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THE CANADA

EDUCATIONAL MONTHLY

AND SCHOOL MAGAZINE.

DECEMBER, 1883.

SCHOOL HYGIENE.*

BY W. OLDRIGHT, M.A., M.D.

THERE are few subjects of as much importance in their bearing upon the welfare of the people of this Province in the near future as that of "School Hygiene." I am, therefore, glad that it is one of the subjects which you have selected for discussion at this meeting of your Association. I trust that the remarks which I have been requested to make will be taken as merely the opening of the discussion, that others will follow me, and that we shall have an earnest consideration of the questions taken up.

I suppose it is hardly necessary for me to prove that as a general rule,—not in exceptional instances merely,—boys and girls, as well as their teachers, are not improved in health by their school life; in other words, that there is plenty of room to struggle after the ideal hygienic conditions in connection therewith. Were it necessary to

prove this, I would do so by pointing to either teacher or pupil at the close of school term, and again at the close of vacation;—I need only point: you have seen the contrasting pictures often enough to be able to recall them to your mental vision.

Shall we not, then, inquire whether there are changes which we can help to bring about to improve the conditions of school life, and what they are? And shall we not, one and all, do our part and our best to bring them about? I feel that if any good is to come from a discussion of this subject, it must be by each one of us taking hold of it in this practical way; and I do believe that it will be so taken hold of.

One of the first things, then, that we shall inquire into, is the conditions of the AIR IN OUR SCHOOL. It is a well-known physiological fact that a healthy adult man exhales six-tenths of a cubic foot of carbonic acid per hour. It has also been proved by experiment

*An Address before the Ontario Provincial Teachers' Association, 1883.

that six parts of carbonic acid in 10,000 of air is all that can be breathed with a proper regard for health: *i.e.*, two parts in 10,000 in excess of the amount naturally contained in the atmosphere. A very simple calculation, then, tells us that to keep the air at a healthy standard, 3,000 cubic feet of air must be supplied. It has further been proved that with ordinary appliances for ventilation, and taking into consideration our climate, three times in an hour is about as often as the air in a room can safely be changed. This, then, would require that a room should be so capacious as to give to each individual adult 1,000 cubic feet of absolute space, necessitating in a room twelve feet high a floor space a little over nine feet square. But, it may be said, children do not require so much, because they are smaller, and there is not so much blood to be oxidized. True, there is not so much blood, but remember that there is more growth and waste in proportion; their blood circulates more rapidly, and their respirations are more frequent; besides, their organizations are more delicate and susceptible to unhealthy influences. Hence, we cannot safely deduct much from the amount of fresh air, and consequently from the air space, required by children. I am aware that the army regulations only allow to the soldiers 600 feet; well, if we are to give our children less than is requisite for the fullest requirements of health, according to the above calculation, let us give them, at any rate, as much as the Government allows to the hardy soldier, and make the very smallest limit not less than 600 cubic feet, or in a room twelve feet high, not less than seven feet square of floor space. I now ask you to tell me in the discussion which will follow, in what proportion of our schools we will find air spaces of 1,000, or even of 600 cubic feet per individual; and to tell me also what is about the

average space that is to be found. I hope that we shall get answers to these questions, as the presence here of so many who are able to answer is an opportunity of which I feel sure the Board with which I am connected would desire to avail itself in its labours in regard to this subject.

Having settled the average amount of air space, the next question to be put is, Are there appliances for changing the air in it the requisite number of times to give a product of 3,000 feet, or something near that amount?

If not, what is the result? It has been found as the result of actual analysis and experiment, that air containing eight or nine parts in 1,000 of carbonic acid produces nausea, loss of appetite, headache, irritability, and allied symptoms. Are your little scholars ever peevish and fretful? I must not ask whether children of an older growth ever become so; no wonder if they do. It is hard to get exact statistics of mortality in connection with various degrees of vitiation of air by respiration, as other unhealthy conditions are often associated; but the above results were found to be solely attributable to the vitiation of air by respiration to the extent named. Of course, mortality statistics associated with an indefinite amount of air vitiation are to be had.

If some of the poor little fellows above alluded to as breathing bad air could be aroused to the necessary vigour, I would like to furnish them with the following "pome," to be recited during visits of the powers that—(don't)—provide school accommodation. I take it from a paper read by the Rev. Mr. Fairfield, of Michigan, who has altered it as he says, "to meet the case" in point. I believe that in its original form it was addressed by a congregation to their sexton, but it is here dedicated to the caretaker of a school:—

"Oh, sextant of the school-house, which sweeps
And dusts, or is supposed too! and makes
fires,

O, sextant I there are I kermoddity
Worth more than gold, which doesn't cost
nothink—[?]

Worth more than anything except the sole
of mann:—

I meen power are, sextant; I meen p:wer
are!

O, it is plenty out o' doors, so plenty it
doant no

What on airth to do with itself, but flies
about

Scatterin' leaves, and blowin' off men's hatts;
In short, it's "jest as free as are" out dores.

But O, Sextant, in our school-house it's as
scarce as hen teeth—

"U shet 100 girls and boys,

Speshaly the latter, up in a tite place,—

Sum has bad breths, none ain't 2 swete,
Sum is fevery, sum is scroffous, sum has bad
teeth, and some ain't over clean;

But every I of em brethes in and out, & out
& in,

Say 50 times a minit, or one million & a half
breths an our;

Now how long will a school-house full of are
last at that rate,

I ask you? Say 15 minits, and then what's
to be did?

Why then they mus brethe it all over agin,
And then agin, and so on till each has took
it down

At least 10 times, and let it up agin. And
wots more

The same individdible doant have the
privilege

Of breathin his own are & no one's else
Each one must take whatever comes to him.

Oh, Sextant, doant you know our lunks is
bellusses,

To blo the fire of life and keep it from
Going out; & how can bellusses blo without
wind?

And ain't wind Are? I put it to your con-
shuns.

Are is the same to us as milk to babies,
Or water is to fish, or pendlums to clox,

Or roots and airbs unto a injun doctor,
Or little pills unto a omeopath,

Or boys to girls. Are is for us to breathe.
Wot signifies who teaches if I can't breathe?

What's Prof's. & Profeses to children who
are ded?

Ded for want of breth? Why, Sextant, when
we dye,

It's only coz we can't breathe no more—
that's all.

And now, O Sextant, let me beg of you
2 let a little are inter our school-house.

It ain't much trouble—only make a hoal,
And all the are will cum of itself.

It laves to cum in where it can git warm,
And O how it will rouse the childers up,

And sperit up the teacher, and stop gapes
And yawns & fijits."

We have come to the consideration
of the MEANS FOR CHANGING THE AIR
in the school-room, the means for
getting in this "kermoddity," and we
shall find that there are two more little
modifications in the "pome" which I
would not make, for fear of spoiling its
vigour by too much matter-of-fact,
but to which we must allude when
we come to the matter-of-fact subject
of ways and means. Whilst the air
"doesn't cost nothink" "out dores,"
it costs a little (not much in proportion
to its worth) to get it into the right
place and "git it warm:" and whilst
it "ain't much trouble to make a
hoal," it requires much thought and
time and trouble—and this all means
money—to get the "hoals" in the
right places, for different seasons and
under varying circumstances. And it
is this question of money, combined
with a want of proper understanding
of the consequences, and of the whole
subject indeed, that stays the hand of
those who have not yet appreciated
the fact that the question at issue is of
the value of children's and teachers'
brains and bodies *versus* the cost of a
few ventilating tubes, and the ingenuity
required to devise and manage them,
and the cost of fuel and enlarged
school-rooms.

First, then, what should be the *size*
of the "hoal" or holes—for it wants
some to let the bad air out as well as
to let the good air in. This will de-
pend upon the rapidity of currents of
air that may be borne, and this again
upon whether the air is warmed when
introduced; but, as a rule, about five
feet per second may be borne. There
are 3,600 seconds in an hour, and we
want 3,000 feet of air in that time, *i.e.*,
five-sixths of a foot per second
for each individual, this with a

current of five feet per second will require our "hole," or inlet, to be one-sixth of a square foot, or twenty-four square inches, per individual; and the same to let the air out. If heated it will have to flow more rapidly, and it may more safely be allowed to do so. Whilst I am speaking of heating, let me dispose of a popular fallacy. I think it is generally supposed that in winter people can more safely crowd together, and do with smaller air space than in summer. Unless the air is heated before it is introduced, the reverse of this is true; the air has to "git warm," as our poem has it, and consequently cannot be changed so frequently, unless we are to be chilled by it.

The next point in connection with the ventilation of the school-room, is the *relative position* of the inlets and outlets. Their relative positions will vary much, according to varying circumstances; among which may be mentioned the shape and size of the room, the season of the year, the mode of heating. And let me here say, that the ventilation and heating of any room must always be considered together. We shall not be able in the compass of this general paper to consider minutely all the varying circumstances alluded to. For a fuller description of details of some of the plans to be resorted to, I shall refer you to one or two papers within your reach. Some others we may consider somewhat in detail; and there are certain general principles which, if strictly remembered and carried out, will help us much in the consideration of details in each special case. There are four of these general principles that must never be lost sight of:

1. The air brought in must be distributed throughout the whole of the breathing space.

2. It must be of a suitable temperature when it comes in contact with the inmates, and of a suitable degree of humidity.

3. It must be pure.

4. Hot air is lighter than cold.

It is of great importance to bear in mind these four principles; it will be found that every defect in ventilation is due to a violation of some one of them.

In many of our school-rooms the feet are in Greenland, whilst the head approaches the torrid zone. The light hot air is at the top of a room, the colder strata below. The air may thus be in a stagnant condition, or an attempt may be made to let the heated and supposedly impure air out by ventilators at the top. And now what happens? In rooms heated by stoves, just as soon as the air becomes enjoyably warm it flies out and away, the lower part of the room being always uncomfortably cold. Following out principles which I have expressed above, sanitarians in various places seem to have hit upon a modification of the Ruttan method, which may be expressed thus: Cold, pure air is conducted so as to impinge upon the stove, or heating surface; here it becomes heated and ascends; meanwhile, at the sides of the room and close to the floor are outlets, sometimes funnel-shaped (of which I here show a sample), taking off air from the floor-line by means of pipes passing up through the room and connecting with the stove-pipe, with the chimney, or with the outside air. The air heated by the stove rises to the ceiling; cooling, it gives way to that which, expanding beneath it, rises to take its place; it falls over in a fountain form, gradually settling down, till it is drawn down and out by the outlet shafts. This plan is illustrated and described in a paper by Dr. Cassidy, to be found on pp. 150-1 of the First Annual Report of the Provincial Board of Health, to which any person in this audience can readily refer.* You will

* The reports and documents issued by the Provincial Board of Health are distributed as extensively as the Government grant will allow. Copies are

see that a constant circulation of air is thus carried on.

I now proceed to show you a set of diagrams which came to my hand most opportunely whilst preparing this paper. They illustrate a series of experiments by an architect, Mr. Warren R. Briggs, and are published by the State Board of Health of Connecticut. They show how much more important than is generally supposed are differences in the relative positions of inlets and outlets in providing for the distribution of fresh warm air in all parts of a room.

Mr. Briggs' object was to determine by what relative arrangement of inlet and outlet the pure warm air could be best distributed throughout the whole of the breathing space—the carrying out of principles 1, 2 and 3, enumerated above. The mode of experimenting was to cause smoke to pass into the room through the inlet and out through the outlet flues, the latter being heated. The breathing

line (the horizontal plane near which are situated the respiratory passages of the inmates) is indicated in the diagrams † by a dotted line. The results obtained are thus stated by Mr. Briggs:—

“The air entering upon the outer wall at the floor, and being removed on the inner wall at the ceiling level, does not benefit the occupants of the room as it should. The action of the air as it enters is rapidly upward to the ceiling, where it stratifies, then along its surface to the outlet, as indicated in Fig. 2. The entering air is warm and light, and naturally rises and flows across the top of the room to the nearest outlet. The foul air of the room, being heavy with impurities, remains at the bottom, becoming constantly more contaminated. There is no doubt that a certain amount of radiation or mixing is going on, but the great bulk of the pure warm air entering the room takes the short cut across it and up the chimney, as shown in Fig. 2. This action of the warm

sent to the following among other persons:—To the clerk of every municipality, to all school inspectors, to all medical practitioners whose names are on the Registrar's roll, and to the secretaries of Mechanics' Institutes.

† The plates used to illustrate the experiments of Mr. Briggs have been kindly loaned by the Connecticut State Board of Health.

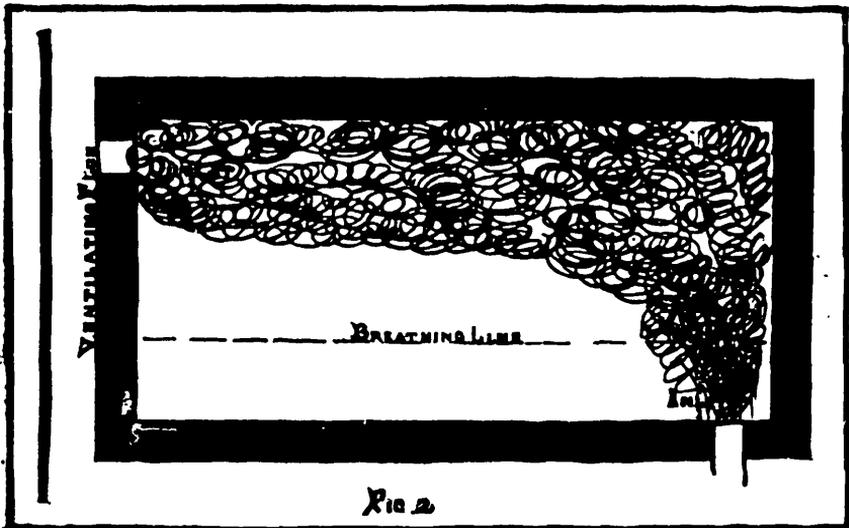


Fig. 2

air occasions, as may be readily seen, an enormous loss of heat, without accomplishing the very points aimed at, the utilization of every particle of heat before it is allowed to escape, and the thorough mixing of the pure in-

coming air with the air already in the room. If any one doubts the correctness of the action of air as herein described, let him fill the incoming flue with smoke, that can be readily seen, and watch its course as it

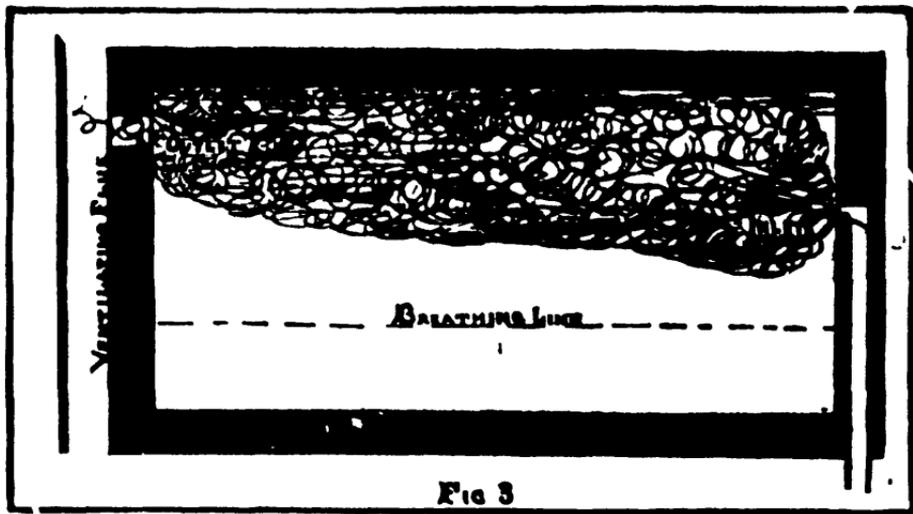


Fig 3

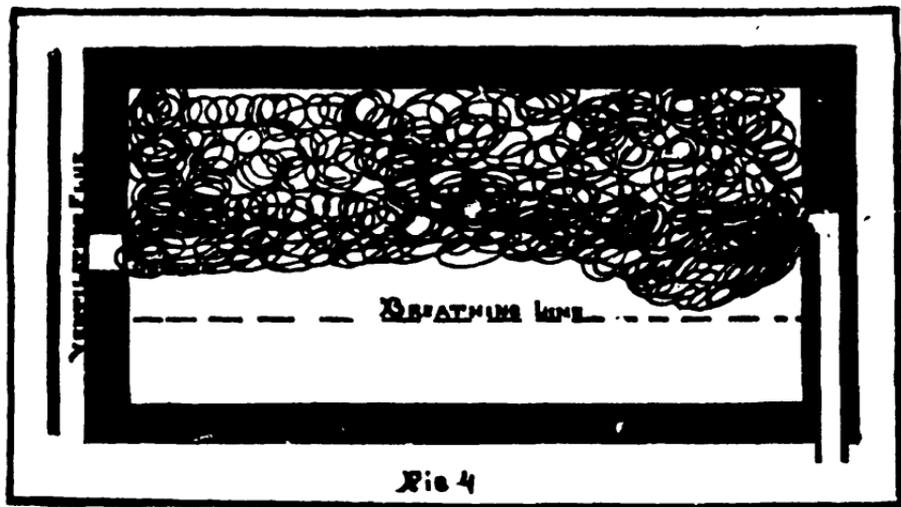


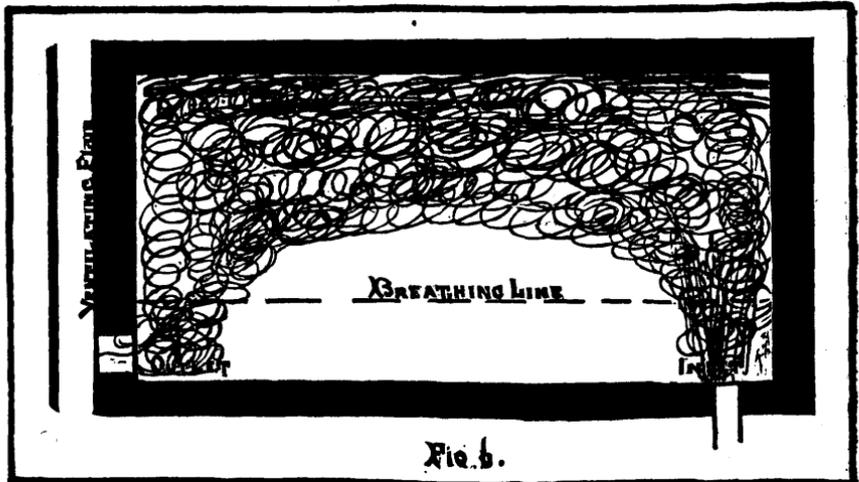
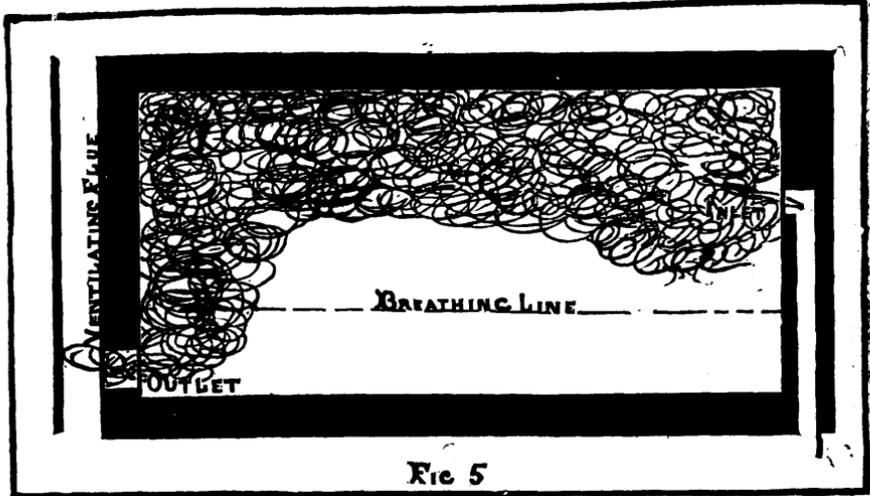
Fig 4

enters, flows upward and outward, and see where the great mass of it goes. The dotted lines of this sketch indicate the breathing point of a person sitting.

