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THE ONTARIO TEACHER:

A MONTHLY EDUCATIONAL JOURNAL.

Vol. 2.

OCTOBER, 1874.

No. 10.

THE CO-EDUCATION OF THE SEXES.

The title of this article formed the theme of a very excellent paper read by Mr. Buchan, High School Inspector, before the Ontario Teachers' Association.

Mr. Buchan, in introducing his subject, referred at some length to the contest recently so vigorously carried on in the United States between the advocates and opponents of the Co-Education of the Sexes. The grounds taken by the former are very clearly set forth by Mr. Buchan as follows:—

I. Boys and girls are brought up together in the same family, and men and women mingle in society; co-education is therefore natural.

II. Young people, if brought into daily contact with the opposite sex, are more likely to be free from illusions with regard to it than if the sexes are educated separately.

III. The presence of the other sex in a class exercises a restraining influence as regards behaviour, and a stimulating influence as regards work.

IV. The sexes are so similar in their

mental powers that the same methods of training and the same subjects of study will benefit both.

These different arguments are discussed at some length and their fallacy completely exploded. The *simple* fact that it is *natural* for boys and girls—for men and women to mingle together cannot prove the *necessity* of their being educated together. The very constitution of both family and society throws the sexes together, and the fundamental constitution of the sexes makes it *natural* that they should intermingle, but how can the necessity of co-education be proved from a social relation that exists outside and beyond *any* system of education? As Mr. Buchan puts it "If co-education means anything it means that because brother Tom splits firewood while sister Jane washes the dishes, and because, after they grow up, they go to parties together, therefore they ought to be taught quadratic equations together." It must be clear that the conclusion from such a premise would not be very logical.

So far as the second argument is con-

cerned we can see no force in it whatever. The public school room is not the place where illusions regarding the sexes can be best dispelled. The contact of boys and girls with each other, either in play or school hours may familiarise the one with the other, but what illusion can it dispel? It may create illusions—it often does worse and generates a rudeness alike degenerating to morals, and offensive to refinement and good taste.

Passing over the third argument let us hear what Mr. Buchan says on the *mental* difference of the sexes, for this really is the point that should decide the whole question at issue.

"What are the mental differences between the sexes? Up to a certain point we as teachers all know that their mental powers are exceedingly similar. The most striking difference is partly moral and partly mental. Women lack the power of the initiative in both thought and action. The female sovereigns that have reigned in Europe have not been deficient in energy. Can any one point to a single great reform in law, administration, religion or commerce originated by any of them? How many women of any class have manifested originality? I will not say in these branches of thought the education for which has been hitherto almost entirely confined to men, but in the domain of art? There have been a few clever novel writers and one or two good poets, and that is all. Though women have for centuries enjoyed superior advantages in the cultivation of music, the great musical composers are all men. In painting the case is almost similar. How many of the thousand and one labor-saving contrivances in use in the kitchen and laundry have been the invention of women? How many patents have they taken out for fuel-saving or light-improving apparatus? Yet the internal arrangements of houses are precisely the sphere in which they have been most stimulated by circumstances to

show whatever inventive ability they possess. Did any one ever hear of a woman inventing anything at all? These illustrations so amply prove the charge that there is nothing left for the believer in the mental identity of the sexes to say except to attribute the lack of the power of the initiative and the correlated lack of originality to the subjection in which women have been kept for ages by the tyrannical sex, and not to the natural constitution of the female mind.

Another, but a related defect of the female mind, is its incapacity for abstract thought. I never heard of a female metaphysician, and I never expect to hear of one. Instances of women possessing real mathematical ability are exceedingly rare. An eminent Canadian instructor, who has prepared many successful candidates for mathematical honours in the University of Toronto, and who has had large opportunities for observing, tells me that he has yet to meet a woman with real mathematical ability. The records of the examinations held by the Central Committee prove the mathematical superiority of men. I am fully aware that in the mixed colleges of the United States the female students do as well in mathematics as the male students, but I infer from the remarks of English travellers that the work done in these institutions is anything but thorough.

It may not be generally known that the Toronto Normal School furnishes a test of the relative mental capacity of the sexes which is as nearly crucial as it is possible for any test of comparative intellectual power to be. The female students of that institution are, when they enter, on the average better grounded than the male students; they generally remain in attendance a longer time, and the standard prescribed for a first-class certificate has in their case always been lower. Up to a certain point they have done better than the men. They have taken rather more second

and third class certificates in proportion to their numbers. But at the end of 1869, out of every thousand male teachers in training, 131 had received first-class certificates; while out of every thousand female teachers in training, only 113 had been equally successful. The difference becomes still more striking when the figures for the years subsequent to the raising of the standard are taken into account. For the years 1871 and 1872 the ratio is forty-four to six. Only one female candidate has succeeded in taking a first A since the year 1871."

Although Mr. Buchan believes in the existence of substantial mental differences between the sexes, yet these differences do not necessarily involve the idea of inferiority. He distinctly says, and we believe this to be the only safe position to take:

"Though a woman's mind is not as well fitted for the work that men do as that of men, for the performance of her special duties in life it is undeniably superior."

We believe there are natural dividing lines between the sexes, beyond which if either dare to advance they will fail. The bird and the beaver, each in its own sphere and following out its own instincts need fear no competitor, but let the bird attempt to do the beaver's work or *vice versa* and both would fail. Woman has no compeer in her own field of labor. She need fear no rival near her throne. But if she steps beyond that sphere and attempts, even from the best intentions and in the most unostentatious manner to accomplish that which the laws of her own nature forbid, then she must and will fail.

The dangers arising from the co-education of the sexes are very clearly pointed out.

I. It would tend to lower the standard of our universities. This conclusion is obvious from the difference in the *possible maximum* attainments of the average female mind.

II. It would have an injurious effect upon the physique of females. Working under an over pressure to compete with their male classmates whose habits of life gave them more vital power and nervous energy, it would sap their constitution and shorten life.

After referring to the difficulties of co-education in some subjects, he concludes his very able essay as follows:—

"The whole question from our point of view resolves itself into this: Should our ideal of womanhood be the same as our ideal of manhood? I am not prepared to define in words my ideal woman or my ideal man, but I hold this most firmly that it is the object of education to develop the powers which are in a human being in a harmonious manner. As therefore co-education must either take no account of the difference between the sexes, or must distort the one into an imperfect likeness of the other, its tendencies cannot be the best possible.

* * * * *

But my main argument, the argument to which all the rest are subsidiary, is that the physical, moral, and mental development of sexes follow different courses, and that you cannot safely neglect the directions of nature. There is such a thing as the difference of sex. That is the fundamental idea of this paper. While the sexes are young they are physically much alike, and the moral and mental differences are not striking. The question whether we should educate at that age is comparatively unimportant. But with the increase of the physical difference between the sexes, there arise conspicuous mental and moral differences. It is then, I think, that it is important to educate separately, because under a system of joint education these differences will be neglected.

"For woman is not undeveloped man.
But diverse: could we make her as the man,
Sweet love were slain: his dearest bond is this,
Not like to like, but like in difference."

We commend Mr. Buchan's closing re-

marks to the careful consideration of the advocates of co-education. There is a harmony in diversity not always recognized. We would yield to none in our appreciation of the mental and moral qualities inherent to the female sex. We would yield to none in our desire to develop both sexes morally and mentally, but in our anxiety to do this we wish to recognize those cardinal differ-

ences of constitution on which their education, to be successful and beneficial, must be based. Education to be effective must be adapted to the sphere to be occupied by the pupil in society. Women must be educated as women, and men as men, and any other process would be a reversal of the laws of nature which would be as absurd as it would be futile.

OUR DUTY TO OURSELVES.

BY RICHARD LEWIS, TORONTO.

Contentment is not always a virtue. There is no condition of life more abject and hopeless than that of the slave who hugs his chains and has no desire for liberty. Whatever be the end in view, political liberty, social elevation, mental or moral improvement, men should always aspire to the best and the highest, claim it and work for it. Discontent becomes a virtue when any injustice oppresses us; and whether men are suffering from their social condition, the recompense they receive for their labor, their influence in the world or the mental or moral defects in their own characters; there is no virtue in the contentment which rests satisfied with things as they are; but the highest merit and hope for them who bravely struggle with what they conceive to be a wrong, and by every legitimate effort seek to win the right.

To no class of men do these remarks apply with more force than to school teachers. Their rank is not an honorable one; the recompense they receive whether in money or public estimation is not just, nor adequate to their services. But they complain and are discontented, and in that there is every hope of advancement. They understand, in theory at least, the importance of their labors. *The world cannot do without*

them. Ignorance may sneer at their office, because it misunderstands the real import of their duties to society and to human progress. But they have their place in society which must be filled. They are as necessary to human progress as the statesman or the divine. The world can no more do without its school teachers than it can do without its legislators, lawyers, doctors or preachers; and when their work is faithfully and wisely accomplished it is second to no other work in its value and its lasting influence. Take their office out of the social scheme and society would retrograde to a condition worse than barbarism. Shut up every school house in the land and the church and the press would be impotent in the conflict with ignorance and vice; for the school house, although of modern birth, is as divine an institution as the church, and as necessary to the well being of society as political government.

Now what do these truths indicate? They are *admitted* truths. You see them admitted in looks and newspapers, and you hear them uttered on grand occasions by glib orators. If our office of school teacher, be the high and important calling that by way of compliment we are of told it is, and which the best and most thoughtful of our order as well as the profound thinkers

of the age believe and maintain it is, what does this indicate, but that first, we have a right to claim our place in society, a right to all the honor and emoluments which are the fair recompense of valuable services and which are awarded to other professions, and second, that we must by personal improvement and fidelity to our work rise to its highest demands?

We all understand that no wages ever paid a faithful servant. You cannot measure fidelity and honor by dollars and cents. But that does not mean that because the upright servant works from a sacred principle of duty that he does not work for money, and that therefore *any* wages will satisfy and be enough for him. That is, in the case of the school teacher, a very convenient doctrine for the grumbling taxpayer. But the school teacher must war with such a doctrine. The Rev. Dr. Castle in a speech delivered lately in Toronto, bravely and generously asserted that the school teacher ought to hold the *same* rank and be as well paid as the doctor, the lawyer, and the clergyman. No doubt had a teacher uttered this opinion it would have been pronounced presumptuous and seditious. But Dr. Castle was right. When the teacher shall cease to look up to *any* profession as being higher or more honorable, or useful, or as having a right to be better recompensed than his own, then shall society reap all the rich fruit from his work, of which it has yet had no conception. Education is said to be a science, but of all sciences it is the least known and cultivated, because its professors have too often no heart for or in their work. They enter upon it with no intention to pursue it to the end; but only as a help and a stepping stone to what they call and society calls a *higher* profession. But the evil recoils upon society. When men become members of the "professions," they remain in them for life, because they receive honor and liberal recompense; and while their ambition to excel is excited because

excellence in the "profession" wins distinction and wealth, society gets all the advantage in having the best results of their devotedness and skill. But the influence of this system is most disastrous to the school. The teacher may satisfy the letter of the law. He may fulfill the requisites of school examinations; but all the deep and lasting influences which no book learning can convey, but which flow from the personal impressions of the teacher devoted to her or his work—regarding that work as the most sacred and responsible that can fall to the lot of a human being, regarding no other work as more sacred and important; all that mental power and moral sympathy which animate great minds devoted to the advancement of human happiness; all this is lost to the school and to society, because the teacher believes there is a *higher* profession; and it is only reasonable to suppose that all his spare moments, all his strongest affections tend in the direction of that "higher" profession.

