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THE CANADA  
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THE DISCIPLINE OF LIFE AND CHARACTER.

BY PROFESSOR WILLIAM CLARK, D.C.L., F.R.S.C.

PART II.

**B**EFORE proceeding to speak of the features or elements of character, it may be as well that something should be said on our starting point. We all begin with certain postulates, certain assumptions. If these are disallowed, they must be argued elsewhere. So far as they enter into our judgments respecting character and its formation, so far we can expect agreement with our conclusions only among those who begin as we begin.

Briefly, then, let us note these postulates. In the first place, we assume that man is not a mere animal, nor merely a superior kind of animal. Man has a rational and a moral nature which is not found in the brute. Man is made in the image of God in a sense which could not be attributed to the lower animals. Very few will deny this altogether.

But further, man is not in a normal condition. We prefer to state the matter in this form rather than speak of man as a fallen creature. It is not that we deny the doctrine of the Fall; but it is not necessary here to assume any particular theory of man's proba-

tion and failure. The general truth that man is in an abnormal condition hardly admits of dispute. When we examine man's constitution, we see that it is not universally or generally acting as it was intended to act. We see that the principle whose nature marks it out as the master principle is continually cast down and made to serve. We see that the human race, generally, is blighted by selfishness. We might perhaps say that herein is the essence of original sin. Moreover, we all inherit tendencies from our forefathers—tendencies for which we are in no way responsible, but which color our whole character and life. Of this we have spoken already.

Now, if we are to consider our subject under a Christian light, we must take account not merely of human sinfulness, but also of Divine redemption and regeneration. We are a redeemed race and if we are not regenerate, it is because we refuse to enter upon our birthright. It is in Christ and in the family of God that we obtain a clear view of the true nature of human life, and of the

aims towards which it should be directed. In Christ we see the ideal man. In Him we see reason and conscience supreme, while passion and appetite are kept in subordination. We believe that we have here the true starting point and the true centre of a harmonious life. If we begin otherwise, we find discord and confusion. If we assume that our nature is in right working order without Christ, we shall certainly go wrong. He alone can bring us into a right relation to God and to man. He alone can give us power to become and to live as children of God.

When we come to treat of the *features or elements* of character, we might make a beginning in different ways and from various standpoints. We might begin with Love, the root of all moral goodness, or we might begin with Courage, without which no moral principle could have any strength or permanence, or we might start from Truth, without which no other moral quality can have any real existence.

(1.) Let us begin with this fundamental quality of *Truthfulness*. As we have said it is the condition of all moral excellence; and perhaps for this very reason it is not generally numbered among the moral virtues. Yet perhaps it may have been comprehended under the virtue of wisdom or prudence, the first of the four leading virtues enumerated by Plato. However this may be, truth is fundamental. Of whatever quality we may think or speak, unless it is real, it is not good. And by this truthfulness, as indeed is already obvious, we do not mean mere veracity in speech, however valuable that may be, and although that must be a necessary accompaniment, but truthfulness of mind, that simplicity and sincerity which gives a value to all other characteristics, and the absence of which mars every other virtue and grace.

Few of us are able to understand the greatness of the demand which we make when we require of one another an absolute sincerity. "The heart is deceitful, above all things;" and, if all men are not liars, most men are not absolutely truthful. It is useless to dwell upon this. A thousand proofs might be given of the commonness of a certain amount of intellectual and moral falseness. It is sufficient to set down here, with all emphasis, that no one will ever succeed in forming a character of any greatness or nobility in himself or others, who does not strive, with all his might, to give to this quality a foremost place in all his thoughts.

(2.) Closely allied with truth is *Courage*. It is indeed its surest and most necessary bulwark and defence. It is a quality to which all men are agreed to do homage. There may be men who think lightly of truthfulness, who hold that untruthfulness of speech may sometimes be necessary, and who do not place sufficient value upon truthfulness of mind. But we have no reason to think that, in the whole history of the world, any one has thought well of cowardice, or failed to admire courage or bravery. There is no term which we should regard as more disgraceful when applied to ourselves than the name of coward. There are few words which considerate men will hesitate so long about applying to another. It would almost be worse than "Thou fool" of the Sermon on the Mount.

And yet our admiration of this quality does not always lead us to a true judgement of its nature. Many actions which we are at first inclined to put down to courage are really cowardly actions. Many which we deem cowardly are most brave and courageous. It is not always a mark of courage to return a blow. It is not always a sign of courage to give back the hot, angry retort, when you are reviled. Sometimes it may need

courage to do these things. More frequently it needs courage to avoid doing them.

Few names are better known or more famous than that of Sir Philip Sidney. He was a great soldier and distinguished himself in the wars of the Netherlands against the power of Spain. But it is not so much of his bravery as a soldier, or of his skill as a commander that we think, when we recall his courage and magnanimity: it is of his patience under insult. A fool who had quarrelled with him tried to provoke him to fight. When he could not succeed, he went so far as to spit in Sidney's face. What was the hero's response? "Young man," he said, "if I could as easily wipe your blood from my conscience as I can wipe this insult from my face, I would this moment take your life." Which was the truly brave man in that case, the insolent fool or the patient hero? It is an example from which we have much to learn on the subject of courage.

True courage is a mighty power, because it is the symbol of truth and devotion to duty. It is the sign of faith. "Conscience doth make cowards of us all." A man can hardly be courageous, in the true sense of the word, who is not animated by a high principle of action. Take some of the most glorious examples in history. There is hardly a nobler than that of Luther appearing before the Emperor and the princes of the Empire at Worms—a poor miner's son daring, in the name of God, to defy the mightiest power on earth. Nor does he stand alone. Knox, the Scottish Reformer, was harsh and intolerant, but he was a man of heroic courage. When he was laid in his grave, it could be said of him with truth that he "never feared the face of man." It is ever so with the truest and greatest. There can be nothing

great in the man who is lacking in courage.

(3.) Pre-eminent among the greater qualities of character stands *Justice* or *Righteousness*. It is, so to speak, the practical, the active side of truth, and is inseparable from it. "The righteous man" is the grand character of Holy Scripture, and the phrase there means very much what we mean by it. It means the man who is guided by the principles of truth and equity.

By justice we mean, first of all, devotion to duty. No man can be just who does not habitually ask himself what God and man may rightly require at his hands, and who does not live under a habitual sense of obligation to make a practical recognition of the relations which he sustains to others. The neglect of duty is the robbery of humanity. It is depriving our fellow-men of that portion of work which we are morally bound to perform, not only for our own good, but also for the good of others.

By justice we mean the doing to others as we would that they should do to us. It means the steadfast purpose to wrong no one by thought, word, or deed—in person, in reputation, in possessions. It means the willingness, the eager readiness to repair, by every means in our power, any wrong which we may wittingly or unwittingly have done them.

(4.) Close beside justice, and almost as part of it, or as inseparably connected with it, stands *Goodness* or *Generosity*. We sometimes hear distinctions made between justice and mercy, righteousness and goodness; and there is a distinction in thought. Nay, there may be at times a distinction in action. We may concede as an act of kindness that which we do not acknowledge to be a duty on our side, or a right on the side of another. The Bible refers to such a distinction. "Scarcely for a righteous man

will one die," says St. Paul, "yet peradventure for a good man some would even dare to die." We admit the distinction. Yet it may be doubted whether justice is ever found in men unaccompanied by mercy, whether righteousness can live without goodness for its partner. A justice which knows no mercy is the height of injustice. A mercy which has no regard to justice is no true mercy.

There is no quality more noble, more beautiful than this of generosity. In the Latin language the *Generosus* was the gentleman. He was the man who was broad, liberal, sympathetic, in thought, word, and deed. May we not say that this is the truest meaning of the word Gentleman among ourselves? A gentleman is not a man who is dressed in the height of fashion, nor even a man whose education is respectable and whose manners are inoffensive. We are perhaps too ready to say of a man that "he is no gentleman," but even then we very seldom have regard to that which is merely external. We do not mean that he is badly dressed. We do not mean that he does not speak his mother tongue with perfect accuracy or irreproachable accent. We mean that there is something low, currish, ungenerous in the man. Yes, with us, as with the old Latins, the *Generosus* is the gentleman.

What a splendid quality is this generosity of thought, of word, and of deed! The quality which makes us think kindly of our fellow-men, when it is at all possible to do so—the quality which urges us to speak well of them, to praise rather than to blame, when our conscience will allow us to do so—the quality which bids us extend a helping hand to those who need it, and not to grudge the help which is asked—the quality which bids us assume as little as possible to ourselves and concede as much

as possible to others. It is the finest quality in the most beautiful lives; and by God's blessing it has never been without illustrations in any period of human history.