"It may be well to explain that in these experiments the outlets have been at least *twice as large* as any inlets, and that there has always been heat in the outgoing flues to produce

a strong up-current, as I believe this to be the *only* sure way to produce a constant outward flow of air. In Fig. 3, the outgoing flue is in the same position, but the incoming flue

has been raised about two-thirds of the way towards the ceiling. In Fig. 4, the flues have been placed on about the same level, but with no better results. In Fig. 5, the outgoing



flue has been placed at the floor, with the results shown in the sketch. In Fig. 6, both flues are at the floor-level, with better results than have yet been obtained, but still far from satisfactory. I have thus tried to show the

general action of incoming and outgoing currents of air by the placing of the introduction flues on the outer walls.

* * * * *

"In the Bridgeport school the coil-

boxes for the heating of the various rooms have all been placed in the main ventilating shafts in the centre of the building, and the air conveyed from them through these shafts to the rooms by means of metal tubes. The air enters the inner corner of the room about eight feet from the floor, the corner being clipped so as to form a flat surface for the register-opening; underneath the register the space is utilized for a closet for the use of the teacher. The outgoing flue has been placed directly under the platform, which is located in the *same corner* as the introduction flue. This platform measures 6' x 12', and

is supplied with castors, so that it can be moved at any time it is necessary to clean under it. Its entire lower edge is kept about 4" from the floor, to give a full circulation under it at all points. The action of the incoming air is rapidly upwards and outwards, stratifying as it goes towards the cooler outer walls, thence flowing down their surfaces to the floor and back across the floor to the outgoing register. By this method all the air entering is made to traverse with a circular motion (see Fig. 7) the entire room, before it reaches the exhaust-shaft, and there is a constant movement and mixing of the air in all parts

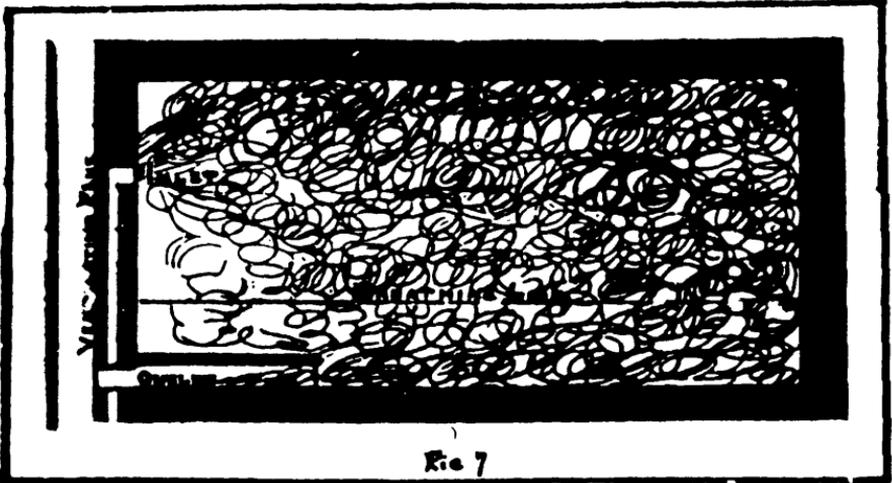


Fig. 7

of the room. All the heat entering is utilized, and I believe that if the supply and exhaust flues are properly balanced as to size, there can be a very small loss of heat.

"The inlets are all intended to be large, and the flow of air through them moderate and steady. The air is not intended to be heated to a very high temperature; the large quantity introduced is expected to keep the thermometer at about 68° at the breathing level."

It seems to me that differences as

to the results obtained even in this plan (that indicated by Fig. 7) might arise in connection with differences in the several dimensions of the room. The Bridgeport school-room has a capacity of 13,000 cubic feet, and was 13 feet high.

I regret that I have not time to enter into other methods of winter ventilation and modes of introducing and distributing heated air.

I must now turn to the methods of ventilating in warmer weather. Even in summer, in Canada, the air is not

often of as high a temperature as our bodies, $98\frac{1}{2}^{\circ}$ Fahrenheit. It is generally much cooler, and becomes heated by contact with us. Hence, put outlets in the top and it will rise to them and away. Then "make a hoal, and all the air will come in of itself." But the "hoal," if not of a particular kind, *may* sometimes allow the air to blow too directly on the teacher's neck, for example, producing unpleasant consequences, especially if it is already blowing hard out of doors. Hence, the teacher may not despise a few hints as to various devices for breaking up a current of air, or directing it above his head, especially if the devices be of so simple a nature that he can, at once, introduce them himself.

1. One such may be adopted by raising the bottom sash of the window, and filling up the opening by a piece of board. You will not see much gain from this until you remember that a broad air duct has been thus constructed, opening upwards between the two sashes, and directing the current of air upwards.

2. Double panes, with a slit at the lower part of the outer and at the upper part of the inner, will act in the same way.

3. So will a board set in the window frame an inch or so inside the open sash.

4. Boards sloping upwards from the top of the upper sash may be used.

5. Perforated boxes running around the room, and having connection at one or two points with the outside air, may diffuse small streams of "this commodity" from their numerous perforations.

6. Wire screens and other contrivances will be found described in some papers which will find place in our next Annual Report.

The third principle that I laid down,—that the air must be pure,—

it might seem almost superfluous to mention, and yet how often does it happen that the air supplied to our rooms—school-rooms as well as others—is taken from halls (where it has already done its part), from cellars, from dirty yards, and often, in addition, is made to traverse flues containing the accumulated dust and rubbish of months and years. I can point to several public buildings in Toronto where this, and worse, has taken place.

It would be very interesting to describe the various procedures for determining the purity of air and sufficiency of means of ventilation, but time will fail us, and I will merely show you a little portable instrument for recording the velocity of currents of air, and which would be very useful to those charged with the sanitary inspection of schools.

FIRE ESCAPES AND READY EXIT.

Before leaving the architectural part of my subject, I should refer to two other closely connected precautions for the saving of life. If I mention the Sunderland disaster, and the fire panic in New York, you will know what I mean. Good broad stairs, doors opening widely outwards, and efficient fire escapes, are some of the requirements needed. In this connection I would desire to allude in terms of commendation to the action of some of our school authorities in exercising the pupils in fire-drill, and would express the hope that this action may become more general, as also the systematic sanitary inspection of schools. A good work in this latter direction has been this year performed by the Medical Health Officer of Toronto, Dr. Canniff.

Closely connected with the subject of pure air in and around school buildings is that of the disposal of sewage; but as I have caused to be placed on the platform, a number of

copies of a pamphlet on the subject, recently issued by the Provincial Board of Health, I will ask each member of your Association to take one, and read such parts of it as will apply to his own locality. And I would especially call the attention of School Inspectors, Principals, and Trustees to pages 6, 7, and 17. If they will not adopt in full the suggestions there laid down, I would at least ask this: That if they have in the past been so thoughtless as to subject to disgust and inconvenience those who cannot, from motives of sensitiveness, allude to the matter themselves, they will, now that their attention is called to it, provide a remedy, and save in this respect much suffering and seeds of future ailments.

In regard to drinking water there is not much to be said under the head of School Hygiene that will not equally apply to hygiene in general. One thing, however, the teacher should look after for himself and the pupils, the condition of the filter. Filters are often used for months and even years without a change of their solid contents, except by the addition of a large amount of organic matter retained in the filter, and which becomes a source of danger.

I believe that in very many instances, teachers and other school authorities are doing their best to battle against the spread of contagious diseases. And I feel sure that many of you are often annoyed and made anxious by accidentally finding out that some hidden source of danger has been lurking unknown to you in the midst of your little community. The only remedy for this will be based upon the carrying out of the provisions of the Public Health Act of 1882. By that Act, it is incumbent on every householder, and on every physician under whose charge has come a case of infectious disease, dangerous to the public health, to report the same

at once to the health officers. When there is no specially appointed Board of Health, the members of the Municipal Council are the health officers. But many of these latter would not know what to make of it if they found disease reports coming in to them; hence, it is no wonder that the reporting of contagious diseases is largely disregarded. Many of our municipalities are, however, waking up; and in several the law is strictly complied with. The Provincial Board is endeavoring to have a Local Board established for every municipality or group of municipalities, and it trusts that you will lend your educating assistance and influence in that direction.

A greater discrimination should be made by some in regard to the exclusion of persons associated with cases of contagious disease. I have known instances where the brothers of typhoid patients have been excluded from school—a proceeding quite unnecessary; whilst, on the other hand, the brothers of scarlet fever patients, and even the patients themselves, have returned before the peeling off of the skin has been completed. Do not let any person or thing associated with a scarlet fever patient return to the school till you have the certificate of the medical attendant that all necessary conditions and precautions connected with disinfection have obtained.

A few words now regarding

PHYSICAL EXERCISE:

I fear that into the schools the tendency has crept down from the colleges to run athletics mad. I have seen children with weakly organizations tempted by the incentive of a prize to risk their safety in a race or other athletic contest, and I have felt sorry for their little pale faces and fluttering hearts.

I noticed a year or two ago that in the schools of Lindsay the ten minutes' recess was abolished, or to be abol-

ished, and I was very sorry to see it. Oh, what a stock of sprightliness and of fresh, lung-expanding air the pupil can lay in during that ten minutes to carry him through the work of the next hour, and if the teacher can only set aside his dignity for that ten minutes, and mingle in the sports of the boys, it does him good, both in himself and with his boys, for the latter, without losing their respect, find out that the master really has interests in common with them, and was once a boy himself.

In regard to

MENTAL REST AND EXERCISE,

you have more than once listened to your old and eloquent friend Dr. Workman: that is enough said—except this, that I have always less fear of allowing children to occupy and amuse themselves with letters and slate-pencils at their own sweet pleasure, even though it be at an early age, than I have of burdening them with a confusing multitude of studies and long tasks after the commencement of what would be called by some the legitimate school age.

You have in your midst too many warm advocates of the further extension of the Kindergarten system to need that I should speak of the part it plays in the interchange and combination of mental and physical exercise, rest and recreation.

I believe that

DEFECTS IN VISION AND HEARING

often get our school children into trouble, whilst, on the other hand, disregard of physiological principles in our schools has much to do with producing such conditions. These, however, have lately been considered in various quarters, as also has the effect which ill-made seats have in producing stooping, contracted chests, and even spinal curvature.

It may be thought by some that the

teacher—at any rate, the male teacher—has not much to do with the subject of dress. Perhaps this is true, except in one particular, which I shall mention in order to put teachers on their guard. I have seen children very ill, and one at least nearly lose his life, from being caught in a storm and obliged to sit in wet clothes. Sometimes, too, the thoughtless chicks may have been indulging in a good wading time in a neighbouring creek, in order to test a new pair of boots. Will the kindly teacher think it too much trouble to save his or her little pupil's life by an ounce of prevention applied in this direction?

One more point, and I am done. If school hygiene or hygiene in general is worth anything, why not have it taught more extensively in schools? You may say: "What, after just speaking of the burdensome multitude of subjects at present being learned, or attempted to be learned." In reply I would bring this paper to a close by a quotation from a paper by Prof. Austin, of St. Thomas, which expresses my position on this subject. I may say, in explanation of one remark, that St. Thomas was at that time much exercised over the question of establishing a system of sewerage. Listen, then, to Prof. Austin, himself an instructor of the young:—

"But even should it be known that something now on the school programme would have to be omitted, we do not think this should prove an insuperable objection to the introduction of the instruction and training desired. The branches of the great tree of knowledge have so multiplied in this day of scientific research that an eclectic course of study is a necessity, and the demand of the age is for the practical as distinguished from the theoretical and ornamental. Now what could be more directly and universally practical than the great laws that govern our physical relationships

and the rules that should govern us in everyday life? If, then, a selection must be made, why not take the most intensely practical subjects? For of what use, so far as life is concerned, is culturing so highly the mind if the body is too weak to bear the strain and pressure of life's battles? Of what use garnishing the jewels till their resplendent lustre dazzles all beholders, if both casket and jewels so soon are to be thrown into the pit? Why be so anxious to increase the size and value of the cargo, if the vessel is so poorly built that the storms will surely wreck her in mid-ocean? Now we are very much mistaken if this instruction and training for which we plead is not really more practical and important in everyday life than some of the subjects usually found in the curriculum of the school. Let us take, for example, ancient history. Outside of the professional walks in life, of what practical value is the amount of ancient history usually received at school? Leaving out

of consideration the mixture of myth and mystery, of truth and fable, of error and exaggeration usually found on the historic page, can anyone for a moment doubt that hygiene and physiology would be of more practical use to nine-tenths of our pupils than this branch of study? The very many questions which ancient history presents for our study and investigation may be interesting enough to the historian and pleasant enough as a pastime, but to us in this practical age are not of as pressing importance as more recent problems. Whether Thebes had a hundred gates, whether Romulus did found Rome, whether Alexander untied or cut the Gordian knot, whether the vision of Constantine was an illusion or a reality, may have been burning questions in the early ages, but after a lapse of a few thousand years they have lost something of their freshness and interest, and hardly arouse as much enthusiasm in St. Thomas as the burning question of the great sewer."

THE MEDICAL EDUCATION OF WOMEN.

BY MRS. J. HARVIE, TORONTO.

AT present all classes of men and women are much occupied in propounding and discussing theories about the position and the education of women. The theories advanced are numerous, and are as opposite as the antipodes. One class denounces in unmeasured terms the injustice of the present position of woman, and demands for her educational and civil privileges identical with those accorded to man; nay, their advocacy would advance a step further, and obliterate, at once and forever, the lines which have hitherto, with more or less clearness, defined the spheres of the sexes. Others regard woman

as an inferior being, in many respects, doubtless, a useful member of society; but considered legally, and in relation to civil rights and privileges, merely an object. The sentiments of this class have recently been voiced by the Attorney-General of Massachusetts, who has stated officially that, whatever a woman may be, in the eyes of the law she is not a person. Another class, while admitting the equality of the sexes in every respect, counsels contentment with the existing state of things. The advocates of this theory fear that if woman presses her claims and secures identical civil, legal, and educational privi-

leges with man she becomes his rival, loses womanliness of character, and the undoubted privileges which, as a woman, she now possesses. They urge, and with a good degree of plausibility, that identical privileges must tend to an identical sphere, and that man cannot be expected to retain a feeling of chivalry or even affection for a being who "dabbles in stocks, wrangles at the bar, or joins her voice in the roar around the hustings," and that the consequent sacrifice will be infinitely greater than the gain. But by far the greatest majority aver that marriage is the ultimatum, the sole aim and end of a woman's life; her sphere is the family circle, and her education should be such as will best qualify her to minister to the comfort and happiness of husband and children. True, women of aspiring natures may look beyond this narrow sphere, and find that their duty is—we quote from a recent writer on this important subject—to entertain the world and amuse it in profitable ways, to minister in all womanliness to its moral, physical, and intellectual health and comfort. These theorists require that women shall be marvels of culinary skill, pretty and accomplished; they must possess cultivated and æsthetic tastes, must be able to converse intelligently and vivaciously upon the topics of the day; and they assert that the best education for woman, in every sense of the word, is that which will prepare her to shine with ease and elegance in the social circle.

But, without entering further into the detail of these various theories, we believe that sensible men and women will agree in the statement that the best education for human beings is that which will most thoroughly prepare them to act well their part in life; and that any theory regarding the position and education of woman which is based on the assumption

that the sexes were designed to occupy identical spheres, or that they require, as sexes, the same kind of education, is not only false, but positively hurtful. Now, as regards the true theory of education, namely, preparation for life and duty, what are the facts in the case? With large numbers of women life is a constant struggle for bread. True, sooner or later many women marry, but previous to marriage thousands are obliged to support themselves, and not a few subsequently are compelled to earn bread for themselves and their children. Therefore a woman is not truly educated unless equipped to earn respectably and successfully her own livelihood; and we say, emphatically, that parents, however wealthy, should make their daughters independent of all circumstances and contingencies by giving them, together with advantages of training in domestic economy and the accomplishments, a trade or profession.

In many respects, especially in matters pertaining to woman's usefulness and happiness, the present is an age of progress. A few years ago women were excluded from many spheres of labour, and consequently to those who were dependent on their own exertions the struggle for daily bread was severe. To-day almost all trades and professions are thrown open to women; and many are availing themselves of these openings to enter fields of labour formerly occupied wholly by men. This tendency to enlarged liberty of action for women cannot but be hailed with satisfaction by sensible people of all classes.

