us churlish in saying this much, for, on reflection, we have no doubt that he will concur with us in the opinion, that the constituency which this magazine addresses is as specially and immediately interested (we won't say more so) in the contents of the Annual Report as the readers of any political and partisan journal. The hasty glance, which is all we have been able to take at the Report, we are, however, glad to say, prepossesses us. It acceptably covers the years 1880-81, is full of interesting details, and has little of the stereotyped matter we have hitherto been accustomed to meet with in the Educational blue-book. Altogether, the Report strikes us as a great improvement on previous issues, and seems to be an ably-compiled and serviceable document. On many points the Minister's suggestions are valuable, though in regard to Upper Canada College we feel that Mr. Crooks's change of

base, in the suggested disposition of the institution, is not likely to meet with approval. But on this and other matters dealt with in the volume we must defer our criticism. The reports of the County School Inspectors, and the summary of the proceedings at the various Teachers' Conventions, will be read with interest, as will the matter in the High School Inspectors' reports. In the latter we note that the Inspectors reiterate their opinion with regard to the "Intermediate." We wish we could say that the space occupied by the details respecting the Mechanics' Institutes, and the large annual grant made to them, were justified by a more satisfactory showing of the condition and working of these institutions. The proposal to remove to the Education Office the Ontario School of Art and Design, is to be received with caution, unless it is stipulated that its management is to be retained in the hands exclusively of professional artists. The country has had enough of official art patronage, in connection with the Educational Museum, to let this institution fall into the hands of the cognoscenti of the "cleaned-out" Depository. The information supplied in the Blue-book respecting those Universities, Colleges and Schools chartered by the Legislature and those provincially endowed, is a commendable feature of the Report. This alone is an evidence of Mr. Crooks's industry in the past year, and deserves acknowledgment.

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#### THE VACANT INSPECTORSHIP.

THE Minister of Education, we are sure, will bear with us if we venture a few remarks in regard to the filling of this post. There is no need to tell him that much depends on his discretion and judgment in making the appointment. The Collegiate Institutes and High Schools are now happily manned by gentlemen of experience and scholarship, and the Inspector of these institutions, if he is to command confidence and be instrumental in maintaining the standard and efficiency of the secondary schools, must at least be the peer of the best master engaged in them.

Not only should he be a first-rate scholar, and an all-round proficient, but he should be a successful teacher, with his heart in his work, and an enthusiast in all that pertains to the higher culture. To be acceptable to the profession he should have a high record in regard to character as well as to scholarship. He should be at once a gentleman, and a man of honour, probity, and independence. His stripe of politics should not discover him: he must be no hanger-on of the Department, or be tainted by connection with those who have brought it discredit. He should be no hobby-rider, but, in his function of examiner, be able to find out what is going on in the schools, and be capable of directing aright the work to be done in them. In the interest of education Mr. Crooks, we trust, will be happy in his selection.

#### FREE PUBLIC LIBRARIES.

THE intelligent philanthropy of not a few wealthy citizens of Montreal has of recent years done much to enrich that city in the matter of University and Art endowment. Public spirit has of late been very infectious in the commercial metropolis, and the art galleries, science halls, colleges and benevolent institutions, recently erected by private munificence, are gratifying evidences of the intellectual direction which wealth is there taking. In Toronto, however, save the munificent gift of Senator McMaster in erecting and endowing the Baptist College, little has been done by men of wealth to promote the intellectual life of the people. The scheme of a free public library limps and drags in a very discouraging way, though there is not a greater want felt by the community. We do hope that the civic authorities will rouse themselves from their intellectual torpor, and put this much-needed institution on its feet. If men of wealth will not step forward to aid the project, the people are willing to tax themselves for its establishment and liberal equipment. Whatever legislation is necessary to enable the scheme to be put under way, we trust will be speedily secured, and the library placed

at the earliest moment at the service of the citizens. Chicago, we observe, has recently had some millions, donated by a Mr. Newbury, placed at its command for the building and endowing of a great free library. Baltimore has just had a gift of a million, from a Mr. Pratt, for a similar purpose. New York, in addition to the Astor and Lenox Libraries, is also having large benefactions left it by public-spirited citizens to increase the facilities for reading and reference enjoyed by the community. Here, surely there is surplus wealth that can be thus wisely and beneficently utilized.