(5.) Among the four leading virtues enumerated by Plato, stands *Temperance*, a quality which not only has a powerful influence on a man's own happiness, but also powerfully affects his attitude towards others. We use the word here in its most comprehensive meaning. St. Paul before Felix reasoned not only of righteousness but of temperance. It is not the same word which Plato uses; but both are employed by Aristotle and with cognate meanings. In temperance we include self-control, abstinence, continence; and signify generally the restraint which should be put upon the passions.

It is not necessary to enlarge upon this subject. Not only will it come up under different heads, but its importance is not seriously called in question. The man who is under the dominion of passion must be a miserable man. In such a character there can hardly be anything good or strong. To young men especially this warning should be uttered: Flee from intemperance and impurity in every form, if you do not wish to be slaves. These things are ruinous alike to body and to soul.

(6.) It is scarcely necessary to add to these qualities the radical grace and virtue of *Unselfishness*: for this is but the negative aspect of Love, and it is the root of all human goodness, as selfishness is the principle of all sin. Selfishness is the parent of falsehood, cowardice, injustice, intemperance, and unkindness. That which we chiefly admire in those good qualities which we have enumerated is the unselfishness, the self-abnegation which enters into them all. This is their basis and root.

What is the most splendid quality

of King David, the man after God's own heart? It was his generosity, his unselfish generous kindness, his forgetfulness of self. Consider, for example, his behaviour to Saul, when that infatuated King was seeking his life. Even the slightest indignity shown to the Lord's anointed weighed upon his conscience; and Saul himself could not help confessing: "Thou art more righteous than I, for thou hast rewarded me good, whereas I have rewarded thee evil." The same character comes out in his refusal to drink the water of the well of Beth-

lehem, because men had gone "in jeopardy of their lives" to procure it.

THE STRONG WILL.—Few realize that the child who is hard to manage has an energy that will make him a living Ære in the years to come. The teacher should wish that pliant girl or boy were harder to manage. It may seem strange, but the pupils of strong wills who learn to endure restraint and to be industrious are the glory of a school; encourage self-manifestation.—*School Journal*.

## GROWTH OF THE CANADIAN CONSTITUTION.

BY W. J. ROBERTSON, M.A., ST. CATHARINES.

THE new assemblies in both Provinces began their work with laudable zeal and wisdom. Slavery was abolished in Upper Canada by Act of Parliament, and in Lower Canada by a Judicial decision, British laws, freehold tenure, trial by Jury, were introduced into Upper Canada—the people of Lower Canada being satisfied to retain French civil law and seigniorial tenure. Roads, bridges, necessary public buildings, such as jails, government offices, etc., were built. Some provision was also made for Elementary Education. For a time things promised well. But not for long. The Provinces were tempting fields for avaricious men; for men with personal ends to attain; for political favouritism, for needless extravagance and the display of petty tyranny. Land Companies were organized in England for the ostensible purpose of aiding in the settlement of the Provinces; they proved to be useful only in preventing settlement, and in plundering the settlers,

men unfitted by early habits for the rough work of colonization found their way to Canada, and soon became established, through family influence in Government offices, which were needlessly multiplied, and extravagantly paid. The irresponsible character of the rule of the Governor and his two Councils was soon felt, but a strong agitation was for the time averted by the outbreak of the war of 1812. In the presence of the foe and invader, political animosities were hushed. To save Canada, at all costs, neither money nor blood was spared. When the colonists emerged from this desperate struggle, it was to find homes destroyed, fields neglected, thousands impoverished, and many families with their bread-winners dead or crippled. The years that immediately followed the war were devoted to the task of repairing the losses inflicted by the Americans; but soon the glaring evils of the Administration of the Family Compact, as the families who monopolized

all power were called, brought agitators to the front. The abuses in the Land Office, the favouritism shown to the friends of the faction in power, both as regards well paid offices and grants of land; the oppressive and paralyzing influence of the Canada Land Company; the would be intolerant rule of the Anglican Church, which claimed to enjoy exclusively the proceeds of the sale of lands belonging to the Clergy Reserves, were keenly felt. The Legislative Council was filled with creatures of the Compact; all offices were at its disposal. Judges sat in this Council; so too did the higher Anglican clergy. No distinction was thus drawn between the body that makes the law, and the Executive that interprets and enforces it. To be a Dissenter was to be open to the charge of disloyalty. In fact, all the evils arising from the government of an irresponsible oligarchy began to manifest themselves. In Lower Canada these evils were increased by a conflict of races and religions. The members of the Executive and Legislative Councils were almost exclusively Protestants, and by way of reprisal, the elected Assembly was soon composed of few but French and Catholics. The bishop of the Anglican Church was a member of the Executive Council, the Roman Catholic bishops were ignored. The education of the Province was placed in the hands of a Protestant institution, and this still further irritated the French. So the two races stood arrayed against each other once more, and the struggle was embittered by the fact of the existence of hostile creeds.

As time passed, and the abuses of irresponsible power became more flagrant, public opinion began to form and express itself through leaders of greater or less wisdom. Robert Gourlay, a somewhat flighty Scotch-

man, began the task of exposing the fraudulent and high-handed actions of the Family Compact. He managed to arouse considerable excitement in the Upper Province, and soon became a mark for the vindictiveness of the faction in power. He was arrested and imprisoned, and it is said the harsh treatment he received drove him partially insane. Finally he was banished from the country and once more the Compact had peace. Still as the abuses did not cease, there could be no permanent quiet and prosperity. The Clergy Reserves question had become a source of keen irritation. These Reserves were one-seventh of the public lands, and the Act of 1791 said they were to be devoted to the support of a "Protestant clergy." This was interpreted by the Executive Council to mean that they were to be appropriated by the Anglican clergy alone. The Presbyterian denomination, however, asserted that as Presbyterianism was the established form of religion in Scotland, it was entitled to share, and this contention was upheld by the English authorities. Eventually the Anglicans, Presbyterians, Methodists and Roman Catholics came in for a share in the spoil. All other denominations were ruled out. The Anglican Church, however, got the greatest share, the Presbyterians next, the Methodists very little. A party now arose in the Assembly that offered strong objections to the Clergy Reserves. It was contended that the land set apart was too great in amount, that it was not properly disposed of, and that instead of being in large blocks it was scattered through the settlements, and thus, paying no taxes and often remaining unimproved, it put serious obstacles in the way of opening up roads, building and supporting schools and other necessary steps in the development of the Province. This party had its chief

support in the Legislative Assembly, and it found a fiery and impetuous leader in a young Scotchman, Wm. Lyon Mackenzie, the editor of a paper known as the *Colonial Advocate*. Mackenzie was elected to represent the most important constituency in the province, the County of York. He had been mayor of Toronto or York; and was able through his paper to make his influence felt in a marked manner. He was utterly fearless in his attacks on the Compact, and, no doubt, was at times injudicious and over-zealous. He soon became the best hated man in Upper Canada. He was expelled 5 times from the Assembly on a charge of libel, and 5 times was elected by his constituents. He then made a trip to England, as the bearer of a petition from the discontented to the British Parliament, and while there enlisted the support of several British members of parliament. It was difficult, however, to bring the British Government to understand the real state of affairs in Canada. Contradictory reports were sent home and a systematic policy was adopted of repressing the instructions and messages sent to the Governors by the British ministers. Things were going from bad to worse. Finally Sir John Colborne retired, but not before he had, without any authority from the Legislature, endowed 57 rectories, for the Anglican Church. This raised a storm of indignation in the Assembly. Had Sir John Colborne been succeeded by a governor of even ordinary capacity and administrative fitness, the rebellion that followed might have been avoided, in Upper Canada at least. But the new governor, Sir Francis Bond Head, was probably worse fitted for the position than any man that could be chosen. He came to Canada with a flourish of trumpets; he made fine promises, and indulged freely in flatteries to the leaders of the Reform

party in the Assembly, but made no attempt to redress grievances and introduce responsible government. He soon cast in his lot with the Family Compact, and became a pronounced partisan. He threw himself heart and soul into the elections, and by means of personal appeals and wholesale bribery and intimidation succeeded in defeating Mackenzie and his following. The return of a majority in the Assembly, hostile to reform seems to have precipitated the Rebellion in Upper Canada, for Mackenzie now became convinced that a recourse to arms was all that was open to him and to those anxious to remedy the existing abuses.