Besides this increased liberty of action in the various departments of labour, we have conceded on all sides the demand for the higher education of woman. Less than forty years ago Elizabeth Blackwell received her well-earned degree in the Medical College

of Geneva, New York. Immediately after, though admitting her superiority as a student, the faculty closed the doors of the college to other women. About the same period Harriet Hosmer went from college to college seeking admission to lectures on anatomy, for the purpose of fitting herself for her chosen profession, Art, and was finally admitted, through the influence of the Principal, to the college of St. Louis. To-day, facilities for the highest education in literature, art, and science are afforded women throughout the civilized world, and as a result we find them pursuing scientific studies and equipping themselves with ease for the successful practice of the professions. On this continent alone we have more than one hundred women practising law, and more than two thousand medical practitioners. And from a Madras newspaper we learn that recently a native lady has been granted permission by a sub-magistrate to practise in his court as a private pleader; that also four ladies have by the local medical college been admitted to practise. In Bengal the Lieutenant-Governor has, in opposition to the council of the medical college there, ordered the admission of female students who are qualified by general education; and the Indian *Daily News* states that a native lady has been enrolled as a pupil in the primary class of the medical college hospital, Calcutta. From these and other facts which might be presented, we infer that the study and practice of medicine is but an outcome of the higher education of woman.

In considering the medical profession as a legitimate field into which the talents and energies of woman may be directed, it is well for us at the outset to inquire whether her mental capabilities are sufficient for the acquisition of the scientific knowledge required, and whether she pos-

sesses the natural qualifications necessary to insure success and enable her to compete creditably with her brother man. This question of ability can best be settled by a reference to the high positions in the various departments of medical knowledge and practice to which ladies on the continent, Britain, and America have attained. In this connection the names of the renowned and scholarly Mesdames Lachapelle and Boivin will occur to many. These ladies have written ably and accurately on the subjects of the diseases of women. Their writings have always commanded the highest respect of the Profession, and have passed into medical literature as standard opinions. Madame la Reine, the French "sage femme," has been a medical practitioner upwards of sixty years, during which period she has attended nearly seven thousand cases in the department of midwifery alone. In Britain we may note the translation from the French by Dr. Agnes McLaren, of Courty's great work on the diseases of the uterus, etc. Dr. Matthews Duncan, of London, England, has written a preface to Dr. McLaren's work in which he compliments the translator, not only on her knowledge of the French language, but on her ability to convert it into accurate, scientific English. Dr. McLaren is not inferior to any in the practice of medicine; she studied at Montpellier under Professor Courty, whose work she so ably clothes in an English dress. We may also mention Mrs. Scharlieb, M.B., B.Sc., London, who recently, on the completion of her medical studies, took the scholarship and gold medal in midwifery, at the examination in the London University, as well as honours in medicine, forensic medicine, and surgery. In America we may single out from many others Dr. Mary Putnam Jacobi and Dr. L. Black, who are well known in the scientific

world by their papers in medical journals, which show an amount of scholarship and careful observation that would be highly creditable to any member of the profession.

Apart from intellectual ability, we believe that woman possesses in an eminent degree other and various qualifications for success in the practice of medicine. Her power of attention to detail and ability to arrive at conclusions with rapidity will assist her to an accurate diagnosis of the various cases coming under her notice. Her courage, endurance, and hopefulness will enable her to meet with calmness great emergencies, and prompt to the use of remedies, when ordinarily effort with hope would be abandoned; while her delicacy of touch, tact, and deftness in the sick room admirably qualify her for the practice of the healing art, especially among children and nervous females. It must ever be remembered, however, that a woman may possess all these qualifications and yet be physically unfit for the medical profession. To be a successful practitioner the woman must have a vigorous physical constitution, and should enjoy good health, in order that she may be capable of enduring the continued strain which the exercise of the medical profession invariably necessitates.

Hitherto, especially in Canada, the obstacles in the way of the medical education of women have prevented the sex from entering a profession "wherein she may most naturally be expected to arrive at eminence * * and in which many are enjoying the legitimate fruits of their honourable industry." After all that may be said in its favour, we must confess that there has always seemed to be a certain amount of indelicacy in classes of men and women attending lectures on physiology, anatomy, midwifery, and kindred subjects. Happily, as

far as we are concerned, this objection is now a thing of the past. Two Women's Medical Colleges have recently been established, one in the city of Toronto, the other in Kingston. The faculty of both these colleges consists of men eminent in the profession; and all the appliances necessary for the study of medicine are at the disposal of the students. It may be interesting and gratifying to Canadian ladies to know that Dr. Augusta Stowe Gullen, the demonstrator of anatomy in the Toronto Women's Medical College, is a Canadian, and that she received her medical education in Canada, having studied at Toronto Medical College under some of the very gentlemen with whom she is now so honourably associated. In passing we may note that the Toronto Women's Medical College is situated contiguous to the General Hospital, in the theatre of which institution special accommodation has been made for lady students. This new departure in education in Canada is worthy of the confidence of the public, and must command it, especially when it becomes generally known that such men as Dr. Barrett, Dr. Geo. Wright, Rev. Principal Cavan, of Knox College, Rev. Dr. McLaren, ex-convenor of General Assembly's Foreign Mission Committee of the Presbyterian Church, Rev. Principal Grant, of Queen's College, Rev. Dr. King, and others have given to the infant scheme their countenance and support.

The promoters of the medical education of women with a view to their entering the profession as practitioners must not, however, overlook the fact that in certain quarters there are prejudices and objections to overcome. Some of these objections were ably answered by Dr. Barrett, Dean of the Faculty of the Toronto Women's Medical College, in his address at the opening of this college. In speaking of the special departments

in the practice of the profession suitable and accessible to women, Dr. Barrett said: "In the general treatment of infantile diseases and of those incidental to female youth, it may with confidence be expected that woman will obtain a favourable field for the exercise of her professional skill; while as obstetricians many will prove the equals of the renowned Mesdames Boivin and Lachapelle. Also as a wife and mother she will have frequent occasion to bring into play the valuable knowledge with which this study will have endowed her, at the same time rendering the woman a capable bread-winner when circumstances may render it necessary that she should assume the maintenance of those dependent upon her exertions." The fact that many medical women entering the profession in this country will choose certain departments, such as some one of the natural sciences, in which they will become proficient, should prevent their brethren of the profession from entertaining any fears of rivalry or unfair competition.

But, while there may be, at least in the minds of some, a question as to the advisability of women practising medicine in this country, there can be but one opinion as to its necessity in the East. On the subject of the medical education of women the *Times* says: "With regard to the fitness of women for medical practice in this country opinions differ. In regard to India, however, there need be no discussion about fitness; the question there is not one between women and men as physicians, but between a woman physician and none at all." The male natives resort in great numbers to English surgeons and hospitals, but a man is never consulted by a woman in the Hindu household. True, some of the poorer classes of women in India are willing to resort to the hospitals opened by

missionaries, or the Indian Medical Service; as a general rule, however, a Hindu woman would rather die than receive assistance from a male physician, at least if that assistance require that he should enter the zenana, the apartments sacred to the women in their Hindu home. In a recent lecture given at Chautauqua, Joseph Cook, of Boston, says: "Who now doubts that medical science ought to be carried to the doors of Hindu households by women trained in all the medical science of the occident?" And Dr. Bielby, a prominent lady physician of Lucknow, India, writes: "The need for medical missionaries for the zenanas is so great that none can tell half its need unless they are here to see. Hundreds die for the want of the medical attention that only a qualified medical lady can give; and the dream that the zenanas will soon be open to medical men is a vain one; the time is far distant, and it is now that these women are suffering."

The following incident related by a returned missionary at an assemblage convened in the interests of missions, in the city of Hamilton, some three years ago, will give an idea of the seclusion of women of high caste in India, and of the customs which hinder them from availing themselves of medical help from the male physicians: A medical missionary was called to save the life of a wife of a prominent Hindu gentleman, after the native physicians had failed to be of service. He could not see the patient, and was refused admission to the zenana. Finally, as the case was urgent, he was permitted to go into the room where the woman lay. She stretched her arm through a curtain. He was not allowed to feel her pulse, but the husband felt it under the direction of the physician, and thus a certain amount of information was obtained. This was, however, deemed

insufficient by the physician, and a slit was cut in the screen and the poor patient was made to protrude her tongue through it, and so further knowledge as to her physical state was obtained, and the physician enabled to prescribe the proper remedies. But that husband would rather have followed the dead body of his wife to the "burning god" than to have allowed this male medical missionary to see her.

The miseries entailed upon native women in India by diseases which might either be prevented or cured have long been known to the members of the Indian Medical Service, and these were the first to suggest that female medical education in England would have its best outlet in India. The same advice might be offered to-day with propriety to Canada, as there are thousands of openings in both India and China for lady medical practitioners. India herself is opening her eyes to the need of lady doctors, and has made a com-

mencement in the way of an effort to meet the demand. One hundred thousand dollars have recently been collected in Bombay to found a native hospital for women, and the sum of twenty thousand dollars contributed to guarantee the salaries of two English lady physicians for two or three years in that city. The ladies whose salaries are thus guaranteed are to be allowed to collect fees from those who can pay them; and it is expected that the large incomes they will undoubtedly make will induce others to follow their example.

In view, therefore, of the wide field of usefulness open to medical ladies at home in the treatment of the diseases of women and children, and abroad as medical missionaries or practitioners, it may be expected that many Canadian women possessing the natural and special qualifications will avail themselves of the facilities now offered them for medical education, and fit themselves for the practice of this most honourable profession.

THE MODERN SCHOOLBOY.

IN the apocrypha of one of our Universities it is written that an undergraduate once replied to a question concerning Esau that he was a Hebrew who wrote fables and sold the copyright for a mass of potash. The ingenious descendant of Æsop who constructed the above admirable little fable erred, like Mr. Shapira, on the question of age. He should have made his hero thirteen years old, and not twenty; and then all who know anything of the effects of our modern system of cram on the mind of the average British schoolboy would have accepted the anecdote as authentic. In the times of Hilpah and Shalum the present curriculum of our private schools would no doubt have been

excellently calculated to meet the wants of an adolescence extending over a century or so; but the school-days of middle-class youth begin now, as a rule, at nine or ten years of age and end at sixteen or seventeen, and the attempt to compress into those few years the acquirement of four or five languages, dead and living, together with a respectable proficiency in mathematics, both pure and mixed, and a smattering of science is scarcely calculated to remove the reproach which Mr. Matthew Arnold lately addressed to us as a nation on the score of lucidity. Probably every school has its mental ostriches, who can digest whatever amount of information they are crammed with; but the school-

boy of the Dick Bultitude type (and there are many thousands of Dick Bultitudes among English schoolboys) generally finds himself, after a year or two at a private school, in unconscious agreement with Socrates that "nothing can be known." It is his habit accordingly, as his unfortunate instructors are painfully aware, to substitute for the effort to learn an attempt to guess; and the results he arrives at are often irresistibly suggestive of mental processes analogous to those pursued by the personage who read up in the Encyclopædia the article "China" and the article "Metaphysics," and combined the information thus acquired. The youthful philologist who defined "customs' duty" as "a usual or common duty" had probably never heard of this personage, but unconsciously to himself he was a disciple of the same school. There is a suggestion, too, of a similar habit of thought in the boy who replied, when asked for the meaning of the word character, that "character means the life or biography of a person, which cannot be seen, but only heard of when a situation is required," and something more than a suggestion in the genius who stated, in answer to a question intended to draw from him the history of St. Philip and the Eunuch, that "Philip was a king of Macedonia, who was at first a heathen, but afterwards was converted to Christianity and baptized by Enoch."

But the model on whom the British schoolboy most frequently forms himself is unquestionably Mrs. Malaprop. The excellent old lady herself might have envied him "the nice derangement of his epitaphs." He has been known to define a satire as "a poem containing a severe census," and to characterize Molière as a "chronic poet," and the elephant as "a very veracious animal." To the despair of his preceptors, he will refer in all simplicity of soul to the work of the

Apostles in "healing the deceased;" and not many months ago there was brought under the notice of an examiner at a large school in the East of England a short narrative of the events of 1588, which ended with the remarkable words, "Nothing more was seen of the Spanish fleet. Hence it has ever since been known as the Invisible Armada, Armada meaning a fleet of ships." One is inclined to conjecture that it must have been this last ingenious youth who referred to the Israelites during their desert wanderings as being "fed in the manner of angels," and "guided by day by a pillow of clouds and at night by a pillow of fire."

In one respect Mrs. Malaprop could not hold a candle to our schoolboy. Admirable as she was when she dealt with words, she sank at once into the commonplace on entering the region of facts, and even when she spoke of an "allegory" was content to place it "on the banks of Nile." But the British schoolboy, by whatever name he called his saurian, would have scorned such a habitat for the brute. He might have housed it in the Pyramids, or represented it as disputing with the lion the supremacy of the desert; but those who know him best are best aware that neither as crocodile nor alligator would he for a moment have thought of permitting the beast to lurk in the mud of either Nile or Mississippi. He is never so remote from all possibility of being right as when his guesses shift from words to facts. Now, as existing methods of education consist largely of attempts to cram the youthful mind with facts and data—the hardest of facts and baldest of data—it would speedily result, were that mind capable of assimilating the crude masses of food offered to it, that society would be horrified by the apparition (at Christmas and Midsummer) of a brood of young monsters. Happily the dis-

positions of nine in every ten of our British youth save them from this fate. There is nothing the average school-boy is in less danger of than of becoming a text-book in knickerbockers. The pitiless shower of facts that his instructors pour upon him may confuse his mind, but they do not dwell there. He dismisses all thought of them as soon as he has exchanged the school-room for the cricket-field; and it is only as examination time draws near that he begins to make some uncertain and desultory efforts to recall whether it is London or Oxford University that tradition credits King Alfred with having founded, and whether the confusion of tongues took place at Bethel or at Babel. It is to be feared that he seldom succeeds in satisfying himself on these or other points; and the ingenious hypotheses on which he ventures when the sheet of examination questions is actually before him generally fall very far short indeed of affording satisfaction to his examiners. Treated as he is apt to treat them, facts are never hard or dry. A harmless simply-worded question concerning the delta of the Nile has been known to extract from him the information that "It is that part where the river falls into its own mouth;" and he has proved capable of citing, as one of the most remarkable of ancient Egyptian customs, that "as soon as a child was born it was immediately thrown into the Nile." He has declared guano to be a fruit from Brazil, and macaroni a kind of small fish sold in Spain. At one time he has achieved distinction for himself by declaring a monsoon to be "a very contrary wind, which blows twelve months in one direction and then twelve months in another;" and again by characterizing a delta as "a kind of swamp, formed after avalanches have fallen from mountains and the sun has melted them." It does not matter whether he is dealing

with history or geography, with dead languages or living, with Scripture or science, there is always room for him to blunder, and, outside the domains of arithmetic, to be amusing. He has been known to define a postulate as "an untruth assumed," and to refer to matrimony as "essentially necessary to salvation." When asked how the Good Parliament earned its name, he has replied that it was "because the Parliament were silent"—a view that may be pardoned him in consideration of the events of recent Sessions; and he has inferred popular representation in Parliament to mean, "when they are there sitting for some time, without doing anything that the public in general hear of." He has been found capable of assuming the curse pronounced against Adam to be, "In the sweat of thy brow thou shalt eat thy bread, for out of it wast thou taken, and unto it thou shalt return;" and on another occasion of perplexing his examiners with the no less extraordinary version, "Thou shalt eat ashes all the days of thy life." Equally startling is his theory of the doom denounced against the serpent, "In the sweat of thy face thou shalt eat dust, until thou return unto the ground."

Some of the very happiest of his hits have been forthcoming under the pressure of linguistic tests. Thus we find him offering as a rendering of "Nigros oculos habent pueri," "Neither of the boys have eyes," and assuming the English of "Plus ibi boni mores valent quam alibi bonæ leges" to be "Rather good-bye good manners than good-bye good laws." He has not been ashamed to construe "C. J. Cæsar anno sexto decimo vitæ patrem amisit" as "C. J. Cæsar loved the Father of Life thirty-six years," or to translate "Notre effroi augmenta en voyant le monstre de près," "Our argument ended in saying the monster had taken too much." Nor has his

ingenuity failed him in the least when his own language has been in question. It has been his fortune to offer as illustrations of the correct employment of the word synthesis such sentences as "The Synthesis of England and Scotland took place in the year 1707," and "The synthesis of the whelk is observable in its symmetry." He has displayed an audacity no less happy in his use of the word mellifluous; speaking of the bee as "a mellifluous insect," and describing a garden as "swarming with mellifluous insects." It was probably an abuse of the Latin dictionary that misled him into giving the meaning of insulting as "jumping at a person with words," but his own unassisted genius must have guided him to the happy conclusion that he arrived at when he distinguished between "perspire" and "sweat," as "a polite and unpolite word, both meaning hot." Nothing could be better in its way than his definition of "proud," "To think oneself everybody;" or of "rude," "Anybody who calls another names in the streets."

No feature of his many-sided genius is more remarkable than the ingenuity and success with which, when called on to paraphrase passages from English poets, he labours to deprive the author committed to his mercies of every shred of sense and meaning. Thus, he has been known to represent Lear as calling on the thunder to burn his white hairs, and Cordelia as declaring that her love is more ponderous than her tongue. But the most astounding paraphrase we can remember him ever to have perpetrated was his version of the well-known couplet in the *Deserted Village*:

A time there was, ere England's griefs began,
When every rood of ground maintained its man.

It is incredible, but nevertheless true, that he explained this to mean, "That

there was a time, before England was burdened with her present griefs, when every rood of ground sent a member to Parliament."

Such as he is, he is what cram has made him. We may term him the unconscious satirist of the system, through whose mouth it stands condemned. For the rest, he is in small danger of falling a victim to it. Fond mammas sometimes shudder at his description of the burden of mental toil that weighs on him, and dread its crushing him into an early grave; but the unfortunate instructors whose dreary mission it is to pile mountains of information on his devoted head know that he is as lively as an eel in wriggling out of all danger of being crushed. It is true that once, while smarting under the consequences of having stated that "a circle has only one straight line which is called the circumference, and encloses a space by meeting again where it started," and, further, that "a circle has no parts and no magnitude," he was found annotating the margin of his Euclid with "Often and often in my misery I have thought of going down to the river, and throwing myself in, and becoming food for the fishes;" but this threat of quitting a world unworthy of him was altogether exceptional on his part. The disposition to temporary insanity that he induces is in others, and not in himself. It is his teachers who feel their mental balance tottering when, after months of patient effort to bring him to a creditable examinational standard, they find him asserting with easy confidence that "a tornado is a peculiar species of a bird found only in the Indian archipelago," or explaining that a poll tax was "a tax by which every one who had a head had to pay so much to the king," or construing "Homerum oculis captum esse constat," "Homer agreed that his eyes were enough," or rendering "Entends-

tu le tonnere au lointain? Non, mais j'entends le mugissement des vagues," into such English as "Do you hear it thundering at a distance? No, but I hear the magic of the ogres." It is his teachers, again, who doubt their sanity when they find him deliberately committing to paper the statement that Mary Queen of Scots, was beheaded in England, and died at Edinburgh, or asserting that the Israelites were fed in the desert "by unleavened bread, which fell from heaven," or describing the Mississippi as a river which "has no mouth to let the water out of," and silencing in advance all possible objection to this hypothesis by the convincing explanation, "The sun draws the water up; that is the reason why this river does not overflow its banks." But, if they are wise, they do not treat such efforts of his genius quite seriously. They credit him with sincerity in many blunders, but not in all. Even the bewilderment that perpetual cram in-

duces has its limits; and although we may be disposed to accept as its victim the ingenuous youth who referred Wat Tyler's rebellion to a refusal to pay the income-tax, and even his fellow who declared that the Habeas Corpus Act was passed "because the law used to swindle people who went to it for judgment," and who explained the benefit it conferred on the English nation to be that "a man can now only be judged by persons in the same line of business," human credulity revolts from the demand made on it by the audacious youth who replied to the question whether Elizabeth had descendants, "She was the father of James I." One prefers to regard him as the utterer of a protest, admirable in its way, against the short-sighted policy of a world which had done its worst to convert him into a walking text-book, and which he felt had much better suffer him to remain a boy.—*The Saturday Review*.