If therefore the teacher is discontented with his position and his rewards, society is the greater loser, by the loss of all those unseen influences and powers for the advancement of the race which a generous and just recompense for important service would secure. Clergymen, as the religious and moral instructors of adults, are paid badly enough. Your mere tradesman, who only needs skill and brains enough to buy in the cheapest and sell in the dearest market, and who in intellectual power and moral influence is often immeasurably below his religious teacher, immeasurably surpasses him in his emoluments. But the clergyman has the highest social rank. The wealthiest and most influential member of his congregation associates with him; salutes him with respect, and thinks it no disgrace to eat and drink with him. Neither merchant, nor doctor, nor lawyer looks down upon his clergyman, and this estimation of the profession is some compensation for poor

salaries. Besides which the clergyman is taught to believe that his vocation is a high and sacred and honorable one; and to desert it for another one because it *paid* him better would be treason to God and man, recreancy to a great and holy trust. It is scarcely necessary to say that the teacher, while his salary is disgracefully low, receives no compensation in social honor and respect. While, "he is only a school master" is outspoken by ignorance and vulgarity, the sentiment pervades every class in its treatment of the teacher, and either he seeks to escape as soon as he can the indignities of a profession which every fool despises, and which few who are not fools have the courage to honor according to its importance; or if he continue in it either from necessity or preference he still feels the bitterness of heart which injustice creates.

Well,

"Who would be free, themselves must strike the blow."

It is vain and weak to go through the world whining about our "wrongs." The world is generous or selfish just as we manage it. Public opinion is slow to admit our claims; then we must conquer and lead public opinion. I am grateful when any representative man stands up, like Dr. Castle, to maintain our claims; but I have no great faith in this kind of help. The work of advancement must be our own, and it can only be our own by raising ourselves to the highest claims of our work as public teachers.

"He who trusts himself, calls no man master And commands success even in the school of Fate."

We know the world cannot do without us; but let us make it sensible of the debt it owes us by showing what we can do for it. The school law demands that every certificated teacher shall possess certain attainments; but the teacher who would be faithful to his office would never rest satisfied with the attainments demanded by the school law. In his own life and practice

he would be a never ceasing student, raising himself by self culture for which he has abundant time and rare facilities, far beyond the limits marked for securing certificates of qualification. I never can understand people who say that it takes a lower education to be a public school teacher than a high school teacher, or to be any sort of a teacher than to be a clergyman, or a lawyer or a doctor. None of those professions require in their direct practice all the subjects through which the students must pass. They acquire knowledge by systematic study because it disciplines and enlarges their minds and this makes them better doctors, lawyers, and divines, than if they limited their studies to the direct needs of their profession. But while they enter upon their separate professions with minds enlarged by general culture—at least they are supposed to do so—that very fact gives them a higher social standing, as well as makes them more skillful in their special vocations. Now all these reasons apply to the office of the school teacher. Let us conceive the possibility of all our public school teachers being men and women of the highest culture, entering upon their duties with the faith that before God and man there was no more important and grander work than theirs; that that work meant not only instruction in book knowledge, but the far higher work of mental and moral development, and the formation of character; and society, which now requites them so ill, would be enforced into justice, and no profession would stand higher in public estimation than that of the school teacher.

Self culture and respect for our work are the first steps to advancement. But we must also adopt the tactics by which other classes and professions make themselves felt and wanted. We have a right to take the initiative in all educational movements. It is our work and our vocation. I have attended educational gatherings and seen upon the platform lawyers, physicians, cler-

gymen, merchants—every class but the right class. Who ever heard of a religious gathering where clergymen were not allowed to take a leading part? We must enforce our views on the public mind and show them that we are the best representatives of the educational interests of the country because we understand them best.

Religious publications devote a large part of their columns to narrations of ministerial work. They give biographies of leading or of devoted clergymen; they relate their experiences, their style of preaching, their trials and sufferings; and they not only excite and sustain public sympathy with Christian work, but they sustain the influence of the religious teacher. There is one periodical in the province besides the *ONTARIO TEACHER*, devoted to the interests of education. It frequently gives brief biographies of lawyers, clergymen, wealthy merchants or farmers; but I never saw the biography of a devoted high school or public school teacher in its columns. We have not yet attained the public respect to claim that honor.

We are not necessarily school teachers only, because we *are* school teachers. Men not only gain influence but enlarge their minds and sympathies by taking part and interest in works of human progress and public good outside of the limits of their own vocation. Other classes and professions do this; and if a school teacher is able to speak as well as a doctor, a lawyer, or tradesman he ought on all fitting occasions to do so. This co-operation with his fellow men in public affairs would give him dignity before his pupils. They and their parents often believe he can do nothing else but teach a school, because he does nothing else. But it would do more. It would send him to the school with a sense of manliness and power, and with a feeling that as the beings in his charge were to be the future men and women of the world, they were interested and concerned in all its

works of usefulness, and must ere long take their share in its duties. There is monotony in all work, and monotony becomes drudgery. The best relief to that monotony is varied occupation, and while study and self culture afford one form of relief, active co-operation with our fellow men in the work of progress and usefulness is another which has the additional advantage of "bringing a man out." Teachers from their associations with children and general habits of life, acquire what the French call a "*mauvaise houte*," an awkwardness in falling into the ranks and habits of general life; and while the school teacher may have a well cultivated mind and abundant common sense, a dapper business man, expert in measuring silks and ribbons for ladies, but his inferior in the higher qualities that make a man, will often outshine him in society because he is more confident and more conceited.

But the great end in view is the advancement of education and its improvement as an art. This can only be accomplished by the school teacher, not by legislation nor by the speculations and theories of amateur educators who have never done the work of the school room. While we are justified in demanding from the public our full recompense both in public estimation and direct money payment, our success in conquering public opinion and elevating *our* profession must be the consequence of our devotedness to our work and our success in developing all its resources. Let us then not fail to form the highest view of our vocation and of its claims on public regard; but let us also never fail to act up to that high estimate, and if we believe that the education entrusted to the school teacher is one of the mightiest instruments for advancing human happiness, we must fit ourselves to the highest claims of our office and show that while its professors demand recompense for their labors they are ready to give the best fruit for the payment.

THE ROYAL ARMS.

BY MRS. WM. LUNDIE, INVERHURON.

Every Canadian is familiar with the appearance of the Royal Arms. From childhood upwards we have learned to associate the royalty of England with the lion and the unicorn, and the smaller quaint heraldic figures on the shield which these redoubted champions so jauntily support. The royal arms are in fact a great national institution, handed down, as we are inclined to suppose, from the remotest antiquity. We can scarcely imagine an English sovereign but associated with the lion and the unicorn, and it seems almost treason to the British Constitution to believe that the national escutcheon ever has been or ever could be changed. These, however, are mere fancies of reverent and uninquiring youth. There have been kings of England with neither lions nor unicorns to support their arms; and the arms themselves have altered and varied scores of times. In fact the present royal coat of arms as borne by Queen Victoria has never been borne by any previous sovereign, and was seen in England for the first time at her accession in 1837. These changes have never been made merely from the caprice of the sovereign; they represent in all cases great national events, and to one even slightly versed in heraldry, they afford a pictorial summary of English history. Thus there are many questions of interest connected with the royal arms, and to these, so far as they can be discussed without tedious antiquarian and heraldic details will be given the present paper. The most prominent feature about the royal arms is of course what heralds call the supporters—the lion and the unicorn. Of these the lion is the badge of England, the unicorn of Scotland; and their position is intended to symbolise the fact that the sover-

ign is maintained by the union of these two countries. The uninitiated observer would describe the unicorn as placed on the right side of the shield, and the lion on the left, but heralds apply the terms right and left to a coat of arms with reference not to the spectator, but to the supposed bearer of the shield, who is of course behind it. Thus they reverse the ordinary use of these words, and the reader must therefore remember that the lion is the right, or dexter supporter of the English arms—the place of honour being conceded to England from its superior importance—and the unicorn is the left, or sinister supporter. The reader will at once infer that these supporters could only have come into use at the union of England and Scotland under James the First, and the inference is perfectly just. Ever since 1603 the royal arms have been supported as now, by the English lion and the Scottish unicorn. What were the supporters previously? the reader asks. Well they were various. Elizabeth and Mary, and their father, had a lion and a greyhound for supporters. Henry the Seventh a lion and a dragon. Richard the Third a lion and a boar. Edward the Fourth a lion and a bull. Henry the Fifth a lion and an antelope. Henry the Fourth an antelope and a swan. Edward the Third a lion and an eagle. The use of supporters began with Edward the Third, so that the reader has thus a complete list of the supporters of the royal arms of England. The lion it will be seen, had almost invariably been used as one supporter (the dexter); the other had varied, the different sovereigns usually introducing some family badge as the supporter on the sinister side. The Scotch arms had always been supported by two unicorns,

and hence on the accession of James the First to the English throne, it was determined that the National supporters should thenceforward be the lion of England and the unicorn of Scotland.

Returning now to the shield or actual coat of arms, it will be perceived that it is divided into four parts, or, as the heralds would say, the arms are arranged quarterly. The quarter on the right hand corner (the readers left hand) is called the first quarter, the opposite corner is the second, below the first is the third, and below the second is the fourth quarter. The first and fourth quarters it will be observed are the same, and contain three lions, which are represented as walking forward with their full face turned to the spectator, or, as heralds say, the (*passant gardant*). These are the arms of the King of England, and have been carried by all the sovereigns from the time of Richard *Cœur de Lion*. If the reader looks carefully, he will perceive that the field in these quarters is covered with small perpendicular lines. This is not a mere caprice of the engraver, but is the sign employed by heralds all over the world to indicate that the field when colored (*red*) for heraldry has a universal language, and in every country where heraldic devices are known, perpendicular lines drawn as in the royal arms are understood to mean the color called in common parlance *red*; but in heraldic language *gules*. Perhaps the reader may have seen the English arms described as leopards and not lions. He may have read Napoleon's famous order to his marshals when he sent them to the Peninsula to drive the English leopards into the sea. All this, however, admits of very easy explanation. The French heralds call a lion that is represented with its full face turned to the spectator a *lion leopardie* or briefly a leopard. In the second quarter a lion again occurs, but this time it is in a different attitude—standing upright on its hind legs, as if about to attack an enemy.