In the meantime, events moved more rapidly in Lower Canada. The conflict there reached its crisis in 1836, and an appeal to force followed with Papineau, Nelson and others as leaders.

The Rebellion and its incidents must be passed over, pausing, however, to notice the visit of Lord Durham in 1837, to the distracted Provinces. The disturbed condition of the Lower Province had led to a suspension of the Constitutional Act, and the appointment of a Special Council, half of whose members were British and half French. Prior to this the Assembly had taken the extreme step of refusing to vote supplies, and the Governor had, on his own authority, taken money out of the Treasury to pay the government officials and carry on the necessary work of administration. So, in 1837, Lord Durham was sent out with full powers as Governor-General to investigate the causes of the prevalent discontent, and if possible to remove them. He was authorized to report to the Home Government, and his Report is of such importance that we must stop to consider it a moment. Durham was a man of exceedingly liberal ideas, and with a mind cast in statesmanlike



mold. His visit to Canada marks an era in the government of colonies. He travelled extensively throughout the provinces, seeking information from high and low, from the governed as well as the governing class. The few months he spent here were so full of varied activity, that when he was somewhat abruptly called home, he had already mastered the problem of colonial government and administration. At the root of all the trouble was the irresponsible government of the colony; this gave rise to abuses of power and petty tyranny. To this irresponsibility of the Executive Councils, was added the friction arising from difference of creeds, races and language. Durham drew up a Report, or rather Mr. Chas. Buller his secretary did, in which he advocated a Legislative Union of all the British provinces in America; failing that, a single Parliament for both Upper and Lower Canada. He urged that the advisers of future governors should be chosen from the ranks of those having a majority in the Assembly—in brief, that the system of Responsible Government which existed in Britain should be extended to Canada. As a necessary corollary of this position, the whole revenue of the province should be placed under the control of the elected Assembly, due provision being made and security given for the payment of judges and the necessary government officials. These were the leading and vital ideas in this valuable Report. Durham did not live to see them carried out; but it was his to sow the seed of responsible government, from which both the Mother Country and her colonies have reached so rich a harvest.

The rebellions in both Provinces having been suppressed, the Home Government and the British Parliament were now anxious to take such steps as would prevent future

risings and ensure peace and contentment in Canada. It was now that Durham's Report was seen to be of inestimable value. It was eagerly consulted and discussed. The final outcome of these deliberations and discussions was the passage of the famous Union Act of 1840, which came into operation in 1841.

Let us now examine the chief provisions of this measure and endeavour to grasp its underlying principles.

The first important feature to notice is, that instead of two provinces with separate Legislatures, there was to be henceforth two provinces with but one Legislature. Each province was to have the same number of members in an elected Assembly, the number at first being fixed at 42. In addition to this Assembly there was to be a nominated Legislative Council, holding office for life, under certain conditions. There was, of course, to be a Governor appointed by the Crown; and an Executive Council, also chosen by the Crown, or the Crown's representative, the Governor. The members of both Legislative Assembly and Legislative Council were to be British subjects, of a certain age, and with considerable property qualification. So far, no very radical change is noticeable in this new Constitution. But one may now be emphasized. The whole revenue of the provinces was put under the control of the Legislative Assembly, definite provision being made for the payment out of a fund of the officers of the Civil List. \$300,000 per annum was to be set aside annually for the payment of judges, the Executive Council and all the other officials necessary for the administration of Provincial affairs. The recognition of the right of the people's representatives to control the expenditure marks a great advance in the direction of Responsible Government. If there was one thing more than an-

other that caused irritation and discontent with the operation of the Constitutional Act, and fastened the fetters of the Family Compact on the people, it was that the greater portion of the revenue was under the control of the Governor and his Councils. Now this source of bitterness was removed for good. Money bills were to originate with the Governor and to be passed first by the Legislative Assembly.

Provision, too, was made for the better administration of justice, and the judges became more independent. The power of veto or disallowance continued to exist in the Imperial Government, and it was expressly stated that all laws affecting religion, the rights of the clergy, Roman Catholic or Protestant, Clergy Reserves, etc., should have no force without the express sanction of the Imperial Parliament. There is, however, one noticeable omission in this Act. There is no clause making it compulsory that the Executive Council or Ministry must be chosen from the party having a majority in the Legislative Assembly. In other words, Responsible Government was not mentioned; but the fact that the control of the revenue was given to the Legislature may be held to imply that Responsible Government was in the thoughts of the Imperial Parliament when the Act was passed. Responsible Government came to us, not by the provisions of any Act, but under and through instructions from the British Government to the governors it appointed. They were advised to choose the members of their Canadian ministry from the party having popular approval. True some of the governors, noticeably Sir Chas. Metcalfe, violated this principle and for a brief period ruled almost despotically. With Lord Elgin who came to Canada

in 1847, we may date the full and unreserved acceptance of this cardinal and vital principle of Parliamentary government.

The Act of Union was not entirely acceptable to all classes of the Canadian population. The French feared the loss of their legitimate influence; the Family Compact of this Province did not relish the loss of much of their power, but all difficulties in the way of its acceptance were skilfully removed.

The Special Council of Lower Canada promptly endorsed it, and Mr. Poulett Thompson who came out as the first Governor, by appealing to the professions of loyalty of the Family Compact, succeeded in procuring a somewhat reluctant assent from the Legislative Council of Upper Canada. Many important changes since that time have taken place, which deserve the greatest attention. Our Municipal system, our Educational system, the acquirement of full control of our trade and commerce, the secularization of the Clergy Reserves, thus severing the link which connected the Church and State; the abolition of Seigneurial Tenure, the introduction of an elective Legislative Council, are perhaps the most noticeable of the constitutional changes prior to the Confederation of the provinces. We have seen Canada as one province, under the Quebec Act; then divided into two with separate Legislatures under the Constitutional Act of 1791; then again united under one Parliament in 1841, and once more decentralized by the Confederation of 1867. It would be a rash prophecy to say that we have even now reached our final political development. Great changes are without doubt in store for us. What particular forms they will take none can tell.

## HOW WE FIND INVISIBLE STARS.

BY SIR ROBERT S. BALL, LOWNDEAN PROFESSOR, CAMBRIDGE UNIVERSITY.

ON one occasion, when I was giving a lecture on the subject with this title, I received an anonymous letter in which I was asked how it was possible that I could say anything about "Invisible Stars"?

If they were not visible, it did not seem that we could learn anything about them. Ought not, my correspondent asked, a lecture on "Invisible Stars" to be about as attractive as a concert of inaudible music, or as the fragrance of inodorous flowers?

It is not impossible that somewhat similar questions may occur to those who read this little paper. Let me therefore say at once that the "Invisible Stars" to which I refer are made known to us by the help of photography. For beautiful though our eyes may be, and exquisitely adapted as they are to subserve the purposes of our daily life, it is yet true that as optical instruments they are somewhat imperfect.

The human eye wants a certain delicacy possessed by the photographic plate. It certainly has not the patience, if I may use the expression, possessed by the film of sensitive material. Hence it is that, in our attempt to explore the heavens, photography renders us most extraordinary aid.

Not alone does the camera enable us to obtain pictures of celestial objects possessing unchallenged accuracy, but its assistance extends a great deal further. A photograph of the celestial regions exhibits multitudes of stars and other objects far too faint to be discernible by any eye, no matter how delicate may be its perceptive powers, and no matter how powerful

may be the telescope to which the eye is applied.

Thus it is that we obtain on our photographs the representations of invisible stars.

To explain the matter a little more fully I will describe how the astronomer sets at work when he wants to obtain pictures of these objects which his eye can never show him. He requires, in the first place, a telescope which is specially adapted to the purpose. It must be understood that the object-glass of an ordinary telescope, even though it be of the most perfect construction, will never answer.

The photographic objective must be prepared with an especial view to photographic purposes; for the light which takes photographs is, to a great extent, quite different in character from the light which acts on the nerves of vision. Provided with an object glass carefully wrought for this purpose, the astronomer places a prepared plate at its focus, and exposes it to the sky.

Special precautions have to be taken to insure that the telescope shall move properly, for as the stars appear to traverse the vault of heaven, it is necessary to follow them with the instrument. Otherwise the star would present a trail on the plate, instead of a sharply marked point.

To keep the plate following the stars, an ordinary telescope is attached to that which carries the photographic apparatus. The eye of the observer is applied to the second instrument, by which he watches one carefully selected star, and thus guides the whole apparatus, so as to insure that the movement shall be perfectly uniform.