EMERSON said something like this: "We send our boy to school, but the boys on the play-ground educate him."

"IF you are a poor teacher you will do most of the talking yourself; if a good teacher, you will have the pupils do most of it." Yes, and if you are a good teacher you will not scold a pupil for stumbling and tumbling before he has learned to talk, nor demolish the bashful boy or girl with a stern "sit down," because he is neither a dictionary nor a grammar unto himself. The good teacher takes his pupils as they are, not as he would have them, *a priori*; that is, as he thinks they ought to be, and builds from the foundation as he finds it. How many teachers fret and fume, and make uncomfortable both the children and themselves, because they find them ignorant where they should be wise, and that their previous training has not obliterated all indications of their descent from old Adam; or, as the biologists will have it, from a dam with an appendage!

THE EDUCATION OF OUR GIRLS.—The old notion that education spoils our servants lingers among us yet, and many are asking what sort of *wives* and *mothers* are our learned girls likely to make? To say the least, we reply, no worse than the girls made who had not the learning. For wifehood and motherhood depend very largely upon natural disposition, cultured character, and their own mother's influence upon them. To say the most, we reply, better wives, as they are likely to come near to, and sympathise fully with, the *best* in their husbands, and will act from cultured judgment and thought in household affairs, and better mothers, as they can more wisely train their children; as they will be less liable to try all sorts of medical nostrums; and as they will skilfully endeavour to culture in harmony the bodily and mental faculties. It should not be forgotten that much of the advanced education of our girls is *directly practical*, bearing on household claims and duties.—*Ex.*

PRIZE POEM, UNIVERSITY COLLEGE, TORONTO.

BY J. H. BOWES.

THE GREAT NORTH-WEST.

No fabled land of song and joy is this
 That lieth in the glow of eventide ;
 Nor sung by bards of old in minstrel strain ;
 Yet he who reads its history shall learn
 Of doughty deeds well worth all knightly fame.
 It is a land of rivers flowing free,
 Lake-mirrored mountains rising proud and stern,
 A land of spreading prairies ocean wide,
 Of mighty forests' dark majestic shades,
 Where harsh sounds slumber in the hush of gloom
 And peace hath brooded with outstretched wings.
 Upon the western shore soft breaks the wave,
 Rolling with measured pace upon the sands ;
 Far to the north the ocean washes cold
 Where reigneth icy solitude supreme.
 Here every season has its varied charm,
 Stern winter shrouds in snow each mountain side,
 Till spring sets free the captive bud and shoot,
 And wood and grove breaks out in joyous song
 Then summer suns bring forth a fuller bloom,
 While autumn gilds the green with flaming red,
 And reapers gather in the golden grain,
 Shouting in merriment the harvest home.
 But every mindful history repeats
 The tale of sons heroic of old France,
 Who came and with brave hearts no labour shunned :
 They pierced the tangled brake, they plied the axe,
 Encountering dangers, yet victorious,
 While lofty bulwarks and far-distant forts
 Mark their endeavour and enshrine their name.
 Here dwelt the Indian when the years were young,
 There lingers many a legend of his race
 Near reed-fringed lake and deep and dark ravine.
 But he has fallen as the autumn leaf,
 Yet not before the herald of great joy
 Bore to the farthest homes the cross of hope,
 And in the shades profaned by pagan rites
 The red man bowed his knee and worshipped God.
 Such was the past of this great Northern land,
 A past of stillness and of nature's reign,
 But lo ! a change. From far across the sea

Behold there comes a mighty multitude •
From Britain's isle, from Erin's verdant strand,
From craggy Scotland, and from sunny France.
They come, they come, their native soil forsake,
Pursuing fortune in another clime,
A younger, sunnier land, where life breathes hope,
While nature freely gives of her rich store.
Here little children come from haunts of vice,
From cities' pestilent and fevered streets.
With wonder gaze they at the limpid streams,
The lakes and flower-strewn plains of Canada.
And here a mighty people shall arise,
A people nurtured in full liberty,
Free as the wind that blows from sea to sea,
Strong as the eagle soaring to the sun ;
And they shall love their land with patriot's love,
And guard her borders as the men of old
Their country guarded in the hour of need ;
Yet not forgetful of the Motherland,
Who scans with kindly eye her child's career,
Wafting a blessing o'er the mighty sea.
And smiling homes shall blossom near and far,
Adown the rivers glide the flying craft,
The palpitating engine cross the plain,
The busy murmur of a toiling world
Shall violate the stillness of the woods,
Where roam the deer in full security.
Such be thy future, O thou land of hope,
Where in the fear of God and loving home,
Thy people shall increase ; O may thy soil
Bear many a thinker, many a man of might,
Many a hero fitted to command,
Many a statesman fitted to control.
May enemies ne'er cross thy borderland ;
But if they come, if the stern blast of war
Ring shrill and clear and rouse thee from thy rest,
May all thy sons rise, valiant hearts and true,
To battle for the land their fathers sought ;
Then safe, reposing on their laurels won,
Love it with greater love for dangers past.
Such may thy future be—nor great alone
In never sated commerce—rather great
In all that welds a people heart to heart :
Among thy sons may many a leader spring,
By whom the ship of State well piloted,
Thy haven of wide empire thou mayest reach,
An empire stretching from the western wave,
To where the rosy dawn inflames the seas.

UNIVERSITY WORK.

MATHEMATICS.

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

CAMBRIDGE PROBLEMS.

NOVEMBER, 1882.

Prove the identity

$$(ax+by+cz)^3 + (ay+bz+cx)^3 + (az+bx+cy)^3 \\ - 3(ax+by+cz)(ay+bz+cx)(az+bx+cy) \\ = (a^3+b^3+c^3-3abc)(x^3+y^3+z^3-3xyz)$$

we have $(x^3+y^3+z^3-3xyz)$
 $= (x+y+z)(x+\omega y+\omega^2 z)(x+\omega^2 y+\omega z)$
 where 1, ω , ω^2 are the roots of $x^3-1=0$,
 and $\omega^3=1$.

Denoting $ax+by+cz$ by X , $bx+cy+az$
 by Y , etc., we have

$$X^3+Y^3+Z^3-3XYZ=(X+Y+Z) \\ (X+\omega Y+\omega^2 Z)(X+\omega^2 Y+\omega Z) \\ = (a+b+c x+y+z)(a+\omega b+\omega^2 c) \\ (x+\omega y+\omega^2 z)(a+\omega^2 b+\omega c) \cdot (x+\omega^2 y+\omega z) \\ = (a^3+b^3+c^3-3abc)(x^3+y^3+z^3-3xyz).$$

Q. E. D.

Effecting the reductions thus

$$\omega^2 a + \omega b + c = \omega^3(\omega^2 a + \omega b + c) \\ = \omega^2(a + \omega^2 b + \omega c) \\ \text{etc.} = \text{etc.}, \quad \therefore \omega^3 = 1.$$

ARITHMETICAL PROBLEMS.

L. B. Davidson, H. M. P. S., Glenallan.

1. Simplify $\frac{19}{7} \times \frac{2}{3-1\frac{1}{2}} \times \frac{7735}{67184} \div$

$$(1.1875 - .9791\bar{6}) + (\frac{1}{3} \text{ of } 6\frac{1}{4} + \frac{1}{8} - 2 - \frac{1}{4} \text{ of } 3\frac{1}{2}) \\ \div \frac{12 \text{ lbs. } 6 \text{ oz., Avoir.}}{12 \text{ lbs. } 6 \text{ oz., Troy.}} \quad \text{Ans. 1.}$$

2. Along a certain railway 96 miles in length there is a distance post every $\frac{1}{4}$ mile, and a telegraph pole every 66 yds. How many of the telegraph posts might serve as distance posts Ans. 65.

3. A druggist buys 15 lbs. of opium by Avoir. weight at 50c. per oz. Find selling price per oz., Troy, that he may gain $\frac{1}{3}$ of his outlay. Ans. 75c.

4. If 9 men or 12 boys can do $\frac{1}{4}$ of a work in 4 $\frac{1}{2}$ hours, in what time will 10 men or 15 boys do the rest, the last $\frac{1}{4}$ of the work increasing $3\frac{1}{4}$ times in difficulty? Ans. 6 hrs.

5. A and B sold between them 50 horses. A sold his at \$95.50 each; B sold his at \$104.75 each. They received together \$22.50 less than if they had sold them all at \$101.50 each. Find the number of horses sold by each. Ans. 20, 30.

6. A bankrupt's assets are \$1550, out of which he pays 75c. on the \$ on all debts above \$200; 62 $\frac{1}{2}$ c. on the \$ on all debts from \$100 to \$200, and 50c. on the \$ on all others. His creditors find upon examination that $\frac{1}{4}$ his debts are above \$200, and $\frac{1}{4}$ between \$100 and \$200. Find his liabilities. Ans. \$2400.

7. An employer who has been accustomed to hire men at \$1.20 per day, finds he can save $\frac{1}{8}$ of his former outlay by engaging boys instead, each of whom can do only $\frac{2}{3}$ of a man's work. Find the daily wages of the boys. Ans. 75c.

8. A dealer in liquors buys a hhd. of wine at \$150, and after keeping $\frac{1}{4}$ of it to sell by the "glass" at 5c., he bottles the rest off into an equal number of quart, pint and half-pint bottles. How many dozen of each has he, and what must be his selling price per dozen to gain on the whole \$54.75? 1 wine glass = $\frac{1}{8}$ pts. Ans. 8 doz.; \$9, \$4.50, \$2.25.

9. An oarsman finds he can go as far down stream in 50 mins. as he can up stream in 70 mins. Compare the oarsman's rate with that of the stream. Ans. 6 : 1.

10. The "freights" on a certain railway line decrease by $\frac{1}{4}$ after the first 50 miles. If a barrel of coal oil weighing 450 lbs. be carried by this line 80 miles for \$1.25, how far should 4 barrels of sugar, each weighing 275 lbs., be carried for \$2.06 $\frac{1}{4}$, the "freight" on coal oil and sugar being as 5 to 4 $\frac{1}{2}$?

Ans. 56 miles.

11. Find the least number of ounces of gold that can be coined into an exact number of sovereigns, also the number of sovereigns so coined (1 oz. gold = \$18.949583).

Ans. 160 oz.; 623 sovs.

12. A merchant buys cotton at 8 $\frac{1}{4}$ c. per yd. Find selling price per yd. in order that the money he receives for 35 yds. may equal his gain on \$16.50 of outlay.

Ans. 10c.

13. A boy on being asked how many eggs he had to market and what price he received for them, replies:—"Had I received 18c. per doz. for them I would have obtained 40c. less than I did; but had I received 25c. per doz. I would have gained 2 $\frac{1}{2}$ times as much as I would have lost by the former price." How many eggs had he, and what did he receive per doz. for them?

Ans. 20 doz.; 20c.

14. A contractor engages 2 men, A and B, to do a piece of work for \$20. They agree to share the money in proportion to the amount of work done by each. Their ability to work is as 1 to 2, and the time each works is as 4 to 3. How much should the better man receive?

Ans. \$12.

15. I leave Glenallan at 5 o'clock a.m. for Drayton by a stage, travelling 6 miles per hour. After spending 1 hr. 40 min. in Drayton I set out on my return, walking 5 miles per hour, but after travelling half the distance I am compelled to diminish my rate by 2 miles per hour, I arrive home at 11 o'clock a.m. Find distance between Glenallan and Drayton.

Ans. 10 mls.

16. A offers B a farm at a certain price, C offers him one for $\frac{1}{3}$ more. As soon as A is aware of C's offer he raises the price of his farm by $\frac{1}{3}$, then C to compete with

A throws $\frac{1}{10}$ off his former asking price. B then accepts C's offer in preference to A's, thus saving \$50. Find A's and C's first prices.

Ans. \$3,000; \$3,500.

17. A father gives his son a certain sum of money, and tells him he must purchase a certain number of pencils. The boy goes to one shop where he is offered 25 for 10c., but he finds were he to purchase the required number of pencils he would be 4c. in debt, accordingly he goes to another shop where the price is 9c. for 30. Here he invests and saves 2c. of his money. How much money had the boy at first?

Ans. 20c.

18. A grocer who makes in the regular line of business a profit of $\frac{1}{11}$ on the cost of his goods, gives in "trade" the same price for butter as he asks in *cash*. A woman sells him a pail of butter for which she takes *trade*, but in weighing it he uses a "pound weight" $\frac{1}{4}$ oz. too heavy; in selling the same butter he uses a "pound weight" $\frac{1}{4}$ oz. too light and thus he finds he has made on the whole transaction a profit of \$1.10. What did he allow the woman in *trade* for the butter?

Ans. \$4.20.

19. \$2190.00. *November 15th, 1883.*

Six months after date I promise to pay to Bryce, McMurrich & Co., Toronto, the sum of \$2190, with interest at 6 $\frac{1}{2}$ per cent. per annum, value received.

WM. SCOTT.

How much must Wm. Scott pay to discharge the note when due?

Ans. \$2260.98.

20. \$370.85. *November 15th, 1883.*

Six months after date I promise to pay to Eby, Blain & Co., Toronto, or bearer, the sum of \$370.85, value received.

JOHN JONES.

Suppose Eby, Blain & Co. sell this note to John Smith three months before its *legal maturity* at 6 $\frac{1}{2}$ discount, what will they receive for it?

Ans. \$365.

21. A gentleman has a lawn 300 ft. long by 200 ft. broad which he wishes to raise 6 in higher by means of the earth to be dug out of a ditch that runs round it; when finished.

the bottom of the ditch is 2 ft. below the top of the lawn. Find the width of the ditch.

Ans. 2 ft.

22. A tank whose length is the same as its breadth is 14 ft. deep, and holds water sufficient to form when frozen a sheet of ice $\frac{7}{8}$ in. thick over the surface of a skating rink 240 ft. long by 198 ft. wide. Supposing water to expand uniformly one-tenth of its own volume in freezing, find the length and breadth of the tank.

Ans. 15 ft.

23. A pile of wood is 10 ft. high and 4 ft. wide, and covers $1\frac{1}{2}$ acres of ground. Find its length in yards; and the number of cords it contains. *Ans.* 5808 yds.; 5445 cords.

24. A grain of gold beats out into a leaf of 54 sq. in. Suppose a cub. ft. of gold to weigh 1216 lbs. Avoir., find how many leaves placed together are as thick as one sheet of paper, when 175 sheets of paper placed together are one inch high.

Ans. 1520.

25. A square yard contains $2\frac{1}{2}$ acres. Find the cost of enclosing it with a picket fence built on the following plan: The posts are to be placed 6 ft. apart, two scantling, 2 in. by 4 in., are to be used as supports for the pickets; the pickets are to be 5 ft. long and 3 in. wide, and placed 3 in. apart, resting on a bottom board 12 in. wide. Posts are worth \$8 per C.; lumber, \$14 per M., and labour $\frac{1}{2}$ as much as the material. *Ans.*

CLASSICS.

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

UNIVERSITY OF TORONTO.
SUPPLEMENTARY EXAMINATIONS, 1883.

Junior Matriculation.

GREEK.

Examiner—William Dale, M.A.

Translate:

I.

Ἐγὼ ὦ Τισσαφέρην, . . . κρατοῦσι.

—*Xenophon, Anabasis, II., c. 5.*

1. Parse αἰσθέσθαι, φοβηθέντες, φθάσαι, ἀποδραίη.

2. ὄρω. Write out fully the imperfect and future tenses ind. act. of this verb.

II.

Translate:

“Τέκνον, . . . ἀολλίσασα γεραιάς.

—*Iliad, VI.*

1. Parse ἀνήκεν, ἐνείκω, ὀνήσει, πιησθα, κεκμηῶτι.

2. Point out the Epic forms in the nine first lines, and give the corresponding Attic forms.

3. Decline fully υἷες, ἄστυ, μένος.

4. Give an account of the Digamma, and point out instances of its use in the present passage.

Senior Matriculation and First Examination.

I.

Translate:

Ἰ Ὀ δὲ ἀμείβετο . . . προσχωρήσουσι.

—*Herodotus, VII., c. 235.*

1. Parse ἀποστείλειας, ἀλικομένης, συνομοσάντων.

2. Give some account of the speaker.

3. Κύθηρα. Decline.

4. Point out the Ionic forms in the passage, and give the corresponding Attic forms.

II.

Translate:

Ὡς οἱ μὲν . . . ξείνια θείω.

—*Iliad, XVIII., 368-387.*

1. Parse οὔατα, ἰδύησιν, προμολούσα, θείω.

2. Derive δαίδαλα, πραπίδεςσιν, θαμίξεις, ἀμφιγυήεις.

3. Translate:

Θῆκεν ἐν ἀκροθέτῳ μέγαν ἄκμονα, γέτο δὲ χειρὶ

ῥαιστῆρα κρατερῆν, ἐτέρηφι δὲ γέτο πυράγρην.

—*Ib., 476-477.*

4. Parse and explain the form γέτο.

HONORS.

I.

Translate:

ἕως οὖν . . . δίκην ὑποσχέιν.

—*Demosthenes, Phil., II.*

1. Parse *παρεκρούσθητε, ὑπομνήσαι, ἵπποσχεῖν.*

2. *γέγονε . . . ἡμέρα.* Explain.

3. *ὁ φωκεὺς . . . προέσθαι.* Explain.