A lion thus depicted is styled by the heralds a lion (*rampant*) and signifies courage. The lines on a coat of arms are all significant in heraldry, and if the reader will carefully observe this rampant lion he will perceive that its body is traversed by the perpendicular lines which occur on the field of the first and fourth quarters; the reader will infer from this that the rampant lion in colored coat of arms is painted red. The field in this second quarter is covered with little dots. These are the conventional representative of gold (*or*), the heralds call it (*or*) being the French for gold, and the field would be painted a gold color or gilt in any accurate representation of the royal arms. A double border called by heralds a *tressure*, encloses this second quarter, which contains the arms of Scotland, borne, it is said, from the time of Fergus the First, the border being especially emblematical of the close friendship subsisting between Charlemagne and Achaius, King of Scotland. Sir Walter Scott, it may be remembered, has given a poetical description—*blazon* the heralds would call it—of the Scotch arms in his account of the meeting of Marmion with Sir David Lindsay, Lord-Lion-King-at-Arms. The third quarter contains a harp, the arms of Ireland; not like the others, a strictly national coat of arms; for Ireland was never a nation as England and Scotland were—subject to the rule of a hereditary line of princes—but rather an allegorical or typical figure. The observer will have perceived that in this third quarter the field is covered with horizontal lines. These are the conventional indication among heralds that the field should be colored blue or *azure* in the language of heraldry. Thus the four quarters of the shield of Queen Victoria carry the arms of England, Scotland, and Ireland; those of England being twice inserted out of compliment to the greater importance of that part of the Queen's dominions. But it will be asked, has not the King of England been for at

least two centuries and a half King of Scotland and Ireland as well? how then should there have been any change of the royal arms when Queen Victoria came to the throne? And what were the arms previously? These are pertinent questions and can be simply answered. Let the reader place before him two half crown pieces, one of the present reign and the other of the reign of William the Fourth; on comparing the coats of arms engraved on the back of each the difference will be at once apparent. The older half crown has the shield exactly as we have described it, and as it is on the Victoria half crown but it has something more. Right in the centre of the coat of arms is a smaller shield surmounted by a crown, and in the very heart of this smaller shield is a third, still smaller, containing something too indistinct to be recognized. This addition to the shield as it is now borne by the Queen represents the arms of Hanover, and as that foreign appanage ceased to belong to the English crown on the accession of Queen Victoria, the laws of Hanover not permitting females to reign, the Hanoverian shield of course has disappeared from the English arms. We need not describe the arms of Hanover at large; on the one shield the reader will perceive three divisions; in the first, two lions in the same attitude as the lions in the English shield stand for Brunswick; in the second a lion not unlike the Scotch lion, represents another Hanoverian dependency; at the foot, a white horse in full gallop is the well known emblem usually associated with Hanover; the small shield in the centre contains, if we could see it distinctly, a curious and interesting object, the crown of the great emperor Charlemagne. The reader who is acquainted with history sufficiently to know that the Hanoverian dynasty came to the throne of England in 1714, will concede that these arms now described must have been the royal arms of England without variation from 1714 to

1837. This however is not quite the case. For four centuries and a half the Kings of England called themselves Kings of France as well as of England. It is true this was in every case but one a mere idle claim, and in the case of the Hanover sovereigns it was a simple pretence. Still this pretence was actually borne by our English sovereigns down to the commencement of the present century. The royal arms necessarily took cognizance of this claim and down to the year 1801 the French lilies three in a blue or azure field figured by the side of the passant lions of England, and the rampant lion of Scotland. In the arms of George the Third down to the union of Great Britain and Ireland, the first quarter was occupied by the arms of England and Scotland somewhat unceremoniously crowded into one quarter; the second was allotted to France; the third to Ireland; the fourth to Hanover. George the Third was the last English King who carried the French lilies on his coat of arms; they were first assumed by Edward the Third about 1340. Queen Anne's shield, like Queen Victoria's, had four quarters without any additions; in two of these quarters the arms of England and Scotland were placed side by side—in *pal* heralds would say—as already described; in the second quarter—occupied on our Queen's shield by the Scotch lion—are the lilies of France; in the third the Irish harp as now. King William's shield was the same as Anne's with the addition on the very centre of the lion rampant, the family badge of Nassau. The royal arms under James the First, Charles the First, Charles the Second, and James the Second were the same as those described under Queen Anne. The Commonwealth discarded from their great seal all lions and unicorns and such like heraldic vanities, and in their place there appeared a map of England and Ireland with the cross of St. George at the top and the Irish harp at the foot. When we come in

our survey to the times of the Tudors, we meet with another change of the royal arms. Neither the Irish harp nor the Scotch lion any longer appears in the shield, which is divided into four quarters, two of them charged with the *lions passant* of England, two of them with the *fleur de lis* of France. In part of Mary's unhappy reign the arms of Spain were placed on the shield side by side with those of England, out of compliment to her husband Philip who was not merely prince consort, but King of England; France, Naples, Jerusalem, and Ireland, with many more dignities beside. No further change in the royal arms occurs till we journey backwards more than two centuries to the reign of Edward the Second. The shield is now a very simple one; England had not yet advanced any pretensions to the crown of France, and had not placed the lilies on its shield, which

contained merely the appropriate arms of England in full size, the three lions—*passant gardant*—in their red field. This remains the cognisance of England as far back as heraldic bearings can be authentically traced, that is to the reign of Richard the Lion-hearted; beyond this we do indeed meet with figures on the royal shields, but they seem to have been regarded merely as an ornament and not as a distinctive badge.

All the grand occurrences in the history of England, we have seen, have left their mark on the National escutcheon; and to one tolerably versed in heraldry the shields of arms borne by the successive kings with their charges and supporters, form a by no means contemptible pictorial abridgment of the fortunes and misfortunes of the Nation, and of the rise and fall of the various royal families who for so many centuries have swayed the sceptre of that empire.

WITH THE TIDE.

BY WILL HARRY GANE.

The lazy flowers upon the stream
Have no ambition at all;
They merely drift with the waves along,
And with them they rise and fall;
Then the moonlight tipping the waters
'Till all are silvery dyed,
Make ghostlike and shadowy outlines
That are drifting with the tide.

A boatman out in the moonlight sheen
Lets his barque float idly on;
He never thinks of the turning point
'Till the last ripple is gone;
And the music of swaying waters
That slowly bore him along,
Have turned the leaves of another tune,
And whispered another song.

Thus our life is like a moonlit lake,
And its toils and pleasures waves,
That rolling on each other so oft,
The path to hereafter paves.

And every day as the years steal on,
To drifting yet fonder grown,
Till to paddle hard, with wind ahead,
We are less and still less prone.

Then let us throw on the illusion
That death has forgotten our day,
And that all this glory and glitter
Is going to last away;
But with hearts strung to hard endeavor,
And bravely determined to ride
The opposite way to the dreamer,
Who are drifting with the tide.

Ingersoll, Ont.

SOLUTIONS TO QUESTIONS, AT THE RECENT COUNTRY BOARD EXAMINATIONS.

(BY J. C. GLASHAN, ESQ., INSPECTOR, WEST MIDDLESEX.)

ALGEBRA—FIRST CLASS.

$$1. (a) \quad 55x^2 - 15xy + 5xy = 105$$

$$7x^2 - 49xy = 105$$

$$\therefore 48x^2 + 34xy + 5y^2 = 0$$

$$\therefore 2x^2 = -y \text{ or } 24x = -5y.$$

Substitute in the latter of the given equations.

$$(b.) \quad 3(2x^2 - 3x - 1) - \sqrt{(2x^2 - 3x - 1)} - 2 = 0$$

$$\therefore \sqrt{(2x^2 - 3x - 1)} = 1 \text{ or } -2/3$$

$$\therefore x = \frac{1}{2} \text{ or } -\frac{1}{2}.$$

(c.) Cubing gives

$$(x^2 - a^2)^{\frac{1}{3}} = -a^{\frac{2}{3}}$$

$$\therefore (x-a)^{\frac{1}{3}} + (x+a)^{\frac{1}{3}} = \pm a^{\frac{1}{3}} \sqrt{(-3)}$$

$$\therefore (x-a)^{\frac{1}{3}} = \frac{1}{2} \{ 1 \pm \sqrt{(-3)} \} a^{\frac{1}{3}}$$

$$\therefore x = 0.$$

$$2. \quad 20x + 2xy = 1600 \therefore \text{the required No.}$$

$$20 + 21 + 1600 - 1$$

is the greatest integer in $\frac{20 \times 21}{20 \times 21}$,

which is 3.

3. Let x = No. of watch-seconds gained (and lost) per hour. Writing W for the words 'watch-seconds,' before the accident, and w for 'watch-seconds,' after the accident.

$$3600 W + xW = 3600'' \text{ true time,}$$

$$IW = 1'' - \frac{x''}{3600+x}$$

$$\text{Similarly } 1W = 1'' + \frac{x''}{3600-x}$$

$$\text{At midnight by the watch it has gone } 21600 x''$$

$$21600W + 21600w = 43200'' - \frac{21600 x''}{3600+x}$$

$$+ \frac{21600 x''}{3600-x} \text{ true time} = 43200 + 12$$

$$12 \left(\frac{1}{3600+x} \right) - \left(\frac{1}{3600-x} \right) \text{ true time, by problem}$$

$$\therefore \frac{x}{3600-x} - \frac{x}{3600+x} = 2 \left(\frac{1}{3600+x} \right) - \left(\frac{1}{3600-x} \right)$$

$$\therefore x = \pm 1$$

The positive value gives 'gaining one second per hour.' The negative value interchanges 'gaining' and 'losing' in the problem.

4. Eliminate x between the equations. The resultant is $(n-m)(2n-m)+1=0$, a quadratic in n .

5. Let a and b be the roots

$$(a+b)(a^2+b^2) = (a^2+b^2)^2$$

$$\text{But } ab(a-b)^2 = 0$$

$$\therefore a-b=0$$

$$\therefore a=b=\mp 2$$

$$\text{But } m = -a-b$$

$$\therefore m = \mp 4.$$

6. Book-work.

$$(1^4 + 1)(1^2 + 1)(1 + 1) = 10(1 + 1)(1 + 1)$$

$$\therefore 1 = -1 \text{ or } \pm\sqrt{3}$$

7. Let $10x = \text{No. of men}$ $\therefore 5x = \text{No. of boys}$. Before the withdrawal the workers were equivalent to $12x$ men, after the withdrawal to $12x - 14$ men, and on 'supposition' to $15x - 20$ men. Let $N = \text{No. of days the piece was in finishing after the withdrawal}$

$$\therefore 12x(N-7) = (12x-14)N = (15x-20)(N-3\frac{1}{2})$$

$$\therefore N = 6x$$

$$\therefore 2x(6x-7) = (3x-4)(5x-3)$$

$$\therefore x = 4 \text{ or } 1.$$

The latter value would make $N-7$ negative and must therefore be rejected.
Ans. 40 men and 20 boys.

8. Obtained at once by actual multiplication, or thus; by the Binomial Theorem

$$a = \frac{t}{t+1} \cdot \frac{m-t}{m-t-1}$$

$$b = \frac{m}{t+1} \cdot \frac{m-t-1}{m+1}$$

$$c = \frac{t}{t+1} \cdot \frac{m-t}{m-t-1}$$

$$\therefore a+b = \frac{t}{t+1} \cdot \frac{m-t}{m-t-1} + \frac{m}{t+1} \cdot \frac{m-t-1}{m+1} = \frac{t}{t+1} \cdot \frac{m-t}{m-t-1} = c$$

NOTES.

$$1. (c). \quad 1^0. \quad (m-n)^2 = m^2 - n^2 - 2mn(m-n).$$

$$2^0. \quad \text{If } y-z=c \text{ and } yz=d$$

$$\therefore y+z = \sqrt{(c^2+4d)}$$

3. It will be seen that the gain is reckoned in FAST SECONDS and the loss in SLOW SECONDS or that, when the watch was gaining, the minute-hand over-matched not x seconds of time, but x -seconds-spaces per

hour of true time, and that, when losing, x second-spaces per hour were under-marked; thus the words "at such a rate, &c.," are interpreted $1W=1, w$. The SLOW at midnight is reckoned in TRUE SECONDS. A similar confusion of true and clock seconds, or of time and second spaces occurs in the solution of Prob. No. 2, by Mr. Birchard in the August No. of the *Journal of Education* as also in a solution in BLAND'S Algebraic Solutions.

$$6. \text{ Since } \frac{1-r^n}{1-r} = 1+r+r^2+\dots+r^{n-1}$$

$$\therefore S = a \frac{1-r^n}{1-r} = a \frac{r^n-1}{r-1}$$

$$\text{Also } \frac{r^8-1}{r-1} = \frac{(r^4+1)(r^2+1)(r+1)(r-1)}{r-1}$$

8. This looks very like proving the IV of Euclid by the use of the XLVII.

ARITHMETIC—SECOND CLASS—BY J. S. CARSON, ESQ., HEAD MASTER, STRATHROY PUBLIC SCHOOLS.