The plates which are employed for this purpose are the most sensitive that can be made. To illustrate the precautions that have to be taken I may mention that a plate has been known to be completely fogged over and destroyed by the accidental circumstance that while it was being placed in the instrument a carriage happened to be driving up the avenue, and a flash from the carriage lamp fell on the plate. All being ready, the exposure is given, not for the small fraction of a second, which would completely suffice for the production of the picture under ordinary circumstances, but for many minutes, or even hours.

It is quite true that the very large stars would record their impression in a few seconds, but to obtain the fainter stars much longer exposures are demanded. It seems as if the little waves of light which come from the star and strike on the plate cannot succeed in engraving their impression until they have been allowed to operate for a time which has to be longer just in proportion as the star is fainter.

It thus follows that the longer a plate is exposed the more numerous will be the stars which can be counted upon it after the development has been completed. It is not unusual to find at least ten thousand stars on a single plate, provided an exposure of four hours has been given.

Indeed, in some cases it has been deemed advantageous to make still longer exposures. I have seen a beautiful plate representing the Cloud of Magellan, in the Southern Hemisphere, which had been submitted to starlight for no less than seven hours.

Many remarkable discoveries have been made by the examination of these photographs. The larger stars thereon depicted are no doubt those visible to the unaided eye; the intermediate stars, which may be counted

in thousands, are objects which might be perceived in a telescope of considerable power; but the smaller points, which are barely discernible on the background of the plate, are the invisible stars. They could never be perceived were it not for the peculiar assistance which photography gives us.

Many of the most noteworthy achievements in this delicate and interesting branch of astronomy are due to Professor Pickering of Harvard College Observatory.

The examination of these plates reveals in the most startling manner the extraordinary profusion in which stars are scattered over the sky. Remember that each plate can contain a representation of but a small part of the heavens. Not fewer than ten thousand photographs would be necessary, if we desired to form a map representing the entire surface of the celestial sphere.

If on each plate there be on an average ten thousand stars—and this is a low estimate—it is obvious that not less than a hundred million stars must be spread over the surface of the sky. When we realize that every one of these stars is an independent source of light, and that dark objects in the stellar regions are not visible at all, we obtain some notion of the extraordinary abundance with which matter is strewn through the universe.

It must be remembered that each star, even the tiniest that is just depicted on the plate, is in itself a sun often comparable with, and often far surpassing, our own sun in splendor. It is the distance at which it is placed that makes it look so insignificant.

There are other departments of astronomy in which photographs are also very instructive, in revealing the existence of invisible objects. Take, for instance, that well-known group of stars known as the Pleiades.

This charming little cluster has

been looked at by every student of the skies for thousands of years. It has been most carefully scrutinized by those employing good telescopes. And yet it possesses a something which had never been noticed until Mr. Isaac Roberts took a photograph of the cluster with an exposure of four hours.

He then found that the well-known group of stars was surrounded, or, indeed, I might say bathed, in a widely extended fire-mist, or mass of glowing nebula. The light from this is of such a kind that it does not appeal to any nerves that are in our eyes, but it does produce an impression on the photographic plate.

Consequently, we are able, time after time, to reproduce on our pictures the ghost-like outlines of this cloud of fire, which can never be perceived by any human eye.

It is quite plain that this nebula can be no mere effect of some error in development, or of some accidental intrusion of light. Widely differing instruments, treated by quite different processes, invariably reproduce the same forms. We are therefore assured that what we are looking at has a veritable independent existence.

It is clearly some trace of that great primeval nebula by whose condensation the stars forming the Pleiades have been produced.

There is indeed a peculiar power possessed by the photograph processes of exhibiting clearly and vividly things which elude ordinary vision. I will here mention a remarkable instance of, however, a very different kind, which came under my notice the other day. In this case the photograph rendered certain marks visible which the eye could not detect.

The puma in its adult form is, as everybody knows, not a spotted animal, but it is clearly allied to the

leopard and to other creatures which do possess spots. The affinity of the puma to these spotted relatives is sufficiently manifest by the resemblance in many points of its structure. It is also illustrated in a very striking manner by the circumstance that the young puma is known to be abundantly covered with strongly marked spots. As the little animal grows up, these spots become more and more evanescent, until at last in the adult they have vanished altogether. That is to say, they have vanished to our eyes, but the photographic eye took a somewhat different view of the matter.

On the photograph of a fully grown puma to which I have referred, the spots were most distinctly visible, though no trace of the spots was discernible by ordinary vision. Other instances could be given of a somewhat similar kind.

We can explain how the photograph supplements our eye in a twofold manner. In the first place, the eye gets fatigued by staring long in hope of perceiving something which is very faint. The photograph, on the other hand, sees a faint object the more distinctly the longer it stares. In the second place, the photograph possesses the property of being affected by light of a kind quite different from that which affects our sense of vision.

Thus it has come to pass that the camera has proved to be of such vast assistance to the astronomer. It not only shows him objects which are too faint to be perceptible to human vision, but it also exhibits to him objects where the question is rather relative to the quality of the light, than to its quantity.

Thus it is, that in a double way the camera has been of such striking service by its disclosures of "Invisible Stars."—*The Irish's Companion.*

## DEVICES IN RECITATIONS.

CLAUDE MELLOTT, SUPERINTENDENT OF SCHOOLS, LEAVENWORTH, KAN.

DEVICES in recitation should secure attention and at the same time not detract from the learner's progress.

As reading is one of the fundamental branches that soon become monotonous unless the teacher resorts to various methods, I shall treat of that first. Some teachers in conducting a reading class permit one pupil to read until he makes a mistake. This pupil then takes his seat and the pupil who corrects the mistake reads, commencing where the other stopped. Others allow the pupil to read until the teacher sees fit to stop him; and in order to insure the attention of the class, generally stops him in the middle, or before the end of a paragraph, telling another pupil to read on; while others divide the time given for the recitation equally among the pupils, giving to each as many minutes as the size of the class and the time will admit.

The most common way is to commence at the head of the class, each pupil reading a paragraph in turn; and, with never a variation, so continue from day to day. This method is bound to lead to oppressive monotony, unless the teacher, instead of taking the pupils in regular order, does like the old pedagogue in teaching the alphabet, "skip around occasionally."

A great many teachers in conducting a reading class give licence to any member of the class to prompt a scholar when he hesitates at a word. Some teachers require the would-be prompters to raise hands and gain permission by a nod before telling; others let anyone tell who can speak out first. In such cases it very often happens that a smart pupil in the class

does all the prompting, so that it is sometimes hard to tell whether the one standing or the prompters is reading. With certain restrictions this is a very good device; as all are anxiously watching for an opportunity to prompt, while the one reading is just as anxious not to need prompting, and the interest and attention are very marked.

A device to interest little folks, is teaching recognition of words at sight. Have the children stand with their backs to you while you place a word on the board; then at a given signal let them turn and see who can name the word first. Only familiar words should be used. When one pupil does too much of the answering, direct him to remain quiet and give the others a chance.

Not long ago I visited a school in which the teacher before asking anyone to read aloud, required the class to read the paragraph silently. The advantages of this can hardly be overestimated; because after all have read it carefully to themselves, they have some idea of the modulation and expression to be used. They assimilate, as it were, the sense which is to be conveyed, and will read it more naturally. Some teachers make a point of silent reading. Let the class read a paragraph, topic or story silently, at the same time with the teacher, and then call upon some one to tell in his own words what he read. This device is useful in geography, physiology, history and other branches, as well as in reading.

One of the most useful adjuncts to the reading class, is supplementary reading. But until school boards and patrons become more liberal, I shall not discuss it. Let us as teachers

educate the coming generation (*the coming school boards and patrons*) in this one particular—liberality.

A device that costs comparatively nothing, and one that will recommend itself to every teacher is this: Take a story from an old book, or paper, and cut the story up into a convenient number of pieces, and distribute them among the members of your class. If the paragraphs are numbered, so much the better; if not, you had better number them, so as to avoid confusion during the recitation. You can call by number upon your pupils to read. The advantages of this device are:

1. Each child has only a verse or two and he gets it well, thus being able to read his part intelligently.
2. No one will know what the story is until each recites his part in class. Hence the attention of the whole class will be centred on the one reciting

so as to get the story as a connected whole.

If you have many primary pupils, try to procure for each one a box of word cards. They cost but a trifle, and I verily believe that any school board, after seeing the little ones at work with them would be willing to pay double their price. If the *board* will not, I know parents will; because parents manifest more interest in the *little* tots than in the larger ones. And again, during the first years of a child's school life the book bill is very small, hence you will generally find parents not merely willing, but anxious to make small investments for these beginners.