Translate :

'*Ἄλλ' ἔστιν, . . . μέλει τῇ πόλει.*

—*Demosthenes, Phil. III.*

II.

Translate :

Οἶνός σε . . . ἀνδράσι κουροτεροισιν.

—*Homer, Odyssey, XXI.*

1. Parse *ἀναίξαντες, ἄσθες, ἦ'εν, πῖνε.*

2. *πιφάύσκομαι.* Derive. In what tenses is it used? When is the first syllable long, and when short?

Translate :

'*Ερμῆς . . . καμόντων.*

—*Homer, Odyssey, XXIV.*

Senior Matriculation.

GRAMMAR—HONORS.

1. Give examples of the principal laws of Euphony in the derivation and inflections of Greek words.

2. In what participles is the Latin verb wanting? How is the want supplied? Give instances.

3. Give instances of the various uses of the participle in *-dus*.

4. Analyse the formation, from the several roots, *οἶ—ἴσθημι; πίπτω; βροτός; πεισομαι* (fut. of *πάσχω*) *βάλλω; ἴσασι; deni; nolle; sterno; exemplum.*

5. Account for the subjunctive in the following passages :

(a) *Dicere solebat, omnes in eo quod scirent esse eloquentes.*

(b) *Rex imperavit ut quae bello opus essent parententur.*

(c) *Redeam? non si me obsecret.*

(d) *Zenonem, cum Athenis essem, frequenter audiebam.*

6. Translate into Greek, and also into Latin :

(a) If he were to say that he did not be-

lieve that I did it, he would be speaking more clearly than kindly.

(b) If I had said that you were base, I do not fear that you would have dared to deny it.

7. Compare the rules of *Oratio Obliqua* in Greek and Latin.

8. *οὐκ οἶδ' ἂν εἰ πεισοίμι.* To which verb does *ἂν* belong, and why?

MODERN LANGUAGES.

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

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

ENGLISH.

FIRST C, 1883.

Answers by J. Barclay, St. Cath. Coll. Inst.

[For questions see C. E. MONTHLY, July-August, p. 300.]

1. Parse the underlined words :—

"Matchless," an adjective, qualifying "Powers."

"As," an adverbial conjunction, connecting proportions B and C.

"To utter," a gerundial infinitive, adverbial relation to "hateful."

"From," a preposition, relation "could have feared," and "depth," ("feared"=apprehended).

"How," a dep. interrog. adv., modifying "could know."

"For," a conjunction, subordinate (=and I say so) connecting the sentence that follows with one omitted.

"After," a preposition, relation "be" understood and "loss."

"To reascend," verb, gerundial infinitive, adverbial relation to "shall fail."

"Self-raised," participle, subjective complement of "to reascend."

"For," a preposition="as for me," the phrase being a sentence complement.

"Till," a preposition, relation "sits" and "then."

"Then," an adverb, used as a noun, objective case, after "till."

"Which," a Continuative or Coördinating relative pronoun, neuter, third, singular, nominative case, subject of "tempted," having for its antecedent the proposition preceding.

2. Paraphrase ll. 14-16, bringing out clearly their meaning:

As for me, let all the hosts of heaven be witness, if counsels different from what would suit the general welfare, or if danger shunned by me, have caused the loss of our hopes.

3. Divide into propositions, stating their kind and relation, ll. 1-13; analyze fully such as are dependent:

O myriads of immortal spirits! O Powers matchless, but with th' Almighty. Independent elements of address.

(a) "And that strife was not inglorious," a principal declarative proposition.

(b) "Though the event was dire," a subordinate proposition, adverbial of concession, modifying "was inglorious."

(c) "As this place testifies," a subordinate proposition, adverbial of manner, modifying "was dire." (This adv. clause corresponds to a continuative relative clause.)

(d) "And this dire change hateful to utter," (testifies), same as (c).

(e) "But what power of mind, foreseeing or presaging, from the depth of knowledge, past or present, could have feared," a principal interrogative proposition.

(f) "How such united force of gods (could ever know repulse)," is a subordinate proposition, noun, objective after "feared."

(g) "How such could ever know repulse," same as (f).

(h) "As stood like these," a subordinate proposition, adjectival, qualifying "such."

(i) "For who can yet believe," a subordinate adverbial proposition, interrogative in form. "For" as before.

(j) "Though (it be) after loss," a subordinate proposition, adverbial of concession, modifying "believe."

(k) "That all these puissant legions shall fail to reascend self-raised," a subordinate proposition, noun, objective, after believe.

(l) "Whose exile hath emptied heaven," a subordinate proposition, adjectival, qualifying "legion."

(m) "That all these puissant legions shall fail to repossess their native seat," a subordinate proposition, noun, objective after "believe."

Analysis of B.

Subject, "event."

Attrib. adjuncts of subject, "the."

Predicate, { verb of incomplete predication, "was."
complement of predicate, "dire."

Analysis of C.

Subject, "place."

Attrib. adjuncts of subject, "this."

Predicate, "testifies."

Adverbial adjunct of predicate, "as."

Analysis of D.

Subject, "change."

Attrib. adjunct of subject, "this dire," and "hateful to utter."

Predicate, "testifies."

Analysis of F.

Subject, "force."

Attrib. adjuncts of subject, { 1. "such."
2. "united."
3. "of gods."

Predicate, { verb of incomplete predication, "could."
complement of predicate "know."

Adverbial adjuncts of the predicate "ever," and "how."

Object, "repulse."

Analysis of G.

Subject, "such."

Predicate, { verb of incomplete predication, "could."
complement of predicate, "know."

Object, "repulse."

Adverbial adjuncts of the predicate "ever" and "how."

Analysis of H.

Subject, "as."

Predicate, "stood."

Adverbial adjunct of predicate, "like these."

Analysis of J.

Subject, "it."

Predicate "be."

Adverbial adjunct of predicate, "after loss."

Analysis of K.

Subject, "legions."

Attrib. adjuncts of subject, $\left\{ \begin{array}{l} 1. \text{ "all."} \\ 2. \text{ "these."} \\ 3. \text{ "puissant."} \end{array} \right.$

Predicate, "shall fail."

Adverbial adjunct of predicate, "to reascend, self raised."

Analysis of L.

Subject, "exile."

Attrib. adjuncts of subject, "whose."

Predicate, "hath emptied."

Object, "heaven."

Analysis of M.

Subject, "legions."

Attrib. adjuncts of subject, $\left\{ \begin{array}{l} 1. \text{ "all."} \\ 2. \text{ "these."} \\ 3. \text{ "puissant."} \end{array} \right.$

Predicate, "shall fail."

Adverbial adjuncts of predicate, "to repossess their native seat."

4. Write explanatory notes on the constructions; "but with," line 2; "knowledge, past or present," line 7; "to reascend self raised," ll. 12, 13; "for me," line 14; "tempted our attempt," line 21.

"But with." But, a preposition, relating "matchless," and the phrase "with the Almighty." The expression, "matchless, but with the Almighty," is a contraction for "matchless, except the match with the Almighty."

"Knowledge, past or present," means knowledge of the past or present: "past" and "present" are nouns used as adjectives.

"To reascend self-raised"—"self-raised" is a secondary complement (a complement of the complement) of "shall fail."

"For me" = "As for me." The phrase in the text, is a complement of the whole sentence that follows, or it is elliptical for

"speaking for me." Its position emphasizes the personal reference.

"Tempted our attempt." It is a figure of speech called Antanaclassis (a play on words.)

6. Write a short paper on the use of the participle. Illustrate by examples found in the passage from "Paradise Lost" quoted above.

A participle shares the function of the verb and adjective. It attributes in the form of an assumption, not of an assertion, and it limits the word it qualifies. If transitive it has its object, but it has no power of independent affirmation.

"Foreseeing" and "presaging" are present participles, qualifying "power."

"Feared" a past participle, which with the auxiliary, "have," forms the perfect infinitive. For the origin of this tense, see any good grammar.

"United;" a past participle used adjectively. It has here lost its verbal force.

"Self-raised," a participial form (coined by Milton) = "raised by themselves." See also answer to 4.

7. (See Grammar.)

8. Criticise the following definition of the prepositions, tell, with reasons, which you consider the best.

(a) The first is the best, but it is hardly full enough. Better, a word showing the relation between its object and some other word in the same sentence.

(b) A preposition is not always placed before a noun or pronoun.

(c) A preposition does not merely join a noun to a verb.

(d) It may show relation between a substantive and some other part of speech than a substantive or pronoun.

(e) A preposition is not necessarily *prefixed* to a noun or pronoun, and it sometimes makes an adjectival phrase.

(f) A preposition does not combine with either nouns or pronouns.

9 and 10—See Text Book.

11. Correct, giving reasons, the following:

(a) The specimens were valuable, but not necessarily the contributors; therefore the

sentence should read: Sea captains are amongst those who contribute the most valuable specimens to the Park aviary, or "are amongst the most valued."

(b) "Before," is unnecessary as "ever" expresses the same idea. "Such a high steeple" (= "a high steeple of this kind,") is not meant. Read: Have you ever seen so high a steeple.

(c) "Taken together" is useless, as "his whole work" expresses the same idea; therefore, the sentence should read: Byron's greatest work was his whole work. Even this is, of course logically incorrect, because his whole work could not be his greatest work. The expression, however, is to be taken as a paradox.

(d) Insert "those of" before "any," for it means the exertions of any other writer on the subject; not than any other writer. Or read, "This gentleman has done more by his unwearied exertions, etc."

(e) Insert "the rest of" before "educated," as his countrymen lived in Europe.

(f) The past tense "wandered," implies "formerly"; substitute for the latter, "once."

(g) "Derive its origin" is incorrect, for the origin is the beginning. Hermippus also should be in the possessive, though some hold that the form in the text is admissible; therefore, the sentence should read: "It seems that the catalogue has its origin in Hermippus's enumerating the titles of the books in the Alexandrine library."

(h) A term is a word used in a specific sense and is applicable to a definite class only—substitute, therefore, "word" for term: the expression "too vague" is also incorrect; for no vague word should be used in reasoning—Better read: "Nature is a word which, owing to its vague significance, cannot be used in reasoning."

NATURAL SCIENCE.

H. B. SPORROW, M.A., Barrister, Editor.

A BOTANICAL FIELD DAY.

It is a bright Saturday morning towards the end of June—a morning to which a score

of boys and girls have for some time been looking forward with a good deal of pleasant anticipation. They are juvenile botanists, members of a class formed some months ago, and having now, by the study of selected specimens, acquired some little knowledge of the structure of plants, they are, on this particular morning, to meet for a ramble; to gather such flowers as come in their way; and then to re-assemble and compare notes, and also to determine the names of such plants as they do not already know.

The rendezvous selected, is a particularly good one for botanical purposes, commanding, as it does, a variety of situations. It is an upland from which, by a gentle slope to the northward, you may descend the reedy margin of a small lake, concealed by trees till you are close upon it. East of this lake stretches a beaver-meadow of many acres, fringed and dotted with Larches, and too moist to traverse in comfort at most seasons of the year, but, in this warm and leafy month of June, solid enough under foot to dispel uncomfortable fears of false steps. If, instead of descending, you skirt along the brow of the hill, to the westward you come upon open meadows, with here and there a low copse or thicket; while to the eastward are noble woods of Maple and Beech, succeeded farther on by Pines, as the character of the soil changes. To the southward are cultivated fields and market gardens, and in the distance the glinting of the sun on a couple of church spires marks the direction of the neighbouring town.

Ten o'clock is the hour of meeting, and on this occasion an exemplary punctuality is observed by everybody. As it is intended to make a day of it, lunch-baskets have not been forgotten. These are left for safe keeping at a cottage close by, and then, after a brief rest in the shade of a friendly Beech, the party is divided, for the day's work, into small groups, and an area roughly marked out for each. The lower grounds and the lake region, as being somewhat difficult of access, are assigned to the sturdier boys, whilst the hill side and the exploration of the woods and fields above are divided among the remainder.

It is agreed that the work of collection shall be limited to two hours, and accordingly as the distant boom of the noon bell comes over the fields, our botanists begin to straggle in again. It is nearly one o'clock, however, before the last detachment arrives. This consists of the boys who have made their way to the eastern end of the lake and the beaver-meadow. Their appearance is hailed with a shout of admiration, for of all the collections of flowers, theirs is certainly the most imposing. They must, indeed, have hit upon a veritable botanic garden, for each of them carries a huge bouquet, made up of a profusion of Lady's Slippers and other Orchids, together with Lilies, Pitcher Plants, and beautiful pink *Pyrolas*. These boys are flushed with the excitement of their walk and their success; and though the condition of their lower extremities would seem to indicate that they are not altogether unacquainted with bogs, they make no reference thereto, but dwell with enthusiasm, and some degree of extravagance perhaps, on the beauties of the scene they have just left. But the others, though their collections will not vie in brilliancy with the products of the beaver-meadow, have, nevertheless, in nearly every case, something of more than ordinary interest to show. The explorers of the lake margin were fortunate enough to find a punt, by means of which a number of aquatic plants, Yellow Pond-Lilies, Utricularias, the pretty white Water-Crowfoot, and the Water-Shield, were brought within their reach; and on the cool northern hillside, trailing over the base of moss-covered stumps, specimens of the Twin-Flower—a special favourite of the great Linnæus, and named *Linnaea borealis* in his honour—were obtained, as well as Violets of various species, Woodbines, Mitchellas, etc. The open fields and fence-rows yielded St. John's-worts, Elder, Gnaphaliums of several species, a handsome *Rudbeckia*—the purple Cone-flower—and of course the ubiquitous Dandelion, and Mayweed and Mullein.

But just now there are cravings which are not intellectual, cravings too urgent to be disregarded. The interest in botany is, at this moment, decidedly of a secondary na-

ture, and when the lunch-baskets are sent for, and their contents exposed to view, the gravest doubts of their sufficiency are entertained and freely expressed. The fullest kind of justice is done to them, and in the course of a few minutes no vestige whatsoever remains—nothing even suggestive of them, save the shrunken wrappers, upon which some eyes are now turned with an expression almost approaching to gloom. It is suggested, and the suggestion meets with no opposition, that whatever may be the merits of botanical pursuits from an intellectual point of view, they have recommendations of a physical nature, not wholly unworthy of consideration; and it begins to dawn upon these youthful scientists, though as yet they have no clear conception of the ideal *mens sana in corpore sano*, that Botany has this decided advantage over all other school studies, that, to pursue it with efficiency, exercise of body must accompany exercise of mind. They can also comprehend that the botanical laboratory is as free as air to everyone who wishes to make use of it; that everywhere around them the lavish productions of Nature are only waiting to be asked, to unfold their beauties; and that anyone who holds converse with the silent yet eloquent creations of the floral world, must become imbued with more or less of the feeling which inspired the tenderest of American poets, when he sang of the flowers as

"Teaching us by most persuasive reasons,
How near akin they are to human things."

But the afternoon is advancing, and important work still remains to be done. It is not enough to admire colour and form; we must look a little deeper, and analyze the structure of our flowers with as much minuteness as may be suited to the capacity of the present students. In other words, we propose to turn our ramble to practical account in the way of an object-lesson, and to test the observing faculties by trying to assign to each plant its proper place in a botanical classification. A good many of the plants are recognized, without much difficulty, as being near relatives of species already examined in the class-room: the Lady's Slip-

per, for instance, is at once pronounced to be an Orchid; the Pitcher-Plant is immediately identified by its leaves; the Water-Crowfoot is only a white Buttercup; the few Composites in bloom at this season are referred at once to the proper family; and so with a number of others. But there are some which cannot be disposed of in this off-hand manner, and for these our "Flora" must be consulted. For convenience, it is arranged that one person shall read aloud from the Manual, while the others, with specimens in hand, listen to the descriptions, and assent or dissent, as these correspond to the characters exhibited by the plant under examination, or the reverse, until finally its true place and name are revealed. These having been duly noted down, along with the date of collection, and the locality, other specimens are taken up in the same way; and though it is found impossible to overtake all the plants that have been gathered, yet considerable headway is made, and even the dullest (for our class, not being an ideal one, contains dull as well as clever pupils)

feel a certain degree of confidence in their ability to do a little botanical work on their own account.

The work of determination is not prolonged to weariness, and soon after three o'clock preparations are made to return home. The fatigue of the morning's walk has completely disappeared, and the youthful mind, released from the mental strain to which it has been subjected, unbends, and with that singular fertility of resource which causes the average juvenile to be at once the envy and the terror of his elders, immediately advances a host of topics for discussion, quite foreign to the object of the day's proceedings. Botany is for the present laid aside, and it ceases to be a matter of any consequence whatever, whether stamens are hypogynous or otherwise, or what may be the relation of the calyx to the ovary. With pleasant conversation the homeward way is beguiled, and as we separate, a hope, which is believed to be genuine, is expressed that ere long we may meet again for another Field Day.

SCHOOL WORK.

DAVID BOYLE, ELORA, EDITOR.

EAST MIDDLESEX PROMOTION EXAMINATION.

NOVEMBER, 1883.

FIRST, SECOND AND THIRD CLASSES.

Wednesday, 21st November.

A.M.—Grammar, Class III.

P.M.—Spelling and Composition, Class II.

P.M.—Composition and Spelling, Class III.

Thursday, 22nd November.

A.M.—Arithmetic, Classes II. and III.

P.M.—Drawing, Hygiene and Temperance, Class III.

Friday, 23rd November.

A.M.—Geography, Class III.

Reading and Writing, Classes II. and III.,

at the time the teacher finds most convenient, according to circumstances.

Pupils should be seated so as to make copying impossible.

Those making 50 per cent. on the total and 20 per cent. on every subject are eligible for promotion.

Tabulate the results and keep a copy. Please mail a copy of the results to the Inspector. Teachers are strongly recommended to meet in twos or threes, as convenient, to read the answers. It has been found beneficial to send a complete tabulated statement of the examination to every parent. Teachers who have not a lithogram can get the children to make copies of the table.

The promotion to the Fifth Class will be the H. S. Entrance Examination, to be held

London East and Lucas, on Thursday and Friday, the 20th and 21st December, 1883. Candidates must be present at 8.45 a.m. Notice of intention to apply must be given to the Inspector on or before the 15th of November. Blanks will be given to fill out at the Examination. Those who use slates must bring their own. Those who find it more convenient to attend any other H. S. Examination may do so; but competition for the Diplomas is confined to London East and Lucas.

READING, 50 MARKS.

3rd to 4th Class.

Third Reader, pages 274, 275: "While he was in this state of despair," to "would be hopeless."