1. Ordinary book work.

2. Let $1 = \text{Number}$.

Then $1\frac{1}{2} = 20$ per cent. added

$$\text{Ans. } \frac{116\frac{2}{3}}{100} \times 1\frac{1}{2} = 280.$$

$$\therefore \text{Number} = 200.$$

3. $20 \times 12 = 240$ equals time required for one man.

$240 \div 120 = 360$ equals time to do half as much again.

$$360 \times 5 = 1800 \text{ equal one man.}$$

Then $1800 \times \frac{2}{3} \div 12 = 100$ men required.

4. $\frac{2}{3}$ of cost price equals intended gain

$\frac{3}{5}$ " " " gain realized

On $\frac{1}{2}$ of a lb. $\frac{3}{5}$ cents were lost

$\frac{1}{2}$ of cost price per lb. was thus lost

$$\therefore 3\frac{1}{2} = \frac{1}{2}$$

And cost price equals $83\frac{1}{2}$ cts. per lb.

5. Rationalize the fraction

$$\frac{(3\sqrt{8}-2\sqrt{7})(\sqrt{8}+\sqrt{7})}{(\sqrt{8}-\sqrt{7})(\sqrt{8}+\sqrt{7})}$$

$$= 10 + \sqrt{56} = 17.483.$$

6. Let 1 equal prime cost of goods
 $\frac{100}{100}$ equals first sale

$$\begin{array}{r} 96 \cdot \quad 93\frac{3}{4} \\ \hline 100 \quad 100 \end{array} = \text{Second sale}$$

$$\text{Then } 96 \quad 93\frac{3}{4} \quad 108\frac{1}{2}$$

$$\hline \times \quad \times \quad \times = \$390.60$$

$$\begin{array}{r} 100 \quad 100 \quad 100 \end{array}$$

Prime cost of goods equals \$400.

7- Multiply both terms of the ratio by 12 in order to avoid fractions,

$$3\frac{1}{2} \times 12 = 42 \text{ equals A's stock.}$$

$$4 \times 12 = 48 \text{ equals B's stock.}$$

That $42 \times 5 + 21 \times 7 = 357$ equals product of A's stock and time.

$48 \times 5 + 16 \times 7 = 352$ equals product of B's stock and time.

By proportion

$$709 : 357 :: 7090 : x$$

A's capital equals \$3,570.

$$\text{Again } 709 : 352 :: 7090 : x$$

B's capital equals \$3,520.

5. $\frac{1}{100}$ equals expense of bankruptcy

\$8000 equals loss by creditors of the bankrupt

$$\frac{3}{100} \text{ equals total loss to creditors}$$

$$\frac{3}{100} + \$8000 \text{ equals } \frac{3}{100}$$

Liabilities equals \$26,666 $\frac{2}{3}$.

$$9. 10,000 \times 19\frac{2}{3} = \$1940$$

$$10,000 \times 5\frac{1}{3} = \$1923.07\frac{1}{3}$$

$$\therefore \$1940 - \$1923.07\frac{1}{3} = 16.92\frac{2}{3}$$

10. The flag stones are placed outside the rectangle.

Find length to be paved.

576 feet equals required length

$$576 \times 12.45$$

$$\therefore \frac{\quad}{5.76 \times 4.15} = 300 \text{ the number}$$

required.

11. Find present worth of £1664

$$\begin{array}{r} 8 \quad 1664 \quad 100 \\ \hline \pounds \quad \times \quad \times \quad \times = \text{present worth} \\ 827 \quad 1 \quad 1 \end{array}$$

Find how much stock this sum will purchase.

$$\begin{array}{r} 100 \quad 8 \quad 1664 \quad 100 \\ \hline \pounds \quad \times \quad \times \quad \times \\ 96 \quad 827 \quad 1 \quad 1 \end{array}$$

equals £1676.14 10 $\frac{1}{2}$.

12. 4x equals length.

3x equals breadth

2x equals thickness

$$\therefore 24x_3 \text{ equals } 3000$$

$$x \text{ equals } 5.$$

$$\therefore 4x \text{ equals } 20, \text{ equals length}$$

$$3x \text{ equals } 15, \text{ equals breadth}$$

$$2x \text{ equals } 10, \text{ equals thickness.}$$

SELECTIONS.

OBSERVATIONS ON SCHOOL GOVERNMENT.

In a pamphlet published in 1870 by A. D. Fordyce, Esq., Inspector County of Wellington, we find some valuable extracts from two books published at Boston in 1869, by A. K. Hope. They will be found worthy of careful perusal.

"The Teacher's work is far from being so common-place and ignoble as some people think:—on the contrary, it is one which calls into exercise every nerve and sinew of mental power, and requires the use of the peculiar talents of nearly every other honorable profession. FIRST:—We must be practical Statesmen; we must be able to organize and legislate—we must make constitutions for our little empires, and laws which will not only protect the weak against the strong, but will regulate and encourage

labor, and punish idleness; thus solving the highest problems of political economy. AGAIN—We must be able to drill and discipline our Lilliputian Armies, to give the word of command with decision and promptitude;—to say "Go," to a boy in such a manner that he goes without further question—we require skill and knowledge to handle our columns—we must take care that our officers obey our orders; that our divisions move in due regularity—that the works are not assailed before the out-posts are carried. We must be Lawyers too, and possess the judicial faculty in a high degree. We are daily called upon to preside at criminal trials in which we conduct the prosecution, agree upon the verdict, and pronounce the sentence. And this we have to do upon evidence which can never be

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quite relied upon, and often, upon no evidence at all,—for, except in very heinous cases, the right minded Master will encourage his boys not to allow themselves to be subpoenaed against one another, and will above all, discountenance the practice of laying informations. Our conscience would be like flint, if we could use this tremendous power hastily or unjustly and not feel remorse. It is a good rule for us to cherish a reluctance to condemn, and, to uphold the good old maxim, that an accused person is innocent, till he be proved guilty. But to know proof from suspicion is sometimes hard.

“Who can deny however, that it is the faults of parents rather than of their children, that the conscientious School-master, has, in too many cases, to do battle with? It has been very often my experience, that the father won't take the trouble to manage his boys, and the mother can't; and so for want of a little wise and wholesome restraint, these boys grow up insubordinate, conceited and selfish, a curse to themselves and to others. The parents refuse to believe that their pets can do wrong; they uphold this boy's goodness of heart, and that boy's honesty, with a pertinacity which astonishes the unprejudiced observers of these young gentlemen's conduct. And even if they are obliged by the stern logic of facts, to recognize that their darlings are not at all what they ought to be, they find comfortable phrases with which to palliate the harsh disclosures, and save their beloved ones from the consequences which ought to attend all deviation from the right path. One, when ill-tempered and selfish is declared to have a “peculiar disposition,” and it is discovered that severity does not answer with another—if haply he is discovered pilfering. An affectionate parent once informed me with regard to a new pupil, that I must not be surprised to find that his boy had a “strong imagination.” This, I very soon discovered to be his way of putting the unpleasant fact, that the boy was the most inveterate liar I ever met with. There is no straw of sentiment so small, that consanguineous affection will not seize hold of it to escape the unpleasant, though sometimes necessary duty, of dragging the child out of the way in which he should not go.

“Some parents have not time to train their own children properly; and even if all had time, they have not all ability for it.

Granting the ability to rule, the weakness of human nature often prevents them from being strictly just to their own children. How many parents have I not seen blind to the faults of bad children! How difficult to open their eyes! and even when undeceived, the average parent of the present day seldom acts with due severity,—either because he has not courage to do so, or because he is imbued with the new-fashioned “rule of love” principles. It is certainly hard for a parent to punish his own child justly:—but if parents are unable or unwilling to manage their own children, they might do more to countenance and assist the Master upon whom the task falls. There are some who send their sons to school with as little thought as they send their foals to grass; and, the thing once done, seem much more concerned for the welfare of the latter than the former.

“But just as likely the parents take too much interest in our work. They keep a jealous eye over what we are teaching, which they of course, know more about than we do. They discover that their boys are not getting on fast enough, and remove them to the care of some other Master whom we heartily wish joy of them. Now we are all bigoted believers in ourselves, and have no faith in the systems of others; so it is natural in us to feel some real concern for a boy who is thus deprived of the enormous advantage of our teaching, and given over to be ruined, as we think, by an inferior workman. So this is one of the chief annoyances of a Schoolmaster; and in the present state of things, I fear we must just bear it with as little complaint as possible. I suppose parents must have some interest in the education of their children, and must be allowed to take whatever steps seem best to them, to secure their being brought up to be wise men:—only one can't help wishing sometimes, that the parents were a little wiser themselves. Of course, this boy's father and mother have a right to take him away from my school and send him to another Master; but as I think I am getting the boy's young ideas to shoot in a most satisfactory way;—and as I consider the master he is sent to, to be ignorant and conceited, and remember the day when he was himself a pupil of mine, and how he blundered, I can't help feeling annoyed by the change. Then the parents interfere with our discipline and question

our infallibility. If a boy has told a downright falsehood, and I give him a due flogging for it,—the chances are, that I have his mother down on me next day. Her boy never told a lie; I must be mistaken; he must have been cruelly slandered;—in fact I have been acting like a brute and a tyrant. These doctrines find favor with the young gentleman himself, and of course my authority over him, is to a great extent, gone.

"Boys can't be properly trained without a wholesome amount of due restraint and correction, but it should be our care that this be made as small and as little galling as possible. It should be—but is it always? For instance, I know a school where the boys are troubled by a chronic and constant state of humanitarian punishment. Mostly all of them are kept inwardly groaning from morning to night, under a shower of vexatious impositions and detentions, which don't do much in the way of deterring them from mischief, but a great deal in the way of spoiling their hand writing and souring their temper. I once ventured to hint to the master of this school, that it would be a good thing if he were to clear the air with an occasional thunderbolt in the shape of a slight flogging, which, in my experience, has more influence on the minds, and less on the spirits of boys than any other kind of punishment. By punishing in this way, I suggested, a boy who hadn't learned his lesson, or had played in school, might have a fair chance of learning his lesson next time, or playing at the proper time and place. Yes, we may correct our boys if they deserve it, always with justice, discretion and sympathy, and they will not be much troubled, but will take it all in good part, knowing in their hearts that we do well—but, let us take heed that we add not to their troubles over much, by hasty and foolish decrees, by cross looks and scornful words, by unjust actions and unkind restraints, by over strictness and over indulgence—yea, by allowing them to sin and thus causing them to sorrow.

"I have found that boys are very much as they are treated. If you are too easy and indulgent with them they will take the reins into their own hands, and lead you a pretty dance after them. If you are too strict and exacting they will become sly and cunning; but if you treat them with firmness and discretion you will have no difficulty with most. Boys appreciate being ruled like reasonable beings. They will obey a strong despot whose only law seems to them his temper and caprice; but they will obey with far more readiness and cheerfulness, a constitutional monarch, who shows them clearly how the principle of his rule is the common good of all. Boys know very well that they sometimes do wrong and deserve to be punished, and the discreet master will make good use of his knowledge. Furthermore he will not frown too severely on every little fault, but will keep his real thunderbolts for heinous sinners. He will say to his boys in effect: "I know that you are naturally prone to laugh and chatter, and play tricks, and make grimaces, in season and out of season; and you know that I am here to make you do something more useful though less agreeable at certain times and places; and you know too that if I did not make you do this, I should be a humbug. I know moreover, that you are willing enough to believe me, and to do as I wish you; but I know that you are unsteady of purpose and weak of memory; and therefore, when you forget or fail to obey me I shall feel myself under the necessity of stimulating your will and memory by some simple means. And I expect you, on the other hand, to take it all in good part, and to believe that it is no pleasure to me to see those little hands clenched in pain and those little lips working hard to repress your feelings. So, let us think no harm of each other, but both agree to hate and scorn whatever is mean, or foul, or dishonest, whether in man or boy." Such an appeal as this will not be found to lack a fitting response."