#### WINDMILL CRITICISM.

THE publishers of the *School Journal*, in the last issue of that erudite serial, we notice, have taken up—may we not say *longo intervallo*?—our rôle of literary critic, and, with such wit as the gods and a Normal School course have endowed them, have attempted a criticism of an authorized text-book on Geography of the character of “a screaming farce”—with the promise of its continuance on the boards for the rest of the “silly season.” The review (save the mark!) is worthy of the genius of the compiler of “Gage’s Practical Speller.” It is characterized by the same puling effort to make itself intelligible, and succeeds with a like encouraging result. With a mount on the Pegasus of the “Gay Science,” our would-be critic soars off into the empyrean and speedily loses himself in a cloud-land, where lunacy finds no restraint and folly has no one to jeer it. From that elevation the geography of the earth is a confused muddle, and its recorded facts have neither accuracy nor coherence. The rarified air of these “high latitudes,” of course, affects the brain of the critic, and men are seen as trees, streams change their courses, and all nature is transmogrified. Through the lens of a disordered imagination the sober, accurate narrative of the text-book is assailed, clauses are ruthlessly torn from their context, and the geography read as by one bereft of reason. To reply to the irreflexivity of such reviewing is,

of course, neither worth our nor the publishers' while. We only notice it to direct the attention of M. Jules Verne to a luminous plot for a new geographical romance, and to commend its writer to the United States Government as a boss crank to take charge of the next expedition to the Pole. There he may have a chance to cool his heated imagination, and to reconstruct his notions of mundane geography.

#### A MENTAL OUTLOOK.

To the Editor of the *C. E. Monthly*:

SIR,—I have been a reader of THE MONTHLY since it was first published, and have always found it very entertaining and instructive. One reason why it has pleased me so well doubtless is the fact that it has always opposed the modern craze for "passing examinations," with all its attendant evils, and their "name is 'Legion,' for they are many." I have been a victim of this craze—this intellectual cram—myself. At the unripe age of sixteen I passed the Third Class Examination, and took charge of a school, before my own mind was in any way matured and fitted to be trainer and director of other-minds—before my plans for life had been formed—before I had any proper conceptions of the objects, or rather ends, to be aimed at in education; the consequence has been that I have *drifted*. Cast upon my own resources when only a boy, having the thoughtless, improvident nature of a boy, I wasted my leisure hours in desultory reading, reverie, and other methods of killing time and rendering its murderer miserable. After a number of years of this drifting, I found myself, like hundreds of others in this fair Ontario of ours, compelled to study for a "Second," or quit teaching. Like hundreds of others, I selected the best cramming machine I could find (in the shape of a Collegiate Institute), passed through the mill in something less than four months, and came out a full-fledged "Second A." Good luck and a new turn of the official crank that manufactures Ontario school *laws*, saved me from the "Normal." I re-entered the ranks of what ought to be the noblest profession on earth (and would be but for its professors), and *drifted* again, and am drifting helplessly still. My sojourn in the Collegiate Institute (thanks to the Education Department and the School Law) had inspired me with no new love for learning, but rather with a distaste for it, notwithstanding my desire to be a scholar and a man of culture.

In History, Literature, Chemistry, and some other subjects, I was so successfully crammed that I managed to pass the examination, and have since contrived to forget almost all about them. But let me pause. Are you wondering why I am writing all this to you? Well, when one is ill he calls the doctor to his aid; so I, thinking you may be able to prescribe successfully for my intellectual ailments, appeal to you for advice as to what plan I ought to adopt to free myself from the empty nothingness of my life.

I am compelled to teach, or do something of the kind, to obtain a livelihood; but I begin to find myself fossilizing, if such a term be allowable, my mind becoming dwarfed for want of proper food, and my life being made miserable.

If you can find time to reply, I shall be very glad to hear from you. Perhaps my letter may suggest to your mind a suitable article on the matter in hand for THE MONTHLY, which might be of great use to others (and there are many such) who find themselves in the same uncomfortable and unsatisfactory position as myself.