For reading this extract with correct pronunciation, with a fair degree of fluency, with attention to the marked pauses, but without spirit and without intelligent and correct inflection and emphasis, give not more than 35 marks.

After all have read, direct them with open books before them to write the meaning of (1) State of despair; (2) Golden Touch; (3) faithfully kept my promise; (4) your own heart has not been quite changed from flesh to gold.

For each phrase wrongly interpreted deduct two marks from the value already assigned for reading.

and to 3rd Class.

Second Reader, page 155: "In the meantime," to "uplifted in his hand."

Allow one mark extra for every punctuation mark the reader can name in the third sentence. ("The children—out?")

WRITING, 50 MARKS.

and to 3rd, and 3rd to 4th.

All the small letters, repeated three times joined, in ruled spaces, 10 marks.

All the capitals, 10 marks.

The ten digits, repeated four times, as for a sum in addition, 5 marks.

The other 25 marks to be judged from the compositions in Class III. and Class II.

SPELLING.

and to 3rd Class.

Value, 87 marks; for every error in spelling, 3 off; in capitals and apostrophes, 2 off; in punctuation, 1 off. Dictate the punctuation marks.

1. Now, puss was inclined to seize any good thing she could lay her paws on, but she could not manage to get her head into the neck of the jug.

2. Where there's a will there's a way.

3. What is very singular, the family missed several things that belonged to little Darwin.

4. Finding Charles in the room, and wishing to amuse his little neighbour, he called to the bird as usual, "Starling, where are you?" "Here I am," answered the bird from the little thief's pocket.

5. If you steadily persevere you will be sure to succeed.

6. When the little busy-body reached home, she got a severe scolding for her pains.

7. Why, I haven't a chick
Would do such a trick.
We all gave her a feather
And she wove them together.
Chuck, chuck I said the hen,
Don't ask me again.

SPELLING.

3rd to 4th Class.

Value, 87 marks; for every error in spelling, 3 off; in capitals and apostrophes, 2 off; in punctuation, 1 off. Dictate the punctuation marks.

1. The Emperor Joseph II. of Austria was very fond of seeking for adventures. One morning, dressed in a very ordinary way, he got into a public conveyance, and told the driver to take him through the town. The cab having been obstructed by some carts, a soldier came up to the disguised monarch and said: "Comrade, will give me a lift?"

2. But, friend, you will never be able to guess: I breakfasted off a pheasant killed in the Emperor's park.

3. One day his employer said to him: "Now, to-morrow, that cargo of cotton must be got out and weighed, and we must have a regular account of it."

4. A thousand years ago, a royal lady, in one of the rush-strewn halls of her rude English palace, sat reading aloud to her children from an illuminated manuscript of Saxon poetry.

5. Steadily persevering in his task, ere long he was able to read the book, and triumphantly claimed it as his own.

6. In after years Alfred remembered and munificently rewarded the hospitable peasant.

7. Alfred's career after this was generally successful; and owing to his activity, bravery, and perseverance, he became, by common consent, sovereign of all England, excepting those parts of which the foreigners retained possession.

ARITHMETIC.

2nd to 3rd Class. Time, $2\frac{1}{2}$ hours.

1. (a) Write in words the number between 709 and 711; write in words 50,407 and 100,011. (b) Write in figures XL.; twenty thousand and thirty-five; ninety-seven thousand and nineteen.

2. (a) $389674 + 86397 + 4896857 + 4963895 + 687968 + 483469 + 7968374$. (b) $48967 + 38965 + 28 + 37349 + 8 + 94 - 67,899$.

3. How much greater is 38,607 than 3,867; and how much less is 4,875 than 48,705?

4. Multiply 160,790 by 160,790.

5. Divide the product of 867 and 896 by their difference.

6. Divide 42,711 by 99, using factors. Prove your answer by multiplication, using factors. Use the factor 11 first in both operations.

7. To 636 add 15; then divide by three, subtract 17, divide by 25, add 27, divide by 7, multiply by 136, and divide by 17.

8. A man bought three farms. For the first he gave \$5,175; for the second \$3,870, and for the third \$219 more than he gave for both the others. He sold all of them for \$20,000. How much did he gain?

9. A dealer bought two droves of cattle. In the first there were 95 cattle that cost him

on an average \$47 each; in the second there were 23 that cost him on an average \$54 each. Before he sold them two of the first drove died, and one of the second drove. He sold the remainder at \$53 each. How much did he gain?

10. How much money would a person get for 139 dozen eggs at 19 cents per dozen; 59 lbs. of butter at 23 cents per lb.; and 28 lbs. of lard at 13 cents per lb.? Find the total amount.

Value, 12 marks for each.

ARITHMETIC.

3rd to 4th Class. Time, 3 hours.

Values, 12 marks each. Count 120 a full paper.

1. (a) What number added to seven thousand eight hundred and ninety-seven will produce a number that is 729 less than ten thousand? (b) What number multiplied by 19 will give 65,778 for a quotient? (c) Multiply together the sum, difference and quotient of 17 and 68

2. (a) Two of the factors of 252 are 4 and 7, find the third factor. (b) The cost of building 252 miles of railway was \$874,314.00; find the cost per mile.

Three marks more to be given for using factors of 252 than for the ordinary long operation. Value for whole question 2 + (9 or 12).

3 Reduce (a) 25 tons, 673 lbs. 16 oz. to lbs.

(b) 2,000 oz., 693 lbs., 0 tons, 17 cwt. to lbs.

(c) 640 perches, 0 yds., 0 ft., 0 in. of wire, to miles.

4. In a bin containing 137 bushels, how many bags are there, each holding 2 bush., 2 pks., 1 gal.?

5. The larger wheel of a bicycle is 15 ft. 2 in. round, how often will it revolve in running 7 miles 160 rods?

6. Show which is cheaper of the following prices:

(a) 5c. an inch, or 50c. a foot for lead pipe.

(b) 10c. an inch, or \$4 a yard for cloth.

(c) 12c. a sq. foot, or \$1.30 per sq. yard for oil cloth.

(d) 25c. an hour, or \$2 a day (of 10 hours) for work.

7. (a) How many square yards in a path 22 feet long and 48 inches wide?

(b) How many cords of wood in a pile 23 feet long, 48 inches wide, and 6 feet high?

8. Make a bill of the following items:

J. S. Robertson bought of D. R. Pollock 4,000 envelopes at \$2.20 per thousand; 80 pass books at 40c. per dozen; 3 dozen maps at \$2.18 cents each; 12 dozen ink-bottles at 30 cents per dozen; and 19 quarts of ink at \$1.80 per gallon.

12 marks for correct work, 6 marks extra for a neat and correct bill.

9. Find the value of:

(a) 4,736 lbs. of wheat @ \$1.60 per cwt., or 96c. per bushel.

(b) 3,824 lbs. of barley @ 50c. per bushel of 48 lbs.

10. (a) A pile of wood 20 ft. long, 4 ft. wide, and 7 ft. high, at \$4.96 per cord.

(b) 3,786 lbs. of hay at \$10.40 per ton.

11. (a) 513 oz. @ 14 cents per lb.

(b) 339 eggs @ 16 cents per dozen.

(c) 332 quarts @ \$1.13 per gallon.

NOTE.—Nos. 9, 10, 11 may be worked by cancellation.

(To be continued.)

SCHOOL SIGNALS.

PROPER signals save time, impart vigour, and train to the habit of exact and prompt obedience. The teacher needs to have a well-adapted system of signals. All movements for show should be discarded. The necessity for each movement should be apparent. All changes should be effected in the shortest time consistent with perfect order.

The signals should be few and significant. Some schools use a vast number of signals. Arbitrary signals, such as counting, or tapping the bell, must be explained.

A spoken signal should be given with the falling inflection, and in a low, firm tone. The elocution of the teacher is an important factor in the government of the school. A thin, faltering tone and rising inflection cause the children to smile.

All movements should be executed quietly, quickly and with military precision. The noisy, sluggish, slovenly movements of some schools are distressing. The results are a

lack of interest, disorder, and bad habits. Precision gives interest. Good penmen and musicians delight in exactness. Let us begin with this morning.

1. *Ring bell.* If a pupil can be trained to do this it is better, for then the teacher can devote his time to other work. But it must be considered an honour, and one pupil should not be continued in the position too long. No one must touch the bell except the pupil designated.

2. *Assemble.* In large graded schools the pupils outside will form in columns and march to their places. Those within will pass to their seats.

3. *Attention.* At the word "Attention," there is a complete stillness. The teacher gives the directions, if any are needed, and all enter upon the work of the hour.

The same order is observed, morning, noon, and after each rest. Those not seated when the word "Attention" is spoken are tardy. No boisterous conduct must be permitted while assembling. Instead of uttering the word "Attention," the teacher may strike a bell or tap with a pencil.

During school hours. The pupil raises his hand whenever he wishes to speak or is prepared to answer a question or to do the work required. All should be made to realize that it is wrong to raise the hand unless prepared. All that object to the answer given, raise their hands. Any one wishing to offer a criticism raises the hand. A failure to raise the hand indicates approval. The pupil who wishes to ask a question indicates it by raising the hand. Whenever possible, the question should be both asked and answered silently. (One finger may mean a request to leave the room; two fingers, permission to get a book, etc.) The teacher may answer by an inclination or shake of the head. Snapping fingers must never be tolerated. Pupils must not raise hands except for good cause.

1. *Dismissal.* The teacher taps the bell once. All sit erect and await orders. The teacher makes such remarks as may be deemed necessary, and attends to any matters pertaining to discipline, etc. Be exceedingly brief. Another bell tap means:

2. *Arrange desks.* Books to be left are

placed in desks, and others are arranged for carrying.

3. *Distribute* hats, wraps, etc. This is done by division bodies. If the building is properly arranged, each one can get his things as he passes out. Another tap means:

4. *Ready*. All prepare to rise. The teacher pauses a moment. All is readiness and stillness. Another tap means:

5. *Rise*. Simultaneously all rise, and each turns in the direction he is to move. Another tap means:

6. *March*. It is best to count 1, 2--1, 2—and at the second (1) have all step off with the left foot, and keep time to counting. The school can be easily taught to march to music. Let the divisions follow each other, so as to have all move at once.

Observe the same order in dismissing at all recesses, at noon, and in the evening. Order in dismissing adds much to the character of the school.—*Selected*.

EDUCATIONAL PROGRESS.

OPTIMISTS will find that in Mr. Mundella's interesting story of English educational systems to strengthen their belief that the world improves and all things are ordered for the best. The statistics given in *The Tribune* recently show the avidity with which the children of the poorest classes seize the school privileges held out to them. By far the greater number of the children that come into the London Board schools are from families that live in one room. The bright, cozy atmosphere of the pleasant school-room is a welcome change to them from the discomforts of their poor homes. Small wonder that with the buoyancy and brightness of childhood, the sharpened wits of poverty, and an eager desire for knowledge, they flock to the open doors of instruction. With this result, Mr. Matthew Arnold, the most cultured of English writers, examined some of the schools, and found that these poor, under-fed boys and girls understood passages of Shakespeare better, and recited them more intelligently, than the pampered children, older in years, attending middle-class schools. With their willingness, nay anxiety, to improve the opportunities given them and

their mental ability to do so, Mr. Mundella has a fine foundation upon which to base his request for further help for these children. The rich Jews of the West End of London provide food and clothing for the children of their unprosperous brothers in the East End Board School. The consequence is that, being better fed, the young Hebrews always take the foremost places in the schools over the heads of the starvelings, who are without food enough in their stomachs to sustain them through the physical exertion of learning the elements of knowledge. France spends as much again money as England on school maintenance and will build 40,000 new schools this year, and the sacrifices made by the citizens of the United States for the poor school children are very great. The benefit of the system to the Republic is shown in the fact that they lead the world in the excellence of their manufactured goods. This is one result of educating their operators and workmen. What is wanted in England's great metropolis, and a member of the Government has asked for it, is support from the wealthy dwellers in West End mansions for the school children of the Eastern districts. What would parents of a hundred years ago have said to the State maintaining their children through a course of education valuable to themselves, and to the industrial future of the country? This is what the request meant under which the Tory majority in the House of Lords sat dumb the other day whilst the Liberals cheered.

What little has been accomplished in their education is telling on the vagabondage and morality of poor children. The average has fallen from thousands to a few hundreds, so that although it has not had time to affect the adult criminal classes, it has almost halved the number of juvenile offenders. This is a result worth striving for and one that would have gladdened the tender heart of Charles Dickens, had he lived to see it. The great work cannot stop here; education, free education, is the birthright of every citizen, and the political friends of the people are in no mood to see them any further defrauded.—*Hamilton Tribune*.

ENGLISH COMPOSITION SUGGESTIONS.

REVISED BY F. BOUTON, ALBANY ACADEMY.

1. *Importance of Practice.*—However valuable as guides the rules of grammar and rhetoric may be, they alone cannot make a good writer. It would be just as reasonable to expect the theory of music without practice to make a fine performer, or merely knowing the rules of base-ball or cricket to make a good player.

2. *Subject.*—If possible, choose some subject in which you will feel an interest; and then, without thinking of a change, do your best with the subject chosen.

3. *Preparation.*—Study the subject in all its branches and bearings; think about it whenever you have opportunity; and, if you have any inclination to do so, write down any ideas you may have and save them for future use.

4. *Comprehensiveness.*—Let your treatment cover the whole subject, and include all that is necessary to a complete knowledge of all its branches and relations. Develop its outlines boldly.

5. *Analysis.*—After you have studied a subject carefully and fully, the proper arrangement of its different parts will be likely to suggest itself. Then make a systematic analysis, arranging the paragraphs so that each shall follow naturally and easily from the preceding. Description, explanation, and arrangement naturally precede conclusions, appeals, and estimates of results.

6. *Originality.*—As far as possible, use your own ideas instead of the ideas of others. *Do not be afraid to express your own views and experiences*, however, much they may differ from the views and experiences of others. After you have carefully and thoroughly studied a subject, you have just as much right to form an opinion about it as anybody else has. No one ever has become a great writer by imitating another. Whatever value your writings ever have, will be the result of either your own thinking or your own expression.

7. *Commonplace and Repetition.*—Avoid

saying what every person would be expected to know, and be careful not to use the same idea twice.

8. *Clearness.* Express every thought so plainly that no one can fail to understand what you mean.

9. *Correctness.* Be correct in every statement, and use only correct forms of expression.

10. *Illustrations.* Illustrate your subject by such drawings as you have inclination and ability to make. If you cannot make very fine pictures, make as good ones as you can.

11. *Spelling.*—There is no excuse for mistakes in spelling. If you are not sure that you know how a word is spelled, find out before you write it.

12. *Punctuation.*—Never neglect to use all the proper marks of punctuation, if you know what they are. If you do not know, find out. It is best to punctuate each sentence when you write it.

13. *Sentences.*—Be sure that every sentence contains one separate, distinct, and independent thought completely expressed. **Do not** make your sentences long and incomprehensible by crowding a number of ideas together and burying them in a tangle of modifying clauses. *Be sure that every sentence means something.*

14. *Paragraphing.*—Include in the same paragraph all the sentences relating to a distinct branch of the subject. **Avoid** with equal care the mistake of making your paragraphs too short and that of making them too long. Except in conversations, one sentence should very seldom form a separate paragraph. In most cases, a paragraph ought not to occupy less than half a page nor more than two pages.

15. Write the title on the first ruled line. Leave a vacant line between that and the first paragraph. Begin the first line of each paragraph about an inch from the edge of the paper; and the other lines about half an inch from the edge. **Take** ample time for copying your work. At least half of the credit given will depend on the clearness and accuracy of your expression, and the mechanical execution of your

work. Try to make your composition so perfect that it will need no corrections.

16. Abbreviations for Criticism.—¶, begin a paragraph; [], indent; —, ○, connect;

∇, separate; ∆, supply omission; ✕, take out, or change; ———, capital required; ? , doubtful; !, absurd; |, correct the error.
—New York School Journal.

TEACHERS' ASSOCIATIONS.

ESSEX.—Mr. Dorsett, writes us that a few errors have crept in our report, in November issue. He says:—“(1) I urged that a chief superintendency such as existed during 1875, was preferable to the present system. (2) Teachers did not vote unanimously in favour of the present system; about one-third of those voting, supporting my motion, and the remainder voting for the present system. Many teachers refrained from voting.”

EAST MIDDLESEX.—In the County Council Chamber, London, on Friday, October 19th, the East Middlesex Teachers' Association began their thirteenth regular meeting. President Dearnness in the chair, Mr. Alex. McQueen, secretary. The formalities over, the Association adopted the report of the Committee on Monthly Reports and that of W. D. Eckert the treasurer, who showed that he had \$44.20 on hand.

It was resolved on motion of Mr. McQueen, seconded by Mr. Eckert, that a deputation be appointed to wait upon the County Council to urge the necessity and importance of establishing a High School in East Middlesex, and to take such further steps as may be advisable. The Management Committee were selected as the deputation.

President Dearnness, in presenting diplomas to the following students in connection with the last High School entrance examination, spoke highly of the neatness and general improvement apparent in the work of the candidates, and thanked the teachers for the pains they had manifestly taken in preparing their pupils:

THE DIPLOMA WINNERS.

Jane Parkinson, Un. S. S. No. 1, London township; Dora Errington, S. S. No. 14, Westminster; John Gurd, London West; Napoleon McIlhargey, S. S. No. 22, Bidulph; John Sale, S. S. No. 2, Delaware; Charles Dunn, London South; Bella McMartin, S. S. No. 6, Nissouri West; Selina Kerr, London East; Hugh McKay, S. S. No. 4, Dorchester; Edward Hall, Lucan.

Moved by Mr. Eckert, seconded by Mr. Honner, and carried, That in future in case of Union School sections, the awarding of the diplomas be governed by the same rules as are applied to inspection and reporting. Adjourned till 1-30 p.m.

AFTERNOON SESSION.

At the opening of the afternoon session a motion was passed authorizing the purchase of a number of copies of the minutes of the Ontario Teachers' Association for distribution among the East Middlesex teachers. Inspector J. S. Carson, of West Middlesex, followed with an address on the subject, "How to Assign Lessons," the principles of which he laid down tersely and well. He supplied his hearers with many valuable suggestions upon this important topic. He indicated the valuable educational results obtainable from thorough preparation on the part of the teacher, and by assigning lessons on all subjects in a suggestive, interesting and intellectual manner. He would have children made thinkers by thorough and practical instruction. In the discussion which followed, attention was drawn to the superficial character of the teaching in some of our public schools, and to the evils of cramming as resulting largely from the manner in which examination papers are prepared, requiring pupils to go over far too extensive a course of study in too short a time, or else fail at the High School entrance or other examinations. A cordial vote of thanks was tendered Mr. Carson for his lucid and interesting paper.