THE SEVEN LAWS OF TEACHING.

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

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

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

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

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

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

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

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

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

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

1. Know thoroughly and familiarly whatever you would teach.

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

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

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

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

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

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

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

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

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

value of these principles. To those who are not thus teachers by nature, the knowledge of these laws is of inestimable advantage.

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

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

It seems self-evident that one can not teach without knowledge, but it needs some reflection to show that this knowledge must be thorough and familiar. Knowledge has its degrees. It is of all grades, from the first dim and partial apprehension of a fact or truth, to the full and familiar understanding of such fact or truth in all its connections—its philosophy, its power, and its beauty. We may know a fact so as to recognize it when another tells it; we may know it so as to be able to recall it for ourselves; we may know it so as to describe it in a general way to a friend; or, finally, we may know it so fully and familiarly that we can clearly explain, prove and illustrate it, as a truth whose importance we feel, and whose beauty or grandeur inspires us. It is this last form of knowledge which our law demands. Such knowledge is indispensable to him who will teach with the highest success.

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

1. A truth which is only partially known never reveals its deeper connections, and its thousand beautiful analogies to other truths. It stands alone, dry and barren. The eye catches no fine resemblances, and the understanding finds no fruitful relations

linking it to the great body of truth. The imagination looks in vain for the rich and beautiful simile to transfigure a fact seen only in dim outline, or known only in shapeless and imperfect fragment. The power of illustration—that central power in the teacher's art—comes only with clear and familiar knowledge.

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

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

4. Finally, ready and evident knowledge exhibited by the teacher awakens a needful

confidence in the mind of the pupil. We follow with eager expectation and delight the guide who knows thoroughly the field we wish to explore, but drag without interest after one whom we suspect to be an ignorant pretender. Children always object to being taught by one whom they have found to be ignorant or unready in their lessons. Nor is this all. Just as the great scholar creates interest in the science which clothes him with so much renown—just as the learning of Tyndall awakens in us a longing to know more of those physical phenomena which he studies with such zeal—so the ripe and radiant knowledge of the well-prepared teacher of the Bible will kindle in his class the active desire to know something more of the book which so absorbs his study.

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

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

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

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

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

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

5. Seek for the relations of the lesson to other lessons already learned, and to the

life and duty of the learners. The vital force of truth lies in its relations. It is the passage of the electric fire along the distant connected wires which makes the telegraphic apparatus important.

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

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

Some go further even than this, and assume that it is the children's work, not theirs, to study the lesson; and that with aid of the book in hand they shall be able to ascertain easily enough if the children have done their duty. Others look carelessly or hastily through the lesson, and conclude that although they have not mastered its meaning fully, they have at least gathered enough to occupy the hour; that any more knowledge would be useless for that occasion, and that they can, if needful, eke out the little they know with random talk or some story. Others still, lacking time or heart for the labor of preparation, carelessly dismiss all thought of teaching anything, and content themselves with such exercises as they can find to fill up the hour, hoping that as the school is a good thing, at any rate, the children will get some good from their mere attendance. Thus a majority, perhaps, of teachers go to their work either wholly without the requisite knowledge, or only partly prepared, and the grand fruits we look for from this great army of workers seem long coming, if not beyond hope. Let this first great fundamental law be fully obeyed, or even as fully as the circumstances of our teachers permit, and we should import into our schools an attractive power that would at once more than double their usefulness, and give an irresistible charm to their exercises.—*Dr. Gregory, in National S. S. Teacher*

HOW TO GET AN EDUCATION.

1. *Resolve to have an education.*

"Where there is a will there is a way." Says Burke: "The lovers of Wisdom will be wise." Mathews says: "If a person does not obtain an education, it is a proof that he did not intend to have one."

2. *Go to school if you can.*

A person can learn better at school than he can at home. At school, study is business. In study, method is everything. The best teachers can show the best methods.

3. *Use the spare moments of time, when not at school, in gaining information.*

"Elihu Burrhitt acquired a knowledge of eighteen languages by improving fragments of his time while working as a blacksmith."

"Franklin became one of the wisest men of his age, by studying during the fragments of time, while engaged as a printer."

4. *Give undivided attention when you study.*

"Genius," says Helvetius, "is nothing but continued attention." Dickens says: "The one serviceable, safe, certain, remunerative, attainable quality in every study, is the quality of attention. My own invention, or imagination, would never have served me as it has but for the habit of patient, daily, toiling, drudging attention."

5. *Be thorough.*

Sir Edward Sugden, being asked the

cause of his rapid rise in his profession replied "that when he learned a thing once, he learned it forever."

6. *Let no day pass without learning one new truth.*

The largest fortune is made up of cents; the highest mountain is composed of grains; the widest ocean is formed of drops; the greatest store of learning consists in individual truths.

7. *Do not get discouraged.*

"A solid character is not the growth of a day. The mental faculties are not developed without long and laborious culture."

"No one knows how much he can do till he has tried."

It is not talent that men lack, but purpose.

8. *The three steps in gaining an education are Intention, Attention, and Retention.*

You must intend to get it; you must attend while getting it; you must retain as you get it.

Dr. Arnold declared that "the difference in boys consists not so much in talent as in energy."

Sir Thomas Fowell Buxton says: "The great difference between men, between the great and the insignificant, is energy, invincible determination, an honest purpose once fixed, and then death or victory."—F. A. Cooper, in *National Normal*.

KINDS OF PUNISHMENT.

In a recent article I tried to explain the object of punishment. It is my object in this article to point out and classify, for the benefit of young teachers, the principal kinds of punishment used in schools with some general remarks respecting their use.

We find in our schools a great variety of pupils who, to a greater or less extent, are committing a great variety of offences, while the same offence is committed in different degrees of intensity. There must, therefore, be a great variety of punishments, and they must be inflicted in different degrees

of intensity. The right adaptation of different punishments in the right degree to different offences and different pupils, calls for the highest wisdom and the best judgment that the teacher can command. It is constant steering between Scylla and Charybdis in order to reach the object never fully attained, viz., the prevention of wrongdoing.

The punishments commonly inflicted in schools may be classified under four heads: 1. Those that disgrace. 2. Those that impose a task. 3. Those that deprive of some

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privilege. 4. Corporal punishment. This may not be a perfect classification, but it is a convenient one.

1. *Punishments that disgrace the scholar.* Any kind of punishment is a disgrace, but some kinds are particularly so. The following are examples:—Requiring the pupil to stand on the floor, or on a dunce block, requiring him to sit with one of the opposite sex, giving demerit marks, announcing his name to the school, writing his name on the blackboard, looking steadily at him until the eyes of the whole school are upon him, sending word of his misconduct to his parents or friends. Some of these punishments are valuable and some are not. Many of them may be used, if done wisely. The teacher must remember that some natures are so hardened as to have no sense of disgrace under any such punishment, while others are so keenly sensitive that some of these punishments would almost crush them.

2. *Punishments that impose tasks,* such as performing a certain number of examples, learning an extra lesson, bringing in wood, sweeping out the room, repairing injury to property, etc. These punishments are sometimes effective with lazy scholars, but teachers should be very careful how they make a *study* a punishment. It is only with rare natures that it can be made a reward, but it can, at least, be kept out of the sphere of rewards and penalties.

3. *Punishments that deprive the scholar of some privilege.* These should be used by the teacher more than all the others put together. The extreme punishment under this head is to publicly expel the offender from school. This should be done when necessary, but only when other means have failed. Lower degrees of this punishment are, privately to dismiss from school, to suspend for a time, to refuse the privilege of reciting with one's class, to refuse permission to whisper or leave the seat for a certain time, to separate those who wish to sit together, to keep in at recess or at noon

or after school; in short, to take from the scholar whatever may be considered *by him* as a privilege in connection with the school. If he does not wish to go out at recess, it will be no punishment to keep him in. The teacher must consider not what the scholar *ought* to regard, but what *he does* regard as a privilege.

4. *Corporal punishment.* The following are some of its forms; Furling the hand, using a rod on the back or on the legs, striking the ears with the hand or with a whalebone, shaking by the collar, obliging the offender to stand on one leg or to hold a weight in the outstretched hand. Some of these are cruel, and should never be used.

Objections can be urged against all these different kinds of punishment, but, in regard to most of them, the objections are valid only so far as they are directed against their abuse. The truth, in regard to corporal punishment, seems to be about as follows; The parent undoubtedly has the right to inflict it upon the child, answerable, of course, to the law for any abuse of the right. The teacher stands *in loco parentis*, in the place of the parent, and has the same right, unless forbidden by law, as he is in some parts of the country. Like the parent he is answerable to the law for an abuse of the right. But the right should be used sparingly and carefully. Great care should be taken not to injure the body. No offence will justify the teacher in striking a child's head. The punishment should be inflicted with kindness, and in such a way that you will be sure of having the sympathy and support of the school, or of the better part of it. Otherwise nothing will be gained. The fear of bodily pain is the lowest motive that can be used with a child. It should be the lowest motive. Corporal punishment should be evidence that the child is a very hard case or that the teacher is.

R. T. Cross, in *National Teacher*.

THE SELF—CULTURE OF THE TEACHER.

Ruskin says that a man entering life ought to know three things : "*First*, where he is ; *second*, where he is going ; *third*, what he would better do under the circumstances. The man who knows these things, and has his will so subdued in learning them that he is ready to engage with heart and soul in just what he knows he ought to do, I shall call educated." Hanson Cox says, "To answer these three questions, Where am I ? What am I ? Why am I ? comprises the entire circle of human knowledge."

It will be readily admitted, I think, that these definitions of the work of an educator are substantially correct. Such a division marks the three great steps in an educational process ; and yet these parts are, and can not be, entirely independent of each other. It would be impossible fully to comprehend the one without much knowledge of the other, so intimately are they interwoven. They are like the net work of rings in Persian tapestry, where each circle is but a portion of the intricate series, and from which it can not be separated without dismembering the whole.

Following the order above indicated, we may conclude that the work of education is, *first*, material or objective ; *second*, mental ; *third*, spiritual. Education which, as its derivation implies, means the art of developing the mind, of assisting it to grow, must start with the natural, the ignorant, the raw material. The educator is to lift the individual out of this state of nature as quickly and effectually as possible. From animal instincts and sensibilities, enthralled by physical necessities, he must be raised to the status of a reasonable being, who looks before and after ; who, subordinating all nature to the service of the spirit, is endued by such a spirit that, in all his after life, he shall not help to make up the three-fourths of all the people in this world, who move on simply by the unavoidable friction caused by the other one-fourth in passing them. It is the object of the teacher to enlist others for the true life ; to fit them for the intelligent observation and performance of all that is good and true. His aim is to enable others to bring their talents and powers to the highest perfection.

Nothing, therefore, is of more importance to the teacher than *self-culture*. He can give to others only what he has himself. He can form in others only what has been formed in himself. We can influence and guide others only so long as we are working for our own advantage in knowledge and character. The school must always be a place where we school ourselves ; and all our lives, whatever we see, hear, or experience, must be a means of our own education and enlightenment. Thus the teacher should ever be a student, and then, because he is growing, he will kindle in the breast of his pupil a spirit of growth. When animated by a lofty faith, all his pupils will reflect his steadfastness and earnestness. The self-culture of the teacher excites, in the most ready way, the powers of the pupil to self-activity. Not what the teacher does for the pupil, but what the pupil is made to do for himself, is of value. Thus the pupil learns the great lesson of industry and self-reliance, preparing himself for the life of a free man in a free state.