I have seen parents actually disappointed when told by the teacher to get only a slate and perhaps a primer, for a little one for whom they would gladly spend two or three dollars.—*Educational Gazette.*

## ECONOMIC GEOGRAPHY.

WHILE the teaching of geography is undergoing a continuous and most fortunate development in that direction which exalts the physical characteristics of the earth's surface over its political subdivisions, it appears to me that more attention might profitably be given to what I would term Economic Geography—*i. e.*, a systematic study of the distribution, over the earth's surface, of the various products that supply the wants of civilized man. It is true that an atlas of physical geography usually contains a few charts to show the distribution of flora and fauna; that geological maps often indicate the general trend of carboniferous and ferriferous strata; and that statistical publications, such as those of

the recent United States Census, contain maps and instructive data upon the districts where other valuable ores abound. But all this information is given incidentally, and can only be studied after laborious consultation of original sources; what we lack is a compilation that would present these facts in a uniform manner for every part of the globe, and maps in which the salient points of this information could be grafted upon the knowledge of the political and physical conformation of the countries.

Economic geography differs in this respect from physical geography, that the latter treats the aspects of nature as the results of cosmic and terrestrial influences; while the for-

more would take these aspects as given causes and examine their influence upon man and his works. In this way, economic geography would connect physical with political geography. But, though there were geographers before Humboldt who described the physical characteristics of the lands in whose political subdivisions they were chiefly interested, it becomes evident to the readers of "Cosmos" that the truths of physical geography could never have been reached, had not the observer shifted their standpoint. To the student of every descriptive science, like botany, chemistry, mineralogy, or zoology, a knowledge of the localities where the various species occur has ever been deemed essential, even if its chief value lie in the sense of tangible reality which it imparts to the study. A limited amount of the material for a work on economic geography is already contained in such descriptive treatises. To the student of technology, a more serious consideration of geographical conditions will often reveal surprising truths. How obvious is the effect which the accessibility of different fuels has upon the metallurgy of iron! The quality of steel or wrought iron that different localities can produce, depends as much upon the relative ease of obtaining charcoal, anthracite or bituminous coal as upon the nature of the iron ores. The fuel question has determined the choice of widely divergent methods of silver extraction in Europe and America. On the other hand, geographical location may largely influence the value of an accumulation of raw material; the worth of a gold mine on the Yukon River is more affected by its difficult access than by the richness of its assay.

Most interesting of all would be a study of the relations between the geographical distribution of desirable material and the course of history.

Here, again, there is nothing novel in the assertion that greed for material wealth has been more powerful than any intellectual principle in actuating men, both in their peaceful pursuits, and in their quarrels and wars. But the precise way in which the existence of local resources has influenced the course of events is not often pointed out systematically to the student of history. It would seem to me to be of more importance than an investigation of methods of diplomacy or strategy, because the latter depended upon the capacities of individual leaders, while the motives of which I speak must have been common to the mass of the people. In illustration, I shall not touch upon the fact that nearly all geographical discovery is due to motives of trade; the ancients found Britain and Prussia in tracing the sources of tin and amber, just as Columbus discovered America and Vasco de Gama circumnavigated Africa in quest of the gold and spice of Cathay. The fertility of Sicily was alone the reason that Sparta and Athens, Rome and Carthage, Normans and Saracens, French and Neapolitans, made it their battleground. The Iberian silver mines led Hasdrubal and Hannibal to Spain, thence to attack Rome. On our own continent, we have the best illustration of the effects which the discovery of new mineral or agricultural resources has had upon the flow of population and the advance of civilization. And if we choose again to look farther, we find that many forbidding corners of the earth are eagerly sought, for some substance which they alone contain. Discover cryolite elsewhere than off the shores of Greenland, richer guano fields than those near Iquique, ivory and copal outside of Africa, exhaust the diamond fields of the Transvaal region, and the communication of these lands with the more



civilized world will cease and their population will desert them.—*Prof. Morris Loeb, in the Educational Review for March.*

OUR SCHOOL.—That is a good school where each pupil is made to feel that something of its prosperity

depends on him. When he comes to it in the morning and leaves it at night as a man leaves his store or his office, having interest there, he is sure to be benefited; he also confers benefits. It is a happy faculty to make all the pupils help carry the burdens and pleasures of the school.—*School Journal.*

### OUR COMMON SCHOOLS AND FARMERS.

THE difficulty with agriculture is twofold—farming does not pay, and farm life is not attractive. The result is that our population, which one hundred years ago was ninety per cent. agricultural, is now but little over sixty per cent. such; and the ratio is increasing. The first great break with barbarism was when land tilling began to create permanent homes and the home instinct; and the next was when each family could have its separate house and its individual tastes. Any reaction toward the herding instinct is a movement backward. It was Jefferson's profound conviction that agriculture must underlie a republican government as the basis of prosperity. "The American people," he said, "will remain virtuous as long as agriculture is our principal object. When we get to be piled upon one another in large cities, as in Europe, we shall become as corrupt as they." But farming does pay; it is paying, that is, in right hands with right methods. So long as any race holds to old-fashioned culture and methods of life, all goes well; but by-and-by the new ideas and new methods are inevitable, and there is a lack of something. They are unable to readjust themselves to the new order. But

we cannot expect to resurrect the eighteenth century. We must find out our difficulty, and that is, as I shall aim to show, that our common school education is almost precisely what it was one hundred years ago, and in no way fitted to the other revolutions in farm life.

Our fathers on the farm were producers in the main for home consumption. Each homestead was expected to be self-supporting, or nearly so. But to-day the farmer everywhere is a trader. In Dakota he raises his truck for Chicago, his wheat for London, his corn for New York. On the other hand, he buys his fuel, lights, clothes, most of his food and his comforts. This flings him in with the world of speculators and adventurers. On the old plan the farmer was everywhere moderately successful. He was educated for that style of work and to be content with that style of life. Now machinery has elbowed him out of his pride, skill and art; and his wife also is left without her craft. He no longer swings his scythe with pride, or his axe with rhythm. She does not sew and knit. The change involves new needs, new desires, new methods. It is impossible to make the farm universally profitable on such a system. The bot-

tom of the difficulty is not some mystery; nor is the cure some nostrum in the way of statute law. The secret is that our common school education is not adapted to create a race of farmers capable of adjusting themselves to the times. We are educating away from the farms, and not toward them. The solution of the labor problem is not in legislation, but in improved tact and skill in the blood and in the fingers of the laborers. The marriage problem will be settled, not by layer on layer of laws, but in a higher moral education of boys and girls to comprehend the purpose of life as altruistic instead of egotistic. The farm perplexity is in a peculiar manner dependent upon defective education. So long as the old order of things existed, the curriculum of common education was satisfactory. The farm boy of the early part of our century had two sorts of education: one half of it was home training, the other half was from the schools. At home he had manual culture; he was taught to handle tools such as were used, and to be proud of his skill. At school all he needed was the three R's. The farm boy only needed to read, to write and to cipher; the rest of his education was on the land.

But note how total is the change. That part of the boy's education which consisted in skilful handling of scythe and axe and other tools is useless and vacated. So far as the three R's are concerned, they can mostly be taught at home. What we want of our country schools is to make the farming to day intelligent, interesting and profitable. The boys and girls should first of all be taught the composition of the rocks and soils with which they have to deal. This should be complemented with a good knowledge of plant and animal life. I suppose that no one could be more ignorant of these things than the

average farmer. He is in no case taught in the common schools the structure of the animals he employs, or the grains that he eats. Geology I would follow with biology in its forms of zoology and botany, and in its divisions of physiology, entomology and ornithology; that is, I insist that our country schools shall undertake to make farmers. The boy on the farm—and the girl quite as much—needs to know the things under his feet and over his head, the soil, the life in and on the soil, and his relation to them. Before the age of seven or eight, in well-to-do families where kindergartens are impossible, the child should be taught chiefly to observe. He should learn to see well and to use all his senses. After that age books should be used as aids to observation; not to dispense with original observation, but to assist. Every child should become an investigator. When this change is made, and the curriculum is readjusted as suggested, I do not say that you cannot drive our boys away from the farms into trade and manufacture; but I do say that, unless a lad is born with a particular bias for something else, he will love the land so that he will not wish to leave.—*E. P. Powell, in the New England Magazine for March.*