The question of School Readers was then discussed at length, and the respective representatives of the Royal Canadian, Royal, and Gage series were heard, Mr. Boyle for the first, Mr. Donnelly for the second, and Mr. Kennedy for the third. Speeches were made by members of the Association, and a resolution was unanimously adopted in favour of the Royal Canadian series as being the best, and memorializing the Minister of Education to take steps for their speedy authorization.

COL. F. W. PARKER'S OPINION.

The opinion of Col. F. W. Parker, of Quincy fame, principal of the Chicago Normal School, was read. He wrote that he had carefully examined the books of the three series, and had no hesitation in pronouncing the Royal Canadian the best.

SATURDAY MORNING SESSION.

The time was chiefly occupied with an interesting and instructive paper on True and

Bank Discount, by Mr. R. M. Graham, of London. After that the session continued jointly with the Sanitary Convention.

AFTERNOON SESSION.

The Managing Committee was authorized to examine and settle the accounts.

Mr. Balfour, of Ilderton, moved, seconded by Mr. Marshall, that the Managing Committee be directed to have the President's paper on "The Sanitary Condition of our Schools" printed and sent to the teachers to be distributed among the ratepayers before the annual meetings. Carried.

"History for the Entrance Examination" was discussed by Messrs. Honner, Eckert, and others. A vote showed that the majority of the teachers would be in favour of retaining the subject in the 4th class and for the High School entrance examination, if a definite period was assigned.

Mr. McQueen, of London South, described a novel method he had tried of training the children to guard the correctness of their speech. The plan was to provide a leather medal, which was presented to the first one who made a solecism in school hours. The recipient kept the medal till he had an opportunity of giving it to some other transgressing pupil. Mr. McQueen created considerable merriment in describing how on one occasion he received the leathern badge himself.

Mr. W. Kerr, of Arva, spoke of the cost and results of a trial of the tonic-sol-fa system of teaching singing. He had sung and used to teach children by the old notation, but his want of success induced him to consult Mr. W. J. Freeland of London. He went back to his school and arranged for the consent of the authorities to have Mr. Freeland give an introductory lesson, and so well pleased were all with the result of this lesson that it was decided to engage Mr. Freeland to give the series. Before half the course was completed, at an expense of less than \$10, the children were enabled to sing a "round" in three parts at sight. The cost to the section for the whole course was from \$1.50 to \$2 a lesson for a series of fifteen to twenty lessons.

The question was proposed, "Which is the best headline copy book?"

Mr. Eckert showed that if headline copy books were used at all, Beatty's new and improved had the most advantages.

Mr. Graham pointed out the greater elasticity and cheapness of having a series of headlines detached from the copy books, but thought it was better still that writing should be taught from the blackboards on good writing paper without headlines. A vote being taken, the Association declared in

favour of Mr. Eckert's opinion as to the best copybooks.

"The Honour Roll, how to make and use it," was treated by Mr. Copeland. He exhibited an attractive roll formed of cardboard, worked in Berlin wool, with spaces left, behind which to insert the names of deserving pupils.

The Association then adjourned to hear the addresses on Infectious Diseases in Schools, delivered in the court-house by Drs. Wright, of Detroit, and Cl. T. Campbell, of London.

Inspector Dearnness, Inspector of Schools, county of Middlesex, now delivered his address on the Hygienic Condition of Rural Schools. In introducing the subject the speaker referred to the unduly low estimation in which the life and health of the young is held by the general public. In reply to the question "Whose funeral?" it is not uncommon to hear, "Its only a child's." Another fallacy is that children are "young and strong and can stand anything." The high rate of mortality among children is a disgrace to our civilization. It is difficult to estimate the pecuniary value of an average life. Before the American war the slave-dealer thought an able-bodied man worth \$2,000, and while perhaps no one would venture to fix the millions annually lost to our country by preventable mortality, it would not be a long sum in addition to tell how much the Government spends in the only effective remedy, the diffusion of hygienic knowledge among the masses. I am a politician who believes it is the duty of the country to spend more money on preserving and fortifying the lives we have, and less on the importation of foreigners. The subject of school hygiene was treated under the following headings: Ventilation and Warming, Water Supply, Sewerage, Furniture, Cleanliness and School Age.

NORTH HASTINGS.—The annual meeting of this Association was held at Madoc on Thursday and Friday, the 16th and 17th Nov. About sixty teachers were present.

The morning of Thursday was occupied with routine business. Reports were received from the treasurer and delegates to the Provincial Association. The election of officers resulted as follows: President—T. T. Grimmer; Vice-President—Miss Henry; Secretary—W. H. Jenkins; Treasurer—Miss McDermaid; Librarian—W. Clark; Executive Committee—Messrs. Britton and Bellis, and Messrs. Morton, McCabe, Shannon and Stevenson.

A short discussion on Promotion Examinations followed. The opinion of the Association was that these examinations have been productive of much good. The principal

point discussed was the difficulty of teaching Canadian History, in addition to the other subjects, especially in the rural schools. In large rural schools it is almost impossible to give this important subject the attention it requires. It was decided that the subject be not made compulsory at the next examination.

The Treasurer was instructed to order a copy of the minutes of the Provincial Association for every member of this Association.

The afternoon session was devoted to practical work and partook of the nature of an institute meeting. Classes were supplied from the Model School, and the actual work of teaching fully illustrated.

The first subject was Primary Reading, and was dealt with by Miss Wootton. A primary lesson was actually given, the object of which was to illustrate the intellectual or word method. After seeing a lesson of this kind taught, we are tempted to wonder how we ever made any progress under the old system of the alphabet and the strap.

Miss Jones then took up the important subject, the Statement and Question to Primary Classes. The lesson was intended to show the necessity of teaching reading by means of full statements and questions. The object of this method is to teach expressive reading; to increase the power of the eye, by forcing it to take in a number of words at a glance, and indirectly to teach composition.

The next subject was exceedingly interesting, and was also dealt with by Miss Jones. A large class was placed on the floor and put through a set of calisthenic exercises. The pupils were drilled in movements adapted to the exercise of every muscle, intervals of rest being occupied by singing. Miss Jones succeeded in showing to the satisfaction of the Convention the absolute necessity of exercises of this kind. The publication of a book of instruction upon this subject seems to be badly needed.

The next subject was Geography by Miss McDermid, who taught an excellent lesson on the rivers of Europe. The subject was illustrated by a sketch of Europe on the blackboard, and the actual course of the rivers thus clearly shown.

Mr. W. Moore then showed his method of teaching Analysis to a junior class. His time was principally taken up with the modifications of the subject, and the lesson was practically illustrated upon the blackboard.

The last subject upon the afternoon programme was that of Word Building, and was treated by Mr. Grimmett. It consisted of a thorough explanation of the Phonic Methods of Teaching Reading, intended as a continuation of the word method. Mr. Grimmett

exhausted the subject, and was listened to with close attention.

In the evening a general discussion upon the methods illustrated during the afternoon was led by Mr. Mackintosh and was generally participated in.

FRIDAY.

After routine business, Mr. W. Clark, Head Master of the Model School, addressed the Convention upon the subject of Composition in Junior Classes. Mr. Clark insisted on the necessity of beginning to teach Composition, orally, to very young pupils, in fact the subject should be taught, indirectly, from the first. As soon as pupils can frame a sentence, they should be required to write it down, other written composition is begun without delay.

In the absence of Prof. Wright, of Belleville, who was to have addressed the Convention upon the subject of High School Entrance Examinations, Mr. Mackintosh took up Penmanship. He found some fault with the penmanship exhibited in many of the schools, attributing much of the failure to a slavish dependence on copy books. Under the method which Mr. Mackintosh illustrated, headline copy books would not be needed in most of the classes of a rural school.

The morning session was closed by a short, pithy address on Geography, by Mr. Boyle, who dealt with the teaching of the subject in a general way, and deprecated beginning with mathematical geography, which is the course pursued in our school geographies.

The afternoon session took the form of a public meeting, and there were present, besides a full attendance of teachers, a large number of trustees from various parts of the Inspectorate. A. F. Wood, Esq., M.P.P., presided, and in his opening address expressed his great interest in the question they were there to discuss, viz., the Introduction of a New Set of Readers. He had given the subject some consideration and hoped that the meeting would make a definite choice of one set only.

The Chairman then called upon the committee appointed to examine the different series to present their report. This was done by Mr. Morton, who moved the adoption of the report, seconded by Mr. Grimmett.

The report recommended the adoption of the Royal Canadian series.

The report of the committee was carried unanimously. The chairman expressed his satisfaction at the decision.

The Secretary was then instructed to send a copy of the report to the Minister of Education, after which the Convention adjourned.

CONTEMPORARY LITERATURE.

AN INTRODUCTION TO GREEK VERSE COMPOSITION, with Exercises. By Arthur Sidgwick, M.A., and F. D. Morice, M.A. London: Rivingtons, 1883.

THE name alone of Mr. Arthur Sidgwick is a sure indication of more than ordinary merit, and we are glad to find his reputation as author and teacher well sustained in his "Introduction to Greek Verse Composition." The arrangement of the subjects is admirably conceived, and the various topics are accurately and clearly discussed. Some of the rules are presented in an original form, e.g., those relating to Monosyllables and the Final Cretic; and in nearly every instance there is a decided gain by the change. Under "Laws of Quantity" we notice some useful additions to the usual rules for the different varieties of elision, in the shape of rules for its use and avoidance based on the versification of Sophocles. The part devoted to "Poetic Forms and Usages" contains a more valuable and complete collection than we remember to have seen in any similar work: the method of arranging makes them at once clear to understand and accessible for reference. The matter under this head alone would render the book invaluable to the student. Even the vocabulary at the end commands our respect, and we are not apt to bestow respect on vocabularies in general: this one, however, does not attempt or profess to supplant the *Greek-English* Lexicon, but gives a useful, if brief, list of the chief synonyms. The exercises and selections are carefully chosen, beginning with the very simplest lessons in the metrical arrangement of words: but, as is usual in such manuals, the progress is very rapid, and rather adapted to the requirements of a student already possessing an extensive acquaintance with the Greek language than of the mere school-boy. To masters, and those who can supplement the material presented, the book will be of great value, for to such it is full of suggestive help, proceeding, as it does, from the definition of an Iambus to selections from Browning and

Tennyson. We extend a hearty welcome to the latest contribution to educational literature of so genial and kindly a master, and so polished a scholar as Mr. Arthur Sidgwick; and we feel assured that no teacher of Greek Verse Composition can afford to dispense with its assistance.

THE ELEMENTS OF CHEMISTRY, for the use of Schools, Academies and Colleges. By Edwin J. Houston, A.M. Philadelphia: Eldridge & Brother.

IN his preface the author of this work announces that "an attempt has been made in this book to present in logical sequence the latest developments of chemical science." The work is divided into three parts, the first embracing Theoretical Chemistry, and dealing with such subjects as the Theory of Chemical Combinations, Atomicity and Quantivalence, Theory of Substitution and Crystallography, and occupying some fifty-five pages. The second part is entitled Descriptive and Experimental Chemistry, and is subdivided into sections dealing with the non-metals and the metals grouped according to their quantivalence. The third part deals with Organic Chemistry, and in regard to this division of the subject, the author claims to have simplified the treatment of it "by the adoption of a classification based on the peculiarities in the linking of the carbon nuclei."

We are disposed to think, if the work is designed as an introduction to Chemistry, and as such to be used in schools, that the young student is destined to meet with a good deal of discouragement if he reads the parts in the order named.

An excellent feature of the work we are at present considering is the syllabus, or synopsis, at the end of each lesson, in which is given a concise statement of the chief points that have been enlarged upon, and this is followed by a collection of questions for review. In this Province we are disposed to complain that our examiners in science

are given to framing their questions too much upon a mathematical basis. In the present work we think the other extreme has been reached, since numerical examples seem to be entirely excluded. This, we think, is a mistake. Under proper control, such examples serve a very useful purpose, and tend to fix the facts of science in a very definite way.

The illustrations throughout the work are very numerous and beautiful, and the mechanical execution all that could be desired. One or two obvious typographical slips occur in the organic section, which will doubtless be corrected hereafter.

ELEMENTARY LESSONS IN ASTRONOMY, by J. Norman Lockyer, F.R.S. London: Macmillan & Co. New Edition, 1881.

THIS little book is written in so clear and attractive a style that one takes pleasure in reading it. It embraces speculations and discoveries of the last few years in astronomy, and answers many questions which are started by the astronomical events of almost every year. It fills a place peculiarly its own, and the numerous plates and diagrams, and a

very complete Appendix and Index enhance its value.

MOFFAT'S ARITHMETICAL TEST-CARDS FOR PUPIL TEACHERS; Years I., II., III., IV. Price, 1s. each year. London: Moffatt & Paige, 1883.

IN this series of arithmetical questions on the compound rules, vulgar and decimal fractions, proportion, percentages, exchange, stocks, etc., along with a number of miscellaneous problems, there are many likely to be very useful to High and Public School teachers in their class-work. Every good teacher knows how necessary it is to have some questions for examinations and home work, to supplement the text-book, and how difficult it is to avoid "getting into a rut," if he relies altogether on questions prepared by himself. The series consists of four parts, each part containing 200 questions, printed on cards and accompanied by the answers (in which a hasty examination has detected but one error) on a separate sheet. Perhaps it would be a little more convenient for the teacher if the cards were enclosed in paste-board cases instead of envelopes. The printing is well done, only half-a-dozen figures being even slightly indistinct in the whole series.

EDITORIAL NOTES.

THE announcement in THE MONTHLY for October that the Hon. Adam Crooks, Minister of Education for Ontario, was restored to health has most unhappily not been verified by events. The Honourable gentleman, to the great regret of the whole country, has broken down completely, and his career as Minister of Education has been abruptly terminated by what is stated to be an incurable affection of the brain. In the presence of such a calamity there is room only for regret and sympathy.

THE MONTHLY does not go outside of its province, when it draws attention to the movement lately set on foot by the students of the various Theological Colleges for the formation of an "Inter-Collegiate Missionary Alliance." Every well-directed effort towards loving co-operation between the vari-

ous denominations is to be hailed with satisfaction. Christianity is true to its Founder only when it seeks unity in spirit and in effort; and although the avowed aim of the "Alliance" is simply "the fostering of an active interest in, and consecration to the cause of home and foreign missions on the part of theological students, both as prospective missionaries and prospective pastors," it is not to be doubted that true Christian charity will be largely promoted by participation in the work of the new organization.

THE NEW MINISTER.

MR. G. W. ROSS, a politician well known in the Dominion Parliament, has been selected by Mr. Mowat to fill the vacancy in the Ontario Cabinet, caused by the retirement of Mr. Crooks. Mr. Ross has had

much experience in the practical work of education in this Province. He has been a Public School Teacher, a Public School Inspector, a member of the Central Committee, and a Model School Inspector. He is therefore not a novice in Public School matters. He has declared, with perhaps unconscious satire, his determination to know no politics in the administration of his department. From the experience of the past we have but little sympathy with the system of a Ministry of Education, but perhaps Mr. Ross will be able to demonstrate to the satisfaction of everybody that such a system is the only right way.

If he will bear with a word of advice from us, he will take pains to surround himself with a representative body of advisers, men of probity and experience, and will put far from him men who have private ends to gain, and whose course in the past gives no promise of good for the future. But whether party politics be allowed to obscure his vision and warp his judgment, the result of his elevation to office will be that every aspiring teacher and inspector with Mr. Ross's shining example before him will become a furious politician. He will not fail to see in his School Register a Minister's Portfolio.

STUDENTS' TEMPERANCE LEAGUE

WE chronicle with gratification the formation of a Temperance League among the undergraduates of University College. The new organization already displays considerable vigour. At its first public meeting, recently held in Moss Hall, it was announced that eighty-seven names had been subscribed to the "total abstinence," and twenty-four to the "moderation" pledge. The League is likely to command the sympathies of an increasing number of the undergraduates, and to exercise a powerful influence. There are no more desirable recruits to the temperance ranks than young men of liberal education, who are to be the future leaders in the higher walks of life. The temperance reformation has always recognized the necessity of laying hold upon youth. Fifty years' experience but emphasizes the importance, for their own sakes, of so doing. Dr. Geikie said very pertinently at the meeting above referred to:

"The less you drink, the clearer your head, the stronger your frame, the bigger your arm, the better your stomach, and the longer your lives." The extreme difficulty of eradicating a taste for intoxicants, firmly established by years of indulgence, has been proved in thousands of lamentable instances. Even where apparently completely destroyed, in nine cases out of ten it asserts, and successfully asserts, its former mastery. Prevention is the surest remedy. Young men who begin and continue as abstainers are secured against shipwreck from drunkenness. One cannot say as much for those who indulge in the habitual use of alcoholic stimulants, however moderately. Dr. Cuyler, of Brooklyn, said the other day: "No small part of my life has been spent in bootless efforts to save those who were in the swift and dangerous current. The remainder of it shall be spent in endeavouring to prevent young men from embarking on the stream."

INDUSTRIAL EDUCATION.

IT is very gratifying to learn that the efforts of Mr. W. H. Howland and several other prominent gentlemen in the city of Toronto to give roundness and completeness to our school system by establishing Industrial Schools are likely to meet with success. These gentlemen have seen with much regret that throughout the Province many boys come before the police court—in the city of Toronto in 1882 nearly 500—and that unless some constant and systematic effort be made to reclaim them large numbers will annually be added to the criminal classes. They have felt that it is extremely undesirable that young offenders should be compelled to associate in jails and reformatories with older and more vicious offenders, and that honest work combined with literary training at some handicraft would be most helpful in restraining them or reclaiming them from evil courses. Accordingly these benevolent persons have obtained incorporate powers, and secured a lease of nearly 100 acres of land from the City Council, and grants from the Government and City Council to the amount of \$9,000, and they propose to raise by voluntary subscription \$10,000 more so as to give

effect to their scheme and place the Institution upon a permanent and proper basis. The City School Board has undertaken to provide the teaching staff, and it is hoped that everything will be in readiness for actual work by the 1st of July, 1884.

The Industrial Society has before them, both as a guide and a stimulus, the work of Industrial Education in other countries. In Great Britain especially, there are hundreds of flourishing Industrial Schools, and it is stated that from 80 to 90 per cent. of the pupils have been successfully reclaimed from vice and crime. In the Annual Report, for instance, of the Oldmill Reformatory School and Aberdeen House of Industry and Refuge for 1880 we find carefully tabulated statistics from 1857 to 1880, showing that of 567 discharges from the School only three came under the head of "incurable," and that the subsequent career of the boys was most encouraging—less than one hundred in all these years being convicted of crime.