This idea has so unfolded and realized itself, that everywhere and always we are impelled by it to throw responsibility on the individual. The sooner we can make the pupil able to pursue his course of culture for himself the sooner our object is accomplished ; for to give the pupil the "tools of thought," as the first outlines of culture have so aptly been called, is our province. In short, our aim should be to rouse the mind to action, to quicken its energies, to stimulate and accustom it to healthy activity, to show it the means and way of discipline and information, and then leave it free to carve out its own destiny, with God, conscience, and the love of truth for its guardians and teachers.

What teachers are needed for this work ? Not cramping, formalistic pedants, who stifle all enthusiasm, and lofty aspirations in the soul of their pupils ; but true, living teachers are demanded. Not those who sacrifice the noble aims of true education, which are of universal and eternal value, to the propagation of a set of opinions, for the sake of personal interest. The time has been, no doubt, when pupils were kept

from absolute mental famine by the few grains of wheat with which such chaff and tares were immingled. We believe the time is come when a purer and more nutritious food is to be offered to the on-coming men and women of the land. Education is a living, growing process. No idea of it can be mapped out, circumscribed, and limited by fixed lines, creeds, or formularies. It can not be measured, or definitely laid out, like the angles or the sides of a crystal. No individual can lay down the exact path which a teacher shall pursue. God, who cuts no two leaves upon a tree after the same invariable pattern, shapes also our soul-work after his own will variously.

The self-culture of the teacher, joined with the attempt of inducing self-activity on the part of the pupil, tests and tempers the mind forming and moulding it to more reflection and higher purposes. Thought leads to action, and action to the evolution of still better thought. The mind reviews and rearranges the knowledge it has gained; its latent powers are developed; the character is strengthened and eventually harmonized and beautified. Such a character will grow with its years more richly creative, more freshly individual.

Having noticed casually the gain in the growth of individual minds by the self-activity of teacher and pupil, let us glance at the duties, we as teachers, owe to the state. The schools are established by the state not for the sake of the teachers, but for the lessons taught. A state wants productive citizenship, as her choicest heritage, and in the education, culture, character, and moral worth, of those who shall partake of her liberal behests she is to find and realize the fruition of her hope. The development of vigorous, capable, and cultivated human beings, armed with facts and principles as a propelling power on the track of

a .ll-directed industry, is the prominent need of the times. The state furnishes the means for sinking the mine-shafts, for smelting the ore, for building the steamboats and railroads, but labor, individual labor, plies the pick and shovel; packs the powder and applies the match; builds and tends the fires; works the iron for shafts or driving wheels; runs the engine and pilots the craft.

Labor fits the foundation stone of the warehouse or factory; adjusts the girders and lays the floor. Can the state afford to have the laborer, to whose hands the slowly accumulated gains are trusted, a simple tool? Can the state afford the waste of material inevitably resulting from unskillful workmanship? The depreciation of value which follows in the train of ignorance? Only where science leads the way, announcing the laws to be obeyed, and intelligence yields a ready and willing submission to her commands, can economy of material and thrift be the result. It is, therefore, the duty of the teachers to the state to impart the only real knowledge which has life in it, viz., that may be transmuted into practical power, and bless alike its possessor and the community. This duty can be more readily accomplished by the appreciative cooperation of teachers, for fellowship of teachers is the sunlight of development and growth. The sharing of gifts and talents multiplies their value.

It is left for this country to make the common man rich in conquests over the material world; and not only this but over the world of mind, the heritage of culture—the realized intelligence of all mankind. In making this the object of our lives as teachers, we shall grow into new insights into truth, for it is one of the beautiful compensations of this life that no one can sincerely try to help another without helping himself.
—Eva V. C. Lin,—in *National Teacher*.

THE GERMAN SCHOOL SYSTEM.

Every child from the age of six to fourteen is, in Germany, required by law to attend a school. Infant schools (Kinder Garten) sometimes give a sort of instruction, gymnastic and musical, at the age of four.

The German educational system includes three distinct grades—the Primary and

the Secondary Schools and the University. The first includes the Elementary School and the Vor-schule (preparatory); the second the Gymnasium and the Progymnasium, the Real-Schule and the Higher Buerger School; the third the Polytechnic Academy and the University proper.

Friedrich August Wolf, who came to Halle in 1873, under Frederick the Great, has the reputation of having renovated, and given its present high standard of excellence to, the Prussian (and through them to all German) public schools. The term Gymnasium was first uniformly given to the classical secondary school in 1812; the terms Lyceum, Latin School and College having previously obtained. The Real-schule, in its present form, dates from 1859. The name was first given at Halle to a school established in 1738, by Christoph Semler. The first successful school of this kind was founded in 1747, at Berlin, by Johann Hecker, but only succeeded in its peculiar province in the present century. In 1832 the Government made it a part of the machinery for public instruction. The province of the Primary School is to teach the fundamental branches of study, and the laboring classes usually begin and end their education in them; the second four correspond in rank to the American College. The Gymnasium (and its abridged form, the Pro-gymnasium) proposes a broad and liberal culture, giving prominence to the classics; the Greek and Latin; while the Real-schule and its abridged form, the Buerger-schule, neglect Greek entirely, give a little Latin, substitute in their place the modern languages, and, having practical ends rather than culture in view, give the prominent place to mathematics and the Natural sciences. Crowning the educational system stand the Polytechnic Academy, the School of Art (the goal toward which the studies of the Real-Schule point,) and the University proper—which teaches pure science, and in its four departments of Law, Medicine, Theology and Philosophy, proposes to give a broad and deep science pre-requisite to the successful professional career, or the pursuit of original investigation in any of the multiform provinces of human research. Having given this general view, we may give some details.

Children of all ranks usually get the elementary education, from the age of six to nine, in the Elementary School, in which are taught the Bible, the Catechism, Reading, Penmanship, Arithmetic, Grammar, History, Geography, the elements of Natural Science, Gymnastics, Singing and Drawing.

The poorer classes, having in view a life of common labor, and induced by the low

tuition, usually end their education here at the age of fourteen, having acquired but the merest rudiments of reading, writing and arithmetic—an inordinate amount of time being devoted to committing to memory the Catechism with its proof texts and the church songs. The children of the wealthier classes either obtain their preparatory training in the Vor-schule, where the tuition is about triple that of the Elementary school, or else continue with their peasant school-fellows until the age of nine, when they enter the Gymnasium or the Real-Schule, in which the course of study embraces all the rudimentary branches, except the beginning of reading, writing and arithmetic.

The Gymnasium, as well as the Real-Schule, divides its course of study into six grades; the three inferior (six to fourth inclusive) occupying one year each, and the three superior requiring two years each, thus demanding nine years for its completion. This enables the student to finish the secondary school by the age of eighteen or twenty. The studies of the Gymnasium and the Real-Schule differ in this, that the former subordinates all to the classics, while the latter gives the prominence to Mathematics and Physics. Students who have the University in view, usually enter the Gymnasium, while those who are contented with being limited to the study of Philosophy (which does not include Theology, Medicine, or Law) in the University, or who would enter the Pyrotechnic Academy or any profession, except the three above excluded, usually enter the Real-Schule.

In the Gymnasium, Latin demands, weekly, ten, and Greek eight hours; while in the Real School Latin occupies five, and Greek is wholly superseded by the modern languages—French being studied during seven and English during five years, each during four or five hours weekly. Zoology, Botany, Mineralogy, Physics and Chemistry are thoroughly taught in the Real-Schule, while they are omitted in the course of the Gymnasium. In Mathematics and Drawing greater proficiency is expected of the Real Scholar. Hebrew and English are optional in the Gymnasium. In both these schools theological instruction occupies two or three hours weekly, also General History, Gymnastics and Singing.

When the Real Scholar or the Gymnasiast has satisfactorily completed the prescribed

course of study, by the age of eighteen or twenty, he usually passes the *apitureaten examen*, or "leaving examination." This is held under the direction of the Provincial School Adviser, by the teachers of each school respectively.

CHOICE MISCELLANY.

THE OLD SCHOOL HOUSE.

By T. HAGAN, INGERSOLL.

It stands, yes, stands in my memory yet,
With its cottage roof and corners set,
And door just placed midway between
The gable sides which fac'd the green.

The old playground so unconfined
Save on the east the board fence lined,
Upon whose summit we sat so free,
The dear old pupils of Sixty-three.

Not then did cares our light heart sway,
But we frisked as blithe as the lambs of May,
And felt not cold, nor heat, nor rain,
Much less the pangs of a winter's pain.

It stands, yes, stands as it did of old,
The benches set and maps to fold,
With a row of desks to line each side,
All cut and defaced with the knives we plied.

And yet one portion does still remain,
But not, alas, in all the same,
For he who taught us with gentle rule
Has long, long since given up the school.

And do I not fancy I see him still,
With mild survey and honest good will?
Yes, yes, he stands forth in my memory yet,
As the kind hearted teacher that first I met.

—"The ancient Egyptians slept with the head supported on an iron bar bent to receive it."

—The dust of the puff-ball (lycohedron) appears under the microscope to be the seed of the plant. Each seed is a tiny ball, of an orange color, perfectly round, and in diameter not exceeding one-fiftieth part of a hair's breadth. If, then, a globe of any substance were taken having the diameter of a hair, it would be 125,000 times as large as one of these seeds.

—Dr. Thompson made the following curious calculation upon the divisibility of matter. He dissolved one grain of dry nitrate of lead in 500,000 grains of water and then passed through it dry oxygen gas. The liquid became discolored by the black sul-

phide of lead thus formed. A drop of this solution we may suppose to weigh one grain. This may be easily spread to cover one square inch of surface. Under a microscope we can easily distinguish one-millionth of a square inch. The water could therefore be divided into 500,000,000,000 parts, each part containing some lead combined with sulphur. In this quantity there must be at least one atom of lead and one of sulphur, whose combined weight is only one-five hundred trillionth of a grain, while the bulk of lead rendered visible by the above process is only 1-888,492,000,000,000th part of a cubic inch.

—DIRECTIONS TO A CLASS IN LETTER-WRITING.—1. Write your letter upon your slate or on some scrap paper.

2. After having written it, look it over carefully, and correct such errors and make such additions or erasures as you can.

3. Copy this neatly with ink upon a sheet *note or letter* paper.

4. Never send a letter to any one written upon foolscap or scrap paper, or written with a lead pencil.

5. Never write your letter upon gaudy paper or with red ink.

6. Always begin the letter upon the first page of the sheet.

7. Always send the whole sheet; even though you write upon the first page.

8. If your letter fills up two pages, write upon the first and third pages. If it should run over the third page, fill next the second, (writing lengthwise, rather than crosswise,) and finally the fourth.

9. It is the best to write four pages consecutively, if you expect to write so much.

10. If preparing a letter for publication, write on only one side of *half* sheets, and number the pages. Place the date and Post-office address at the bottom and to the left of the signature.

11. Fold the note paper twice, laterally, into three equal folds. If the sheet be too wide to go into the envelope folded thus,

then fold once laterally and the second time lengthwise, adapting its length by the first fold and its width by the second. If letter paper, fold once laterally into two equal folds, then twice lengthwise. By the first fold suit the length, by the second and third the width of the envelope.

12. Always make the folds square and close. When folding a sheet begin with the letter laying on the fourth page, always folding the first page in. If writing is exposed on the fourth page so that it might be read through the envelope, place over it a neat slip of paper.

THE FIRST DAY OF SCHOOL.—1. Prepare for the commencement of your school, if it is possible, by securing a clean and attractive school-room. Rather do disagreeable work with your own hands, or use money from your own purse, than receive your pupils in an untidy or unattractive room.

2. Do not forget that first impressions are lasting. So trivial a thing as the careful arrangement of the hair, or the adjustment of a fresh ribbon or dainty flower, may win young hearts and begin a friendship which will not soon end.