A ROC'S EGG.—A very fine specimen of the egg of the *Æpyornis*, the fabled roc of the *Arabian Nights*, a gigantic bird now extinct, was recently found floating in the sea on the south-west coast of Madagascar, by Mr. J. Procter of Tamatave. It is supposed to have been buried in the sand hills along the foreshore, which have been gradually washed away. The egg measures  $33\frac{1}{2}$  inches around lengthwise, and 28 inches around laterally. In bulk it is equivalent to six ostrich eggs, 148 ordinary hen eggs, or 30,000 eggs of the humming bird.—*Goldthwaite's Magazine*

## OUR GRAMMAR AND HIGH SCHOOLS.

WE have in this country special reason to be proud of our elementary and secondary schools—that is, the schools which cover the education of the child from its beginning to the time when he is ready to enter college. Nevertheless, careful teachers are aware of certain defects in the training of the pupil from the beginning of the grammar school course to the end of the high school period. The general recognition of some of these defects has led to an attempt to remedy them. A series of conferences of teachers has been held under the direction of a committee appointed by the National Educational Association. The teachers in these conferences were chosen from all parts of the country, and represented public schools, private schools and colleges in fair proportion. In a general way, it may be said that the educators agree that certain subjects now taught in the schools should be lopped off, and certain other branches introduced. They propose that all pupils who pursue the same branches shall be taught alike, whether they are going to college or not; that is to say, not that all should study Latin or Greek, or chemistry, but that every subject taken up shall be taught in the same way and to the same extent to every pupil.

It is proposed that instruction in Latin and Greek—when these are taught—and in all cases natural history, elementary geometry and algebra, shall begin earlier than is usual at present. On the other hand, formal grammar is not recommended to be taught before the age of thirteen, and then no longer than is necessary to familiarize the pupil with the main principles—probably not more than a single year. The instruction in

English is not to cease, according to this plan, from the time the child enters school until he leaves it. It is to come to him in the twofold form of familiarity with good literature and training from the start in the art of expressing his thoughts properly. Every lesson, even in geography or mathematics, is to be incidentally a lesson in English. As deficiency in the kindred arts of reading, writing and speaking English is recognized as one of the chief defects in the education of the usual applicant for admission to the colleges, it is not surprising to find the instructors of the country earnestly insisting that in the ordinary school work, the pupil's standing in any subject should depend on his use of clear and correct English. Another "lopping off" is recommended in arithmetic. It is proposed that certain subjects which for the ordinary student are said to have no practical and but a limited disciplinary value, such as cube root, duodecimals and compound proportion, shall be omitted. More attention is to be paid to facility and correctness of work than to the slow solution of heavy problems.

It is proposed to begin at an early age with concrete or experimental geometry, in such a way that the youngest pupils shall learn to estimate by the eye, to measure lengths, magnitudes and areas, and to make models of geometrical solids. Natural science will come in for early and gradual teaching; and geography it is proposed to turn into something quite new, including a good many interesting facts about the earth, weather science, etc., which will make it very different from the somewhat dry science which now goes by the name. History and civil government would be taught, altogether, a period of

eight years—throughout the grammar and high school periods. On the whole, the proposed new system would tend to harmonize and simplify elementary instruction all over the country. The colleges hope to obtain by means of it boys and girls better fitted for higher education, at a somewhat earlier age; while the pupils who do not intend to go to college will receive a better practical training for actual life than the present discursive and frequently aimless methods of education give them.—*Youth's Companion*.

NOT ELIGIBLE.—In a very friendly

notice of the last volume of the *Journal*, the *Spectator* puts to us point-blank a question which we gladly answer, as we are thereby enabled to remove some misapprehensions concerning the position we have taken up on the question of clerical headmasters. "Would the *Journal* have an atheist appointed, if his secular qualifications were superior to those of a believer?" An atheist, we hold, would be no more eligible for the headmastership of an English public school than a blind man or a foreigner who did not understand English.—*The Journal of Education*.

## THE TEACHING OF MATHEMATICS.

BY PROFESSOR W. H. H. HUDSON, M.A.

THE next general law of teaching that we must observe is that of *continuity*. That which is new and unknown should be made to grow out of that which is old and known. Evolution is true in the mental as in the physical world. The particular case prepares the way for the general, the easy for the difficult; the difficulties, even the impossibilities, are the avenues leading to new knowledge: thus vulgar fractions arise out of division, the negative quantity grows out of a seemingly impossible subtraction, logarithms arise out of the general index, the arithmetic of square measure is derived from the geometry of the arithmetic of the ret-angle.

The subdivision of mathematics into separate subjects tends to obscure the connection between them. We should be watchful to seize opportunities of bringing out, whenever possible, the connection of algebra

and arithmetic, and of both with geometry. Even the illustrations that we choose to explain a particular point are all the better sometimes, if they are seen to be connected with the next.

In order to preserve this continuity, it is essential that the old, the known, must be soundly known and firmly grasped. The pupil should have to unlearn nothing as he advances. The earlier teaching should be designed so, that the latter can be easily joined on to it. On this account it is desirable that the teacher should have a grasp of subjects beyond what he is actually teaching, that he may prepare the way for the future. It is a mistake to ask an ignorant teacher to take an elementary class.

Thus the teacher of arithmetic should be watchful to assist the transition to algebra, and the teacher of algebra should frequently bear in

mind the subsequent study of the Differential Calculus.

In arithmetic, subtraction should be taught as a shopman gives change, because this smooths the way for the improved long division. The highest digit of the multiplier should be used first in the multiplication of whole numbers, because this facilitates the approximate multiplication of decimal fractions. Arithmetic may be taught so as to prepare the student to pay regard to dimensions in mechanics; and in the treatment of circulating decimals, either sound ideas may be given, facilitating the acquirement of the important doctrine of limits, or confused ideas may be allowed to be formed retarding the pupil's progress and throwing additional difficulties in his way. It were better not to touch this part of the subject at all than to do this; in fact, in accordance with the first law of teaching, if the subject is beyond the pupil's comprehension the teaching of it should be deferred. The particular instance quoted, however, is quite intelligible at a much younger age than is often supposed.

Mathematics are sometimes thought to require operations of the mind different from those employed in other studies. \* It is said not to encourage the art of observation. As we all know, this is not the case. The teacher should take opportunities of exercising this faculty, and should ask his pupils to notice distinctions, and when they have discussed these distinctions, and described them by a clumsy periphrasis, when the *thing* has thus become known, the *name* "binomial," "homogeneous," or whatever it is, may be given: there are many opportunities for lessons in classification based on observed distinctions.

\* "Of observation, experiment, induction, analogy, the mathematician knows nothing."—*Sir W. Hamilton.*

Another common mistake is to suppose that mathematics do not admit of reasoning from analogy; on the contrary, the good teacher bases his pupil's apprehension of mathematical method upon the analogy which he guides them to observe in the mode of solution of similar problems.

Inductive reasoning is also said not to appear in mathematical. On the contrary, the mathematical teacher will often lead his pupils by particular examples to guess by induction a general formula, and then he will be able to show them how to verify their guess, and ascertain whether their induction is justified. They will sometimes guess wrong, and thereby learn to distrust unverified induction.

The use of experiment to ascertain whether a proposed theorem is likely to be true, is another instance of the application of a mode of investigation often thought to be foreign to mathematics.

Another subject most intimately connected with mathematics is language. One of the aspects of algebra and the differential calculus is distinctly linguistic. It is a valuable exercise for the pupil to translate his symbols into the English language. Clear and exact language is requisite in order to state mathematical problems, and the necessity of using it constitutes one of the difficulties of the learner, but it is a difficulty in the overcoming of which mathematics give much of the intellectual benefit which is supposed only to be derived from the study of a foreign language. The power of stating a physical problem in the language of the differential calculus is an acquisition worth having, even if the subsequent solution of the problem is at present impossible.

After the three great laws of teaching, the Law of Understanding, the Law of Sequence, and the Law of

Continuity, some minor maxims may be adduced.

(1) *Principles are more important than methods and formulæ.*

Mathematics are built upon a certain number, not very large, of axioms and conventions. The axioms give rise to no difficulty, except to the metaphysician; all believe them as soon as they understand the language in which they are expressed; but it is necessary for the teacher to

see that the pupil does understand this language.

The conventions must be laid down authoritatively; the pupil must, here as elsewhere, understand what they mean; but he is not, in most cases, an adequate judge of their propriety. He will often think them inconvenient and improper; but he is not in a position to set his judgment against that of the scientific world.—*Educational Times.*

## SCHOOL-ROOM COURTESY.

BY CAROLINE B LEROW.