I remain, yours respectfully,

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[Time and space will only permit of our making a brief reply to our correspondent, though we would assure him of our sympathy and interest. His case, we fear, represents only too faithfully the indifferent equipment of many in the profession, who take to teaching without due regard to the qualifications required of them, or to the maturity of mind which they ought to reach before undertaking the responsibilities of assuming charge of a school. Unlike many, however, our correspondent has the sense to feel his own deficiencies, and this in itself is encouraging. That he has come through the "Slough of Despond" into which the *ignis fatuus* of "Cram" has led him, is a hopeful sign; and if he will only fortify his mind, which needs tonic treatment, by assiduous study and fructifying thought, the future may yet be bright for him. We should say, indeed, that he has just reached the point, in his mental history, from which, as a student, he can advantageously start out on a career of substantial conquest. He admits having forgotten his Second Class subjects. In justice to his employers, these he should renew ac-



quaintance with, and when he has mastered them proceed to attack those for a First Class. This will supply a definite motive for exertion, and if he aspires to be "a man of culture," he will then go on to secure a First A, and follow that by a University course, as many a poor but hard-working teacher has done and subsequently attained *eminence in the profession*. Never mind the past: Look forward, not back! and call up all the energy at command for the course we have suggested, and we feel that great will be the gain thereof. Read Carlyle's address to students as Lord Rector of the University of Edinburgh, and further stimulate the faculties by the reading and mastering of a few strong books with a fibre in them, and be mindful of Philip's query: "Understandest what thou readest?" Green's "Short History of the English People," read leisurely and thoughtfully, will be useful; and in literature take up, not discursively, a number of authors, but the study of one, and thoroughly assimilate his matter. When this has been done, add another English classic to the mental possessions, and so find the ground grow firm beneath the feet.—ED. C. E. M.]

#### LITERARY AND EDUCATIONAL NOTES.

A NEW work, entitled "The Making of England," by J. R. Green, LL.D., author of "A History of the English People," has just been issued by Messrs. Macmillan, of London, and reprinted by the Messrs. Harper, of New York.

THE fourth and completing part of Prof. Skeat's "Etymological Dictionary" is announced for early publication—a work of extraordinary research and unusual erudition. It would be trite to say of the book that it should be in the hands of every student of the language. What we will say, however, is, that if there is a friend to education within ten miles' radius of any High School, let him buy a copy of the work, when completed, and present it to the library of the institution. A better investment of ten dollars could hardly be suggested.

THE first volume (embracing some 5,600 entries, down to the end of the letter "E") of an elaborate and comprehensive "Dictionary of Anonymous and Pseudonymous Literature of Great Britain" has just appeared from the press of an Edinburgh publisher. The work should find a place in every literary workshop, in line with Adams' "Dictionary of English Literature" and Alibone's "Dictionary of Authors."

NO one professing to teach English literature, if not possessed of Professor Henry Morley's larger treatises, should be without that author's "First Sketch of English Literature," the eighth edition of which has just been published by Messrs. Cassell, of London. The work will be found eminently instructive and suggestive, giving not only "an account of English authors, but a history of English life on its literary side."

NOTHING could well be more effective as an antidote to the pernicious literature that nowadays finds its way into the hands of boys and girls, than those attractive and instructive serials published by the Religious Tract Society of London—"The Boy's Own Paper" and "The Girl's Own Paper." They are re-issued in Canada by Messrs. William Warwick & Son, Toronto, and should be widely circulated and have a place in all school libraries.

NO one can now complain of lack of useful works of reference. Messrs. Cassell have just commenced a re-issue, entirely re-written, of their "Popular Cyclopædia," and have published the first volume of their new enterprise, "The Encyclopædic Dictionary," the latter of which is a new and original work of reference to all the words in the English language. New and cheaper editions also appear of Dr. Brewer's "Dictionary of Phrase and Fable," giving the derivation, source or origin of some 20,000 common phrases, allusions, and words that have a tale to tell; and of his later work, "The Reader's Handbook of Allusions, References, Plots and Stories"—a key to a thousand matters which want explaining to the mass of even students of English literature.