3. In our ungraded schools, names and classification can best be obtained by calling out one class at a time and having a kind of informal recitation. Everyone will then do something, and the wearisome first day will seem less like the meeting of some mutual-admiration society.

4. Instead of a multitude of small classes, one large one is preferable, even if a uniformity of books can not be secured. Assign a topic for the lesson, and allow facts to be obtained from any reliable source. For instance, a class in geography might begin with the State of Michigan—its boundary and rivers, followed by its lakes, minerals, and animals; and that by its towns in order of size, and rail-roads, or its area, population, etc.

5. Instead of spending an hour in laying down rules, wait till there is a necessity for a rule, when it can best be made known and will be much longer remembered.

6. The teacher will find it a relief to the entire school, if he vary the tedium of examination and classification by reading some entertaining and instructive sketch or singing a few well known tunes. He might also inspire confidence in himself by preparing an interesting object lesson for the

little folks while the older ones are preparing a short lesson. In the same way he could interest the older ones, and make them feel that the day is not lost, by a short time spent in oral instruction on some such topics as color, ornamentation of ourselves and surroundings; the different presidents of the United States, some of our common animals, the movement of the earth and its moon, and consequent placing of the circles of the earth. In short go to the school-room the first day armed with interesting stories, rousing songs, cheerful looks, and kind words, and other more common weapons will not be needed.

METHODS IN GEOGRAPHY.—Among the pleasantest is that of allowing the pupils to make imaginary journeys through the countries they are studying. For instance, if the geography of the United States was being studied by a class, each pupil might have a section assigned to him, and his journey confined to that. He must tell in what manner he travelled, by land or by water; what was the appearance of the country; what crops were cultivated; what manufactures carried on; what cities; were there any natural curiosities; where was the scenery most beautiful; are there any places of historic interest, etc., etc. This account may be given orally, or prepared as an essay. It should be accurate in its details, though much freedom may be given to the fancy in descriptions. A pupil once described her journey to South America so naturally, that her companions asked to see her preserved specimens of the magnificent ferns she had referred to. In preparing them, railroad maps and gazetteers should be used as the foundation, and with this weave in the descriptions of travellers, which are so frequently found in the periodicals.

Another very fresh exercise is to select some place of interest, as Niagara, Yosemite, the White Mountains, and let each one find out all he can about it, and, if possible, bring a stereoscope with views, or any other representation, and spend the recitation hour in familiar talk about the place.

Again prepare a list of the celebrated works of art and noted buildings in the country you are studying, and let the class find out about them.

These few exercises will suggest other similar ones, by means of which the whole

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subject can be made to wear a newer and fresher aspect. Besides fixing geographical facts in the minds of the pupils and lifting them from the dust of dry details into an atmosphere of freshness and reality, it will be found useful in two other directions, equally important. They will be obliged to use their own language, thus cultivating their powers in that direction, and enabling the teacher to give essential aid on much neglected points. You will also be able to cultivate a literary taste, by using such standard works as Scott's beautiful descriptions, Bayard Taylor's travels, and inspire in the minds of your pupils a taste for instructive reading, and a liberal and comprehensive knowledge of the countries of the earth.—*Connecticut School Journal*.

—Shallow scholarship is the bane of this country. We do everything in a hurry, and scarcely take the time to do anything well. Nowhere is this evil greater than in our schools. We hurry our pupils through their books, through their studies, through their classes, through the schools, and into this fast life we are living. We skim the surface of knowledge, but few of us ever dive beneath it. There is not one school in ten in which there are not many children advanced beyond their strength. They are studying more branches than they can master, studying lessons too long for them to learn thoroughly.

Teachers make your lessons short. If so, you will have them well learned. Your pupils will come to the recitation in cheerful spirits. They will recite well. They will go from it determined to master the next lesson. They will be eager to learn any fresh matter you may add to that contained in the text-book. They will grow intellectually day by day. If, on the contrary, you *must* hurry them through the book by giving long lessons, you will have poor, dragging recitations; your pupils will soon lose their heart and health; their zest for study will leave them, and their mental stomachs will refuse to digest the food you cram into them.—*Pennsylvania School Journal*.

—A very good substitute for a ventilator is the following. Fit a narrow board into the window frame beneath the lower window sash so as to raise it about two inches. Let the joints be tight so that no air can come in at any point. There will be a space,

however, left between the upper and lower sashes where the atmosphere can enter without producing currents to inconvenience persons sitting near the window, as the draft will be toward the ceiling. If windows on the opposite sides of the school-room be arranged in this way, a much more satisfactory ventilation will be effected in cold weather than by lowering the upper sash, as is usually done.

—It is curious to notice the difference of condition of the "human flowers," as Froebel loves to call them, in the different schools already in progress in Boston. Miss Garland has under her care the hot-house blossoms—the delicate little fairies who are brought to her by their maids or their coachmen, and who are clad in purple and fine linen. The public kindergarten contains good, hardy, native flowers, corresponding with those which grow out of doors in our gardens, fed by wholesome rain and sun and dew. And the two kindergartens which the North-End Mission has just added to its already noble work, are they not full of weeds—poor, little, vagabonds, wayside thistles? Miss Garland says her great difficulty is to interest her pampered little ones—used to French dolls and unlimited bon-bons—in the simple pleasures of the kindergarten. They are accustomed to so much luxury at home that the pictures and flowers and little ornaments which would be a vision of impossible loveliness to some poverty-stricken child, seems to them, at first, trivial and of small account. But, as soon as their intellects are fully awakened, as soon as they have tasted the pleasures of observation and invention, she has no more trouble. Yet she half seemed to envy the teachers of children who were not the curled darlings of fortune. "It would be so lovely," she said, "to give them their first glimpses of beauty and order—to open to them the doors of a new world." As to the mission schools, one of them is taught by a Roman Catholic, the other by a Protestant; so that for little wayfarers or either faith there is congenial welcome.

One can not go to a kindergarten without becoming enthusiastic about the system. You see these little creatures, so quick, so observant, so inventive, and, above all, so bright and so happy. "How do you punish them?" I asked. "for, of course, being human children, they are naughty some-

times." "They seldom need anything more than the mildest reproof," was the answer; "but when they do, it's quite sufficient to move the offender's chair away from the others, and give him a little sense of isolation."

There will be no lack of trained teachers for this system, for every year Miss Garland has a class of young ladies in the afternoon. She carefully instructs them in her theory and practice; allows them by turns, to assist in the exercises of her own school; and, at the end of a year, she will have abundantly fitted them for their work, provided always that nature has been beforehand with her in giving them a mental and spiritual adaptation to receive her instructions. For let no one think that to teach in a kindergarten is a simple matter, requiring

little culture and less genius. I know of no more exacting occupation. Infinite tact, infinite sweetness, infinite patience, are a few of the requisitions. Wordsworth's perfect woman nobly planned would be none too good for it. But, given the teacher at once wise and zealous, and the parent who understands that to spell words of three letters is not the only or the most important knowledge possible to an infant human being, and we can certainly, by the system of Froebel, make our children thoughtful, reasoning, inventive, and orderly, almost from their cradles; and, above all, we can so quicken and awaken their perceptions as to render them capable of using, to the best advantage whatever opportunities the future may offer them.

EDUCATIONAL INTELLIGENCE.

CANADA.

The South Simcoe Teachers' Association met in convention at Alliston, on Saturday the 29th August. The attendance was rather small, but the exercises were lively and very interesting. Rev. W. McKee, J.P.S., President, occupied the chair. Mr. W. D. Bradshaw Everett, read an admirable paper on History—the Norman dynasty—and illustrated his methods of teaching the subject. Mr. E. E. Fraser next read a carefully prepared paper on School Organization, which elicited considerable discussion. Mr. C. S. McMain then showed his method of teaching Arithmetic to junior classes. Afterwards several Teachers joined the Association, and the usual routine business having been despatched, the convention was duly closed.—Com.

As the arrangement for an admission examination (into High Schools) in June last, appears to have been misunderstood in some localities, notwithstanding the repeated announcements, and as the next examination for admission will not be held till December, the High School inspectors have, at their request been authorized to admit, *provisionally*, such candidates as

may have been prevented from attending the June examination. The attendance of such scholars will be reckoned from the time of such provisional admission, provided they succeeded in passing the regular examination in December, and the date of such provisional admission will be indicated by the inspector.—*Journal of Education*.

EDUCATION IN ONTARIO.—At a late meeting of the National Educational Association, held at Detroit, Dr. J. G. Hodgins, Deputy Superintendent of Public Instruction for the Province of Ontario, read an essay, explaining the Common School system of Canada, which met with considerable favor from the distinguished representatives of American education who were present. His claim that the Canadian system had advantages in the permanence of its school inspectors, and usually in the quality of the men, was generally admitted. The fact that questions of politics have nothing to do with the administration of the schools in Canada, whereas in the United States such issues do creep in considerably, notwithstanding the efforts that are made to keep them out, was very clearly presented, and its importance acknowledged. The fund now established in Canada, sustained

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and enlarged by small annual contributions from the teachers themselves, from the income of which pensions are paid yearly to those teachers who become worn out in the service, and have not the means of supporting themselves, was considered worthy of imitation by the teachers' associations of the United States. It is pleasant to learn that, in a matter as to which some persons would have us believe that the Americans are capable of instructing "all creation" they have discovered that something worth knowing may be learned from Canada.—*Montreal Gazette.*

The Council of Public Instruction, on the report of the Central Committee of Examiners, have awarded First Class Certificates to the following candidates, as authorized by the Act 38 Victoria, chapter 37, section 27. (23):—

GRADE A.—Messrs. Archibald Smirl, Joseph Standish Carson, Morris Johnston Fletcher, Edwin D. Parlow, Robert Kimball Orr (conditional), and John Munro.

GRADE B.—Messrs. David McArdle, T. Leitch, Alfred Goodbow, Charles Andrew Barnes, and David Hannuel.

GRADE C.—Messrs. John Wesley Cook, Alexander Hotson, and Levi Clark (conditional).

In June last the Chief Superintendent, on the report of the Central Committee of Examiners as to attainments, and of the Principal as to ability and aptitude to teach, granted the undermentioned first-class certificates to students of the Normal School, as authorized by section 31 (12).

GRADE A.—Mr. Isaac James Birchard.

GRADE B.—Messrs. Charles Andrew Barnes and Archibald Lee.

GRADE C.—Messrs. Sandfield Davidson and Hugh Alfred Jameson; Misses Emma Carter, Mary M. L. I. Corner, Katy F. Hagarty, and T. Louisa Palmer.

—The last meeting of the Thames Teachers' Association was held at Thamesville. Mr. Harrison, I. P. S., was appointed to the chair.

The forenoon was occupied in discussing the advisability of establishing a professional library in connection with the Association and the best means for so doing; the reception of new members; the next time and place of meeting; and other matters connected with the working of the Association.

A number of resolutions were passed in reference to the recent election of a member of the Council of Public Instruction, among others thanking the *Globe* and other papers for the course pursued in the matter, and cordially approving of Mr. Maxwell's course in the convention at Toronto. The Secretary read a very able and interesting essay on Questioning which elicited considerable applause and seemed to give entire satisfaction to the listeners. A vote of thanks being tendered the essayist, the subject "What are the proper spheres for the deductive and inductive methods of Instruction" was taken up and briefly discussed by Messrs. Maxwell and Harrison, when the subject was laid over to be taken up at the next meeting of the Association.

It was moved, seconded and carried unanimously that, "It appears advisable that the Ontario Association for the promotion of Education be held during the Easter Vacation." The Association then adjourned to meet again in Chatham about the second Saturday in December. The following persons were admitted as members: Messrs. H. C. Arnold, James Beard, E. E. Tait and Wm. Ward.