We have good reason to congratulate ourselves that the good work is begun in Ontario. It can hardly fail to be successful. Under the system dirt and rags will give way to soap and corduroy, the Artful Dodger will give up Fagin's School for the Industrial, the dime novel will be supplanted by the text-book, and the priggish hand in search of a pocket will become deft in turning a good furrow or it may be in making a good shoe.

PRINCIPAL GRANT AND TORONTO UNIVERSITY.

We find no difficulty in giving a place to Dr. Grant's address at the recent Convocation of Queen's University. With many of the learned Principal's views we are happy to find ourselves in accord, but from his opinions upon the question of the desirability of further State aid to the Provincial University and College we entirely dissent. Into the controversy occasioned by his address, a controversy, in one or two conspicuous instances, grievously marred by a departure from the courtesy that should obtain amongst scholars, we have no desire at present to further than to observe that it seems

to us that the position taken by those that hold that the Provincial University is the legitimate child of the State, and should be supported by its parent the State, is impregnable. The question of further aid to Toronto University involves the whole question of State education from the Public School to the University. The State has long since provided the machinery for meeting the law of growth in the Primary and Secondary Education, and it is hardly necessary to remind the enemies of Toronto University that the machinery is not of the subscription list, hat-passing, and "trencher fury" kind. It is ludicrous and absurd to propose a plan for the University that would not apply equally well to the Secondary and Primary Education of the Province. There is, as everyone knows, provision in the Statute Book for the expression of private benevolence towards public education. The channel has indeed been provided, but the fountain refuses to flow. The trinity of Liberty, Fraternity, and Equality needs now more than ever the help of the State trinity of Primary, Secondary, and University education. The safety of the national system of education is surely not to be left to the tender mercies of certain ecclesiastics, who, strangely enough, find their only unity in opposing the system which is a standing menace to denominationalism no less than to bigotry and intolerance. Laymen would be glad to see the various branches of the Christian Church devoting their energies to producing a copious supply of well-furnished theologians and not to dissipating their energies in merely secular work.

There are not wanting signs that the Christian Church is waking up to its duty. We have a shrewd suspicion if it were not for the activity of some of the clergy the churches would gladly abandon the work of secular education and confine themselves to the salvation of mankind. Even the clergy need to be reminded occasionally that Christ's kingdom is not of this world.

Meantime Principal Grant has done Toronto University signal service. He has not only for the present defined his own position but he has given occasion to others to define theirs also by their readiness to dig up the

long-buried hatchet and array themselves, a motley group, at his side. He has done better than even this. He has aroused her somewhat lethargic alumni into life and en-

ergy, and united them in her defence. His touch was the one thing wanting to crystallize the solvent mass into a form of coherence and strength.

CONTEMPORARY OPINION ON EDUCATIONAL TOPICS.

QUEEN'S COLLEGE, KINGSTON.

PRINCIPAL GRANT'S ADDRESS AT THE ANNUAL CONVOCATION.

THE formal opening of the forty-third session of Queen's College took place on the evening of October 17th, in the Convocation Hall of the College, Principal Grant, in the unavoidable absence of Chancellor Fleming, in the chair. After the installation of the Rev. Donald Ross, of Lachine, as Professor of Apologetics, and the delivery of his address upon the subject: "Physical Science and the Possibility of Miracles," Dr. Goodwin, the new Professor of Chemistry, was formally inducted. Principal Grant then delivered the following address:—

"Gentlemen of the Convocation,—I congratulate you on the auspicious opening of our forty-fifth session. Although work commenced two or three weeks ago, as usual we held the formal and public opening on the birthday of the University, and on each recurring University day there is cause for fresh congratulations. The professors who visited Europe during the summer months have not been unmindful of our interests, and a wise appropriation of funds by the trustees has enabled Prof. Marshall in particular to make needed additions to the physics laboratory. Mr. Fowler has received from the Smithsonian Institute and other quarters very valuable specimens for his department; and, aided by Prof. Dupuis, has done so much towards the systematic arrangement of the museum that, after another summer's work has been bestowed upon it, we may be in a position to throw it open—occasionally, at any rate—to the public. Dr. Bell has given the whole of the summer to the library, and I trust that next year we shall have a new catalogue, based on a division into departments corresponding to the studies actually pursued in Queen's. As for myself, since I last met you I have been wandering more widely than ever Ulysses did, but you must look to the papers and elsewhere for fuller accounts of my travels. Of course, the

CHIEF CAUSE FOR CONGRATULATION

is that we have at last reached that point of equipment, so far as the teaching staff of the college is concerned, that I indicated as essential in my inaugural lecture. True, we have made our last two appointments without securing endowments for them, but we could not afford to wait longer. Besides, the trustees felt that in any case it was something to have the necessary funds pledged for five years, and that in the case of Queen's, where no step backward has ever been taken, it might be said to be everything. We have never made an appeal in vain to the public. Old friends have remained true, and new friends have always been coming to the front. It would be an impertinence were I to say a word as to the qualifications for their respective chairs of the Rev. Donald Ross and Dr. Goodwin. It is sufficient to appeal to their past record, and those who know them best are confident that what they have done is only an earnest of what may be expected from them.

WOMEN'S MEDICAL COLLEGE.

A medical college for women has been established in Kingston since our last Convocation, and its application for affiliation, on the usual terms, is now before the Board of Trustees. Last winter it looked as if no Canadian woman could be educated as a physician without first expatriating herself. Such a state of things was simply intolerable, and it is no wonder that it was not allowed to continue long. Two schools sprang into existence last summer to remedy this grievance. Naturally enough the friends of each think that one school is enough, and that their's should be the one. It is difficult for those connected with either to express a disinterested opinion. Outsiders are not, however, called upon to pronounce judgment. They can afford to wait, without labouring. In the meantime we can wish well to both schools, while clear on the point that the number of students attending them respectively, shows which had the most urgent, practical and immediate reasons for organization. Certainly the Kingston Women's Medical College has started under

PECULIARLY FAVOURABLE CONDITIONS.

The City Council has acted towards it with exceptional liberality. I know of no medical

college in Canada, for either sex, so comfortably housed. In no other medical college in Canada are all the Professors paid for their services, independently of fees. Of course the salary is small, and it is looked only as an *A honorarium*, but it is certain. And already three scholarships are provided and others are expected. No surer proof than the successful starting of this institution is required to show that an appeal to the liberality of the people for any worthy educational object need never be made in vain. The friendly relations at present existing between Canadian colleges and universities is a most pleasant feature in our intellectual life. They all contribute to the harmonious and right development of our people, and they should be appreciated generously and treated justly. I esteem it a great honour that I am still connected, as one of its Governors, with Dalhousie College, N.S. Since coming to Queen's I have attended the Convocations, and, what some of you may consider of more consequence, the dinners of McGill, Victoria, and Toronto, and at every one of these have been

TREATED WITH THE SAME RESPECT

that is kindly paid me on this platform. Next year I hope to be present at the Convocation of Trinity, for I have not been able to accept the invitation of more than one sister university during each year. This inability, however, has been a benefit, as it has given me time to take in the situation better than would have been possible otherwise. The dimensions of our country are so magnificent, its centres so numerous and its interests so varied, that one must not be in a hurry while feeling its pulse and judging of its condition in any important particular. It seems to me that at present there is a cheering prospect of continuous development before our institutions of higher learning. Wealth is beginning to show that it is awakening to a sense of its high duty and privilege to foster these as the fountain-heads of all that dignifies and sweetens life, and so far as the colleges themselves are concerned, there seems to be an almost entire absence of those

FEELINGS OF JEALOUSY AND HATRED

that once found expression in scornful and bitter words on both sides. Anything that would reawaken those feelings should surely be avoided; and it is solely because a proposal recently made by Mr. Mulock, Vice-Chancellor of Toronto University, is certain, if pressed, to reawaken them that I take the liberty of uttering a note of warning. Like every other college in the old and new worlds, University College is in need of additional funds. The field of the knowable

is boundless, and every college is ready to spend millions on its staff, on laboratories, on libraries and on original work. Doubtless, too, the money would be well spent. But when Harvard, Columbia, Cornell, Princeton, Johns-Hopkins, and the other great colleges of the United States, or when Dalhousie, McGill, Victoria and Trinity are in need of additional funds, they appeal to the public, explaining fully why and what for the money is needed, and a response more or less satisfactory is sure to be made. Each institution has a constituency that believes in it, and is willing to prove its faith by its works. Instead of following this excellent and universal example, my friend Mr. Mulock proposes that the Government of this Province should give to University College all the money that may be required by it; that is, that the friends of other colleges, who have voluntarily and at great sacrifices, and for what seemed to them good and sufficient reasons, brought their favourite colleges to such a standard as to compel universal recognition, should now be forced by law to give more money to extend, they may think needlessly, an institution which, however excellent,

MAY NOT COMMENT

itself to them as embodying the highest university ideal. A proposal so manifestly unjust cannot be seriously considered. It was evidently made in ignorance of the facts of the case. The chief reasons assigned was that the various denominations support Queen's, Victoria, Trinity and the other Colleges, and therefore that the Province should support University College. I would like to ask what the Province amounts to apart from all the denominations? Aside from this, the assertion is inaccurate. The church with which we are historically and honourably connected is not responsible for the maintenance of Queen's as a Faculty of Arts and Sciences, or for the same work that is done in University College. The church gives an annual grant to the Faculty of Theology, and to that faculty only; for all other expenditure we have to depend on fees and on the liberality of those classes of the people who believe in us, for one reason or another. As a matter of fact our great friends have been the people of this city and county, without respect to creed, and the members of the Presbyterian Church in Ontario and Quebec. All honour to that church for starting Queen's. It did so because, after repeated efforts, it

FAILED IN ITS ATTEMPTS

to make what is now Toronto University broad enough for more denominations than one. With subsequent contests we have no-

thing to do. It would be worse than a waste of time to revive their memories. We cannot return to the year 1840 or 1850 or 1860 or 1870, and it is well that we cannot. We have to do with the position of to-day. What is that position? Why, simply this. That no one now dreams that one college is sufficient for Ontario. University consolidation is another matter, though people often mix up the two questions rather ludicrously, and speak as if the consolidation of the universities would diminish the expense of teaching in the colleges. Everyone now admits that Ontario not only has, but that it needs several colleges, and the only question now is whether all these must be in Toronto or not? That question, too, scarcely requires discussion. Seeing, then, that there are several colleges, all of them in need of increased funds, and some of them doing their best to meet the necessities of their case, without putting their hands into their neighbours' pockets, I would have supposed that the representative of the one whose friends have hardly yet been appealed to, would have faced the difficulty before him in one of two ways. (1.) either by calling upon the Province to help, according to a

WISELY CONSIDERED PLAN

that would stimulate voluntary effort, every properly equipped institution that is admittedly doing a good work for the Province; or (2.) by calling upon the wealthy people of Toronto and its neighbourhood, and the graduates and friends of University College, to put their hands into their own pockets. This latter and perhaps more excellent way is the one favoured by Dr. Wilson, the President of University College, whose repeated words of brotherly recognition I cordially accept and reciprocate. He is a wise man and knows the Province well, and he did his duty in giving public warning that a proposal to assist one college with public moneys would arouse a not unreasonable opposition on the part of all the others. It would be a public calamity were the present friendly relations between institutions that have a common and generous aim to be disturbed. But we would be destitute of self-respect did we not unitedly and determinedly oppose a scheme that implies not only our own spoliation, but that is based on the idea that we are somehow pledged to the aggrandizement of Toronto, rather than to the well-being of our own Alma Mater. I would subscribe willingly, as liberally as my means would permit, to any fund for improving the condition of

UNIVERSITY COLLEGE.

But men who would give \$100 as a gift will

resolutely refuse a cent when it is demanded as a right. On this subject it is unnecessary to enlarge at present, but I have no wish to conceal that the words which I have just expressed are not only my sentiments, but the sentiments of the heads, and so far as I know, of the benefactors of this and other colleges. And perhaps I may be permitted, as a friend of University College, for I claim to be such, though they may regard this as unpalatable counsel, to hint, that what it most needs is not Government interference, patronage or subsidies, but the chivalrous, self-sacrificing support of its own children, "the deeds, not words," of those who most loudly assert its claims.

I have time for only a few words to the students. The Senate extends a hearty welcome to those who have returned, and to the freshmen. Gentlemen, let us never forget to attend with all our might to the duty that lies nearest to us. You have come here to study, and everything must be subsidiary to that. Captain of a University foot-ball club nearly thirty years ago, and having just returned from crossing

THREE GREAT RANGES OF MOUNTAINS,

on horseback and foot, the Chancellor and myself forcing our way up and down precipices, across torrents, through beaver dams, devils' clubs by the million, and the densest underbrush I have ever seen, you may be certain that I am not likely to belittle sport, manly games, or any kind of muscular Christianity. But I am afraid that some of you are a little inclined to forget the rule of proportion, and instead of giving nine hours a day to study and three to athletics, would fain invert the proportion, or worse, remit books to the Christmas or Easter holidays, which means to the Greek Kalends. Gentlemen, it is an awful thing to be a fool.

A FOOL

is a man who does not live close to realities. And a man is living in dreamland and not on *terra firma* who acts as if games of any kind would enable him to earn his living, develop his mind or form his character. Stick to foot-ball of course, but I will think less of the good old game than I ever did unless I find that the best foot-ballers are also good students. Begin work resolutely this very night. Let this be the best year of our lives. Unseen eyes are beholding us; hearts far away are throbbing with mingled fear and hope on our account. Let us be true to them and to ourselves; then may we expect that God will bless us, and that right early."

TO OUR READERS.

1. Matters connected with the literary management of *THE MONTHLY* should be addressed to The Editor, P. O. Box 2675. Subscriptions and communications of a business nature should go to The Treasurer, Mr. Samuel McAllister, 52 Mattland Street, Toronto.

2. The Magazine will be published not later than the 20th of each month. Parties desiring a change in their address will please send both the old and the new address to Mr. McAllister not later than the 15th of the month. Subscribers failing to receive the magazine after the 15th of each month, should communicate at once with him.

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

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

5. Subscription, \$1.50 per annum, post paid. Club rates—Five copies per year at \$1.25 each; ten copies at \$1; twenty copies at 85 cents, net, post paid. Send money by registered letter or P.O. order. Be careful as to the address. Letters intended for us sometimes go elsewhere, and are not recovered without delay and annoyance.

6. The publishers are desirous of obtaining copies of *THE MONTHLY* for the years 1873 and 1880. Any one returning the vols. of these years may obtain complete vols. of 1882 and 1883, bound in paper. Parties having copies of 1879 and 1880, or portions of them, to dispose of will please communicate with Mr. McAllister.

7. Circulars respecting *THE MONTHLY* may be had on application to the Publishers.

8. We have several important changes and improvements in contemplation, designed to render *THE MONTHLY* more interesting and valuable to its patrons. Amongst other things we promise more attention to the work of the Inspector and the Public School Teacher. We shall begin a News Column in the January number. Natural Science also will receive special attention.

See our clubbing rates. They afford a rare opportunity to secure for 1884 some of the best serial literature at publishers' lowest rates.

If your subscription expires with this number please renew at once. We trust our friends will assist us in extending our circulation.

We are again compelled from lack of space to hold over much interesting matter, such as Conventions, Notices of Books and Magazines, Announcements, Exchanges, etc.

ONCE more *THE MONTHLY* has special pleasure in directing attention to that unique and altogether admirable serial *Latine* (\$3.00 a year), now published by D. Appleton & Co., New York, as before under the editorial care of Professor Shumway. *Latine* for 1883-84 is greatly enlarged and improved, and has found and filled so agreeably a sphere of usefulness and already circulates so widely, that we hope to learn that it will find an entrance into every school in Canada where Latin is studied. We advise every

classical master to get a copy and use it in his class. He will be ready to say if the half has not been told us.

We have special pleasure in inviting attention to an advertisement of our old contributor, Mr. David Boyle, who begins business under auspicious circumstances at Ye Old Book Shoppe, 153 Yonge St., Toronto. Mr. Boyle has a good stock of books, new and old, and his old professional brethren as well as the general public in quest of books cannot do better than give him a call.

Our readers will find in our advertising columns both for November and December, prospectuses of some of the best magazines of the day. Every teacher should take at least one magazine. He must be hard to please if he cannot find one to his taste in our clubbing list.

Our favorite contemporary *Griß* thus hits off the educational situation. In a recent issue he makes the education horse very lame of a leg, so lame indeed that the beast cannot move. In the next issue following Mr. Ross's appointment, Mr. Mowat appears with a large bottle of Gargling Oil as a specific for the ailments of the poor brute. As the horse is a good one let us hope that he will be recovered from his hard usage. *Griß* thinks so. *Non profecto.*

The Free Library of Toronto is making good progress. The Chairman of the Library Committee, Mr. John Hallam, and the Librarian, Mr. Bain, have just returned from England, where they secured a large number of valuable books of reference and of general literature. The Library will start with 32,000 volumes, and with a supply of the best serial literature of the time. The two branch libraries are now in operation. The Central library will not be ready until March. We could wish that all of our readers, and especially those engaged in the work of education, were within reach of these storehouses of knowledge.

The first two numbers of *The Week* have appeared and have met with signal favour. The literary quality of the publication is of the highest order, and the paper and printing are excellent. Mr. Roberts, the Editor, is well known in educational circles in New Brunswick, and his paper will therefore find congenial readers amongst the teaching fraternity throughout the Dominion. To the readers of the *Century* magazine his merit as a writer requires no commendation. In the numbers already issued are contributions from Goldwin Smith, Collins, Mulvany, Fawcett, Roberts, Principal Grant. In *The Week* we confidently look for a powerful ally in the work *THE MONTHLY* has undertaken to perform—honest and fearless criticism of our educational affairs. See our clubbing rate.

Dio Lewis's Monthly (\$2.50 a year; Frank Seaman, 60-71 Bible House, New York,) is a new candidate among American magazines for popular favour. It has been very well received by the press in America and Canada. It is, as may be supposed from Dio Lewis's previous publications, a family magazine. It is exceedingly practical, and deals with many questions of special interest to the teacher and parent. It is well worth the price. See our clubbing rate.

We wish you, friends, the compliments of the season.

PLEASE RENEW YOUR SUBSCRIPTION AT ONCE.

 See Notes "to our Readers" and Clubbing List.