AMONG the editorial items on the first page of *The School Journal* for March 3, are a few lines concerning the deportment of a teacher in a class-room, the article closing with the words, "There is such a thing as school room etiquette. The teacher is critically observed. If his doings and sayings are condemned he cannot exert the influence that forms character."

Once upon a time a certain mother noticed a remarkable change in the deportment of her six-year-old son, who from a rough, noisy, discourteous boy, became transformed into one of the gentlest, most courteous, and considerate little fellows in the world. The child was attending a kindergarten, and the mother naturally inferred that to his teacher was due the change she was glad to notice in him.

"Miss Smith teaches you to be polite," she remarked, making what was really an assertion in an interrogative tone.

"No, she never teaches us one bit about it," was the instant and very emphatic reply.

The mother was puzzled, for she was at a loss to account in any other way for so radical a change. A second and third attempt to discover the cause of this condition was attended with a similar result,—energetic denial upon the part of the child of any instruction in the matter of courtesy.

"Well, then, if Miss Smith doesn't say anything, what does she *do*?" she asked at length, quite desperate in her desire for light upon the matter.

"She doesn't do anything. She just walks round, and we all *feel* polite. We feel just as polite as—a *everything!*" and the inquiring mother was fully satisfied.

There is a class of persons by whom every observance of etiquette is considered to be a sign of weakness, hypocrisy, or submission. The rude movement, loud voice, and disregard of one's companions and surroundings are, on the other hand, supposed to indicate strength, honesty, and independence. There could not be a greater mistake nor one more fatal to the reputation of

the individual and to the comfort of those about him.

Politeness is as essential to life as is oil to machinery, and it serves a similar purpose. Nothing is lost by it, and much is gained, and in many ways. It makes everything easier, quieter, quicker, more harmonious, and more effective. It diminishes friction, that great drawback in nearly every social condition, as well as in every piece of working mechanism. The refined, quiet, considerate, and courteous man and woman has an immense physical, intellectual, and social advantage over their fellows. In fact, the positive value of simple, every-day courtesy cannot be overestimated.

The development of courtesy is far more a matter of example than of precept. It cannot be taught from books or blackboards. It is felt, not reasoned about. It is given only in the form of object lessons. It appeals to the heart even more powerfully than to the head. It is not a matter of demonstration so much as of experience.

It is the finish, polish, luster, color, and flavor of otherwise rough, dull, somber, and disagreeable existence.

The teacher is, above all other persons on earth, the upon whom most depends the development of this element in the young. For hours a day his pupils are in his constant and impressive presence, conscious, always, even if not apparently, directly, observant of every motion which he makes, of every word he speaks, sometimes of many of the thoughts he thinks. His very title marks him as one who is legitimately the subject of examination and of criticism.

The father and mother perhaps make no pretension to be models in any way, but the child almost unconsciously assumes that the teacher must be a model and a safe example from the very nature of his position.

Oftentimes, too, the child has no conception of any, even of the most common, graces and elegances of manner and ways of doing things, except that which he gets from his teacher in the school-room, and if all that is claimed for courtesy be true, even on utilitarian and social grounds, can there be any greater moral responsibility laid upon the teacher than the observance by him and consequent inculcation in his pupils of "the most excellent grace of courtesy?"

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## NOTES FOR TEACHERS.

**REPRESENTATIVE ASSEMBLIES.**—The total membership of both houses of the British parliament is 1,223, or, in proportion to the population, about six M. P.'s for one U. S. congressman. The parliament of the United Kingdom is the largest representative body in the world.

In the House of Lords there are 553 persons entitled to vote, and in the

House of Commons there are 670 members. France, in its Corps Legislatif, has 300 senators and 584 deputies. Italy has a varying number of senators and 508 deputies.

Japan has 300 peers and 300 representatives. Germany, in its Bundsrath, or Senate, has 58 members, but its Reichstag has 397 members. Spain's Cortes has 431 members. Canada

has a Senate of 80 members and a House of Commons of 215 members.  
—*Chicago Times*.

A NEW INVENTION.—Scientists have been at work for a long time trying to invent some machine by which instantaneous submarine photographs could be taken at any depth and during a stormy sea. For a long time those who understand the art of photography have been able to take photographs at a depth of six metres in a calm sea, depending on the rays of the sun for the light.

M. Bouton, a French scientist, has invented a magnesium lamp by which photographs have been taken during a stormy sea when no ray from the sun could possibly penetrate the water. It consists of a cask which will hold twenty litres of oxygen. On the top of this cask is a spirit lamp covered by a bell glass. This lamp is so connected with a ship containing powdered magnesium, that the metal is thrown upon the light by a rubber ball acting as a bellows, thus causing a flash light strong enough to make the photograph. As yet the pictures taken have no background, but it is thought that this can be remedied when the machine has been perfected.  
—*Educator*.

MY GOLDEN RULES.—“Whatever I have devoted myself to, I have devoted myself to completely; that in great aims and in small I have always been thoroughly in earnest. I have never believed it possible that any natural or improved ability can obtain immunity from the companionship of the steady, plain, hard-working qualities, and hope to gain its end.

“Some happy talent and some fortunate opportunity may form the two sides of the ladder on which some men mount, but the rounds of that ladder must be made of stuff to stand

wear and tear; and there is no substitute for thorough-going, ardent talent and sincere earnestness. Never to put one hand to anything on which I could not throw my whole self, and never effect depreciation of my work, whatever it was, I now find to have been my golden rules.”—*Charles Dickens*.

#### ELECTRICITY AND PHOTOGRAPHY.

—For a long time it was believed there were three different kinds of ether waves, known as heat, light and actinic rays. The latter were supposed to be the ones that produced the chemical action on photographic plates, while light consisted of rays of a different kind, capable of affecting the eye. It was discovered, however, that the same rays that can produce vision can also heat a body, and also do photographic work, and what any ray can do depends upon the kind of matter it falls upon, so that all rays have similar characteristic properties. This discovery makes it plain that there is no peculiar kind of ether waves which can be called light, as distinguished from other kinds of ether waves. What is called light is a physiological phenomenon, and has no existence apart from eyes. So well assured is this, that the serious proposal is made to banish the word “light” from physics.

The sensitive coating upon a photographic plate is an unstable chemical compound, which may be broken up by mechanical pressure, by heat or by ether waves. The proper wave length for a given plate depends upon the nature of its surface. The tanning of the skin, the darkening of newly-laid shingles, the coloring upon apples and other fruits, is a photographic process, as can be shown by shielding them from the sun's rays. It has long been known by photographers that pictures may be taken with ether waves much too



long to be seen by the eye, if some other substances are used in place of the simple silver salts in common use.

Since it has been shown that ether waves of all lengths have an electromagnetic origin, it has been apparent that all the effects of light can be duplicated with suitable electric apparatus. Lay a coin, like a half dollar, on a plate of glass and let a few sparks from an electric machine fall on it. Remove the coin, and the glass surface will not appear to have been affected; but if it be breathed on, the image of the coin will at once be seen, and that it is really engraved on the glass surface is evident, for it will not easily rub off. If a piece of photographic paper takes the place of the glass, it will have the imprint of the coin made upon it. It is not needful to have the sparks fall upon the coin, for, if it be inclosed in a dark box, brought near to an electric machine having short sparks passing between its

knobs, the ether waves set up by the latter will be sufficiently short to affect the photographic surface, which may be developed afterward in the ordinary way. So it is actually possible to take a photograph of an object in absolute darkness, with the ether waves set up by working an electric machine. Not much has yet been done in this direction, but it is a new clew to chemical possibilities; and one may confidently look forward to the time when the qualities and colors of surfaces of many things will be changed to suit the taste by an application of electric waves of suitable length to bring about the proper chemical reactions; and an electric machine may become a necessary adjunct to the apparatus of the photographer.—*Prof. A. E. Dolbear, in the Cosmopolitan for April.*

There is nothing in which we are more frequently mistaken than in our suspicious and harsh judgment of others.—*Marcus Dods.*

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## PUBLIC OPINION.

**HOME WORK.**—The subject of home work for pupils needs revision. Educational methods that require children of tender years to spend two or three hours to prepare lessons for recitation in school, or for the teacher to take time to explain and criticise, is wrong. The subject is constantly cropping out in different parts of the country, and is a source of much complaint from tired mothers.

The system that requires the amount of home work from children, of which so many parents complain, is bad, but it is only corollary of the examination craze so destructive to true educational work in Canadian schools.