—The annual Convention of the Teachers of Prince Edward was held on Thursday and Friday, August 13th & 14th last. The attendance amounted to about sixty, and consisted of about equal numbers of ladies and gentlemen.—The Chair was occupied by G. D. Platt, County Inspector.

The first question discussed was "How to secure proper order in school?" upon which a number of teachers expressed their opinions, among others Mr. Robert Carey, a former member, who has lately been appointed Superintendent of schools for the town of Upper Sandusky, Ohio. Upon being compelled to leave the Association during the first forenoon session, a complimentary resolution was adopted and tendered to Mr. Carey, which was acknowledged in appropriate terms. The chief points brought out in the discussion of the subject seemed to be, the need of the teacher showing proper example of order to the pupils—keeping the younger pupils constantly employed—and never to proceed with the work of school while there is disorder. If these only are followed by teachers generally, there will be less disorder in our schools. "Grammatical Analysis," consisted of a

short exercise, conducted by the Inspector, on the different phases of the *infinitive mode*.

In the afternoon the first subject was "Natural Philosophy," in which several questions were explained by Mr. S. M. Dorland. This was followed by "How to teach Reading to Junior classes," introduced by Mr. E. Roblin, and further discussed by Messrs. W. T. Kinney, Youmans and others.

On the second day, the first subject was "How to excite interest in study," introduced by the President and ably discussed by several teachers. "The subject of 'Drawing,' was well introduced by Mr. Sandford Johnson, and formed a very interesting theme for discussion by several teachers. "How to teach Fractions," was next clearly explained by Mr. J. A. Youmans. The subject of "Stock" was then brought forward by Mr. R. B. Mastin assisted by Mr. J. Kinney, in connection with which several difficult questions were explained by Messrs. Dorland, Nethory, J. Kinney and W. R. Brown. The last question discussed was "Object Teaching," which was gener-

ally regarded as a matter of great importance, yet still much neglected in many schools. The practical explanation of the subject was laid over to the October meeting.

The next in order was the enrolment of members and the election of officers. The Association makes an allowance of 25 cts. to each member who subscribes to the ONTARIO TEACHER. About thirty teachers in the County receive the publication.

The following officers were elected: President, G. D. Platt, B.A., County Inspector. Vice-Presidents, J. Kinney and S. M. Dorland. Sec-Treasurer, S. B. Nethory. Executive Committee, Misses. Mary Williamson, Eliza M. in, Sarah J. Brown, Sarah E. Kingston. Messrs. W. T. Kenney, J. A. Youmans. Roblin, R. B. Mastin and P. H. Veil.

The excursion on Saturday was patronized by three hundred, mostly teachers and their friends, who enjoyed the fine trip to the full. The proceeds of the Association was \$66.00. The next convention will be held in October.—*New Nation*.

TEACHERS' DESK.

J. C. GLASHAN, ESQ., EDITOR.

Contributors to the 'Desk' will oblige by observing the following rules:

I. To send questions for insertion on separate sheets from those containing answers to questions already proposed.

2. To write on one side of the paper.
3. To write their names on every sheet.

CORRECT ANSWERS RECEIVED.

WM. BRYCE, Watford, 71.
J. CAMPBELL, Hillsburg, 72.
D. FRANCIS, Mitchell, 72, 73.
WM. JAMIESON, Aberfoyle, 69, 70, 71.
W. S. HOWELL, Belleville, 66, 69, 70, 71, 72, 74.

ANSWERS TO QUERIES.

65. *The* (=by that) is an adverb modifying *more*. This *the* is the old instrumental case of the article *the*, not, as Latham says, the ablative of *that*, for which however, it is used. "*The* is used as the

ablative of the demonstrative and relative with comparatives to signify the measure of excess or defect. *The sooner the better*, i.e. By how much the sooner, by so much the better." ABBOTT, Shakespearean Grammar § 94. *In vain* is what Earle calls a Phrasal Adverb. Others are *at best*, *at worst*, *at most*, *at least*, *at large*; *in earnest*, *in jest*, &c. See EARLE's Philosophy of the English Tongue §§ 445—450. *Vain* an adjective meaning *empty*, *useless*, or as here, *without effect*. A noun may be supplied or *vain* may be treated as a noun equivalent to its adjective force and the noun understood. The latter is the preferable method as the phrase was introduced at a time in which the substantive use of singular adjectives was common.

Former, is an adjective qualifying a very general and indefinite noun understood, which noun is so very often omitted (a common thing with such indefinite nouns when qualified by an adjective) that it is not unusual to call adjectives so used, pro- noun

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truth they are incipient pronouns. *Little* is an adverb modifying *dream*. *By* may be understood, but *little* is here an old instrumental in which case adjectives were formerly freely used as adverbs. *What* is a simple relative (originally an interrogative) pronoun, object of *said*, the antecedent being suppressed. As *what* has never altogether laid aside its 'interrogative syntax' the 'antecedent' if expressed must follow *what* or else *what* must be changed into the common relative *whi*-. '*What*, being simply the neuter of the interrogative *who*, ought consistently to be similarly used. As, therefore, *who* is used relatively, we may expect *what* to be used so likewise. And so it is; but inasmuch as the adjective *which* very early took the force of the relative pronoun, *what* was supplanted by *which* rarely used relatively. Even when it is, it generally stands before its antecedent (transitional use of *who*) thereby indicating interrogative force, though the position of the is altered to suit a statement instead of a question. Shakesperian Grammar § 252.

Good seems to be an adjective used as a noun (really with the noun so long suppressed that the adjective has added its meaning to its own.) *Good* may also be parsed as an adverb (called by Earle the Flat Adverb.) 'Blows good (luck to) nobody' or 'blows good (=well) for nobody.'

Full is an adverb modifying *many*, and equivalent to *very*. We still retain it in 'full seldom,' 'full often,' &c. It was freely used in Early English. *Many* is an adjective qualifying flower. (Compare *multus vir, multa avis*.) This construction has already been discussed in the 'Desk.'

Unseen is a verbal adjective, a quasi-predicate of flower. 'To blush (it being) unseen.'

68. Since $160 = 13^2 - 3^2$ or $10 = 3\frac{1}{4}^2 - \frac{3}{4}^2$

Take a common chain (or tape line four rods long) and fasten the end at A the corner of the lot, measure $\frac{3}{4}$ of a rod down the side, say to B, and there loop the chain round a stake; returning to the front of the lot walk along it until the chain is taut say at C; four times AC will be the side of a square acre.

69. ALL an adjective qualifying a noun understood, or an Adjective Pronoun object of *of*. *Not* a noun equivalent to *The whole*. *Better* is an adjective in the comparative degree predicated of the noun phrase 'To dwell in the 'midst of alarms.'

'It would be better to dwell. &c.'

70. 'To touch some part of his idol. Though he touch nought but its garment.' As is well known Horne Tooke asserted there were in English two words, *but*, of different derivation; the better,

class of modern grammarians, however, reject this view. See Abbott's Shakesperian Grammar Sections 118—130. Mr. Howell of Belleville, sends us the following excellent discussion, (He will pardon us remarking that his 'New Departure' is not new, but is involved in the discussion, whether *BUT* is the imperative or the past passive participle, i.e., whether it means *except* or *excepted*, 'except its garment' or 'its garment being excepted.'

"I must confess no slight inability to treat it thoroughly. It is often true that we teach as we ourselves were taught, and it has become a habit to suppose an ellipsis in any proposition in which the syntactical relations of its parts, are not readily perceived. Consequently I will say, 'He strained . . . greedy to touch, though he might touch but his idol's garment, or, 'though IT SHOULD BE but his idol's garment.' 'The 3rd subordinate conjunction, introducing the dependent proposition 'he might touch but his idol's garment,' adverbial extension of the preceding proposition of which 'strained' is the grammatical predicate.

Eminent lexicographers and grammarians differ so much in relation to 'but' that an ordinary man can scarcely decide what view to adopt concerning it.

Let me say (1) 'though he might touch NOUGHT BUT his idol's garment'; or, (2) 'though he might BUT touch his idol's garment,' or, (3) 'though he might touch but his idol's garment.'

I. Worcester considers 'but' a preposition in 'all but one were lost' and as the above seems to be parallel 'but' is a preposition, but=excepting, holding an adjective relation to 'nought' and followed by the object 'garment,' but as 'garment' seems really the object of 'touch' I cannot agree to the above explanation, however convenient it may be in practice.

II. 'But,' is often considered an adverb signifying only. 'Though he might ONLY touch, &c.' 'But,' ('but touch,') adverb modifying 'touch.'

III. Yet, it seems that instead of modifying 'touch,' it limits the meaning of 'garment,' i.e.; 'touch the garment ONLY,' 'only' would here be called an adjective and why not as well call 'but' an adjective, if it in any way restricts the meaning of 'garment.' 'He might touch but (only) his idol's garment.' 'But,' ('but garment,') adjective limiting 'garment.' This new departure is perhaps as legitimate as either of the former methods of parsing.

Dr. Johnson always considers 'but' a conjunction, and in this case it may so be called without any great stretch of imagination.

'He might touch nought but his idol's garment.' 'But,' (nought but garment.) Co-ordinate conjunc-

tion connecting the two objects of 'touch,'—'nought and 'garment.' This gives 'garment' an object relation to 'touch' which is its evident syntax. 'But' is equivalent to 'no more than' or 'none except' and excludes all else but 'garment,' consequently the antecedent term of the couple connected must be a negative word. And, since 'but' in itself conveys that negative meaning, 'but' is very frequently considered an adverb, by supposing an ellipsis, 'but' can generally be made to plainly appear a conjunction, though the propriety of constantly supplying 'words understood' is very severely censured by some very eminent men. Still it seems here plainer to use to call 'but' a conjunction.

W. S. HOWELL.

PROBLEMS AND QUERIES.

75. If a walking cane AB, 40 inches long be suspended by a string SD fastened to the middle point D, a body hung on at E 6 inches from D, will be balanced by a weight of 2 lbs., hung on at the large end A. If the body be removed one inch nearer to D, the weight on the other side must be moved to G, within 3 inches of D, before the cane will be in equilibrium. Required the weight of the body.

From 'Hutton's Mathematics.'

D. MCFARLANE, Arkell,

76. One-thirteenth of the whole population of a certain village was white; 105 negroes having arrived the whites were then found to be only $\frac{2}{31}$ of the whole. Required the number of whites and negroes in the village at first.

JAMES ROSS, Crumlin.

77. Johnny Stittle of Cambridge, England, compared eternity to a great clock which said 'tick in one century, and 'tack' in the next. Calculate the length of the pendulum.

D. R., Birmingham,

78. What is the difference between a Municipality and a State?

H. T. SCUDAMORE, Florence.

79. Have intransitive verbs voice?

The subject gives rise to a good deal of discussion here, and I think would be of interest to the profession generally.

W. C., Woodstock.

EDITOR'S DRAWER.

—A Correspondent asks us to give the answers to questions in Algebra, Natural Philosophy, and Arithmetic at the recent examinations. They are not at hand just at present, but the answers will appear in the solutions which we commence giving in this No.

—There is a movement now on foot to have the law amended so that there may be an examination in December as well as in July, for candidates for Teachers' certificates. The matter is worthy of being carefully considered and discussed by all parties concerned.

VICTORIA MEDICAL SCHOOL.—We would call special attention to the advertisement of the Medical Department of Victoria University which will be found on cover. This old and well established institution requires no eulogy from us, but we would say that the appointment of Thos. Kirkland, Esq., M.A., one of the most able science teachers in Canada, to the position of Professor of Chemistry, cannot fail to make the Medical Department of Victoria University increasingly successful and popular.