We hold that children should not have anything but the simplest exercises to do at home, such as would take but a very little time, and not a thing that would cause worry, annoyance and the loss of sleep over the possible consequences of failure.—*The Barrie Advance.*

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**TEACHERS IN THE IMPERIAL HOUSE OF COMMONS.**—It has become more than ever evident during the year that the presence of practical teachers in the House is absolutely necessary if educational matters of importance, whether of general or particular application, are to receive due attention.—*The Times.*

Too MUCH—Too much altogether is expected of the men and women who direct the education of the youth of the country. For a salary little in advance of a laborer's wage the teachers are expected to be of unimpeachable character—as they usually are—to instruct spiritually, morally, physically, socially, and even industrially the children committed to their charge, and all these in addition to giving the usual text book education.

In many respects, no doubt, the public schools could be improved, but we are confident that the members of no profession feel more deeply their responsibilities than the public and high school teachers, and none strive more conscientiously to discharge their duties to the letter, and these would-be reformers, enthusiasts and busybodies who criticise the school system most severely, but not always wisely, usually do more harm than good. How often is it seen that those same persons are derelict in many of their own duties, both as individuals and as citizens.—*The Inland Sentinel, Kamloops, B. C.*

THE BIBLE.—Greatly to the surprise of many of my friends, I have always advocated the reading of the Bible and the diffusion of the study of that most remarkable collection of books among the people. Its teachings are so infinitely superior to those of the sects, who are just as busy now as the Pharisees were 1,800 years ago, in smothering them under the precepts of men. It is so certain, to my mind, that the Bible contains within itself the refutation of nine-tenths of the mixture of sophistical metaphysics and Old World superstitions which has been piled round it by the so-called Christians of later times; it is so clear that the only immediate and ready antidote to the poison

which has been mixed with Christianity, to the intoxication and delusion of mankind, lies in copious draughts from the undefiled spring, that I exercise the right and duty of free judgment on the part of every man, mainly for the purpose of inducing other laymen to follow my example. If the New Testament is translated into Zulu by Protestant missionaries, it must be assumed that a Zulu convert is competent to draw from its contents all the truths which it is necessary for him to believe. I trust that I may, without immodesty, claim to be put on the same footing as a Zulu—*Prof. Huxley.*

EDUCATION IN THE HOUSEHOLD.—Education does two things for the household: it gives a certain amount of information that is of direct service, and it gives a training that is of indirect, but even greater value. The information immediately gained comes through the study of art, chemistry, economics, physiology and psychology. The study of art should enable the housekeeper to build and furnish her house with taste; of chemistry, to provide for its sanitary construction and for the proper preparation of all food materials; of physiology, to study the physical development of her children; and of psychology, to observe their mental growth and base her training upon it. If this were all, it might well be said that for a young woman contemplating the care of a household the best possible preparation would be a four years' college course. But these gains are on the side of information: the real work of education in supplying the needs of a household is far more important. There are constantly arising in every household emergencies, for which the housekeeper is, and must be, totally unprepared as regards the amount of

available information she possesses. There are demands made every hour, every moment, for the exercise of reason, judgment, self-control, alertness, observation, accuracy, ingenuity, inventive genius, fertility of resources. The housekeeper finds herself in the same position as does the lawyer, the physician and the clergyman. All are educated side by side throughout a college course. In a subsequent professional career, the lawyer forgets his Greek, the physician his history and the clergyman his mathematics; but there remains with each one a precipitate of far more value than the original compound. Knowledge that is not constantly used passes out of mind, yet like the food assimilated by the physical body, it serves its purpose in the mental strength and energy gained through it. Indeed, it may be said that information becomes more and more the dross, and education the pure metal remaining from a general school or college training. Thus the housekeeper, forgetting her Latin, Greek and mathematics, her French, German and history, her biology, astronomy and economics, retains as the most valuable heritage of her education a training in habits of accuracy, observation, good judgment and self-control that enables her to be the master of an unexpected situation that may arise.

Inactivity in household affairs has largely come from three things. It has in the first place been generally believed that a knowledge of all things pertaining to the house and home, unlike anything else, comes by instinct. Another mistake is also made: the husband of the family often excuses his absolute ignorance of the affairs of his own household by the lame apology, "I leave all these things to my wife and daughters." As long as this view prevails, two things result: first, the relation

existing between different parts of the household is not an organic, but an inorganic one, and its highest development has not been reached; second, no special effort will be made to provide instruction in these lines. One more obstacle that is found in the way of advance is the belief that all women have a natural taste for household affairs, which without cultivation grows into a positive genius for carrying them out. These three common mistakes of belief—first, that a knowledge of housekeeping affairs is a matter of inspiration; second, that they concern women alone; and, third, that all women have a natural love for such affairs that supplies the place of training—are perhaps sufficient explanation of the present lack of all opportunity for the investigation of the household in a professional way.

What then is the one great need of education in household affairs? It is the establishment of a great professional school, *open only to graduates of the leading colleges and universities few worthy of the name*, which shall have as its sole object the investigation of this great unexplored field—the household. Absolutely nothing is known of the chemistry of foods or the economic basis of the household; comparatively little of household sanitation, artistic house-building and decoration. Fashion, not art, governs every question of costume; while, with a few notable exceptions, Porter's "Development of the Human Intellect" contains the sum and substance of our knowledge of the mental development of children. The possibilities of such a professional school are boundless. Household affairs would in time come to receive the respect now accorded the learned professions. Instead being taken up as a temporary occupation by persons, who as they themselves say, "have not education enough to do anything

else," household work would be dignified into a profession that would attract large numbers who now seek other occupations.—*Lucy M. Salmon, in the New England Magazine for April.*

A MISSING SUBJECT IN MODERN EDUCATION.—Modern education is more generally supposed to be in danger of suffering from a plethora than from a deficiency in the subjects of instruction. Yet we feel impelled to make a claim in favor of one subject which scarcely seems to receive the attention it merits. The subject we speak of cannot be called a new one; it is that branch of instruction commonly known by the name of "Scripture."

Lord Sherbrooke, in one of those delightful tirades against public school

education wherein his soul rejoiced, complained of the almost 'universal ignorance of the Bible, even among educated men. The "Cave of Adullam," wherein he played so prominent a part, had lately received its title, and, much to his surprise, the jest had fallen flat with most of his parliamentary acquaintances, from entire ignorance of what the name implied, so that he had been under the "painful necessity of explaining it, and thereby pointing the barbed arrow against his own bosom."

Lord Macaulay's well known dictum, that "any one who sets up to be a critic should have the Bible at his finger's ends," is generally recognized by those whose way in life lies among the paths of literature.—*C. M. Febb, in London Journal of Education.*

## GEOGRAPHY.

THE NEW AND THE OLD WAY AROUND THE WORLD.—Now that the glorious anniversary of Columbus have been celebrated, and again there has crossed the Atlantic reproductions of the caravels which discovered the fifth part of the world, and thus opened the way to those who, less than forty years later, made the first voyage of circumnavigation of the globe, there is some curiosity in making a rapid comparison between the formidable difficulties which the bold explorers encountered on that first voyage. It therefore becomes a pleasant task to study the facility and comfort with which a trip around the world can now be made.

When, on the twentieth of September, 1519, the intrepid Magellan left the port of San Lucar in Spain, to sail into the unknown, his fleet com-

prised five ships, not one of which would in our day be thought fit for a coasting vessel. All the ships were of very small tonnage: one, the "Trinidad," of 130 tons, Magellan himself sailed on; another, the "San Antonio," was about as large; then there were the "Vittoria" and the "Concepcion, each of 90 tons, and finally the "Santiago" of 60 tons. They were boats with three or four masts, manned altogether by 260 men. The tonnage of the entire fleet amounted to 485 tons, while a single transatlantic steamer of the kind which carries across the ocean the tourists of the C. P. R., is of 13,000 tons, or twenty-six times more than Magellan's entire fleet. Consider, moreover, the condition in which Magellan's ships were when he started on his voyage. Alvarez said of them:

"I would not like to risk myself in one of them to go as far as the Canary islands." And, notwithstanding, three years and fourteen days afterwards, one of the captains of the expedition, Sebastian de Cano, returned to San Lucar, though with but one ship and seventeen men.

Now, we reckon the voyage, not by years or months, but by days. Get one of the trip tickets of the Canadian Pacific R. R. Co., and embark at Liverpool on one of the steamers of the Allan Line—which, to be sure, cannot be compared in luxury with the boats which run between Queenstown and New York—and in seven days and a half you are in Quebec. You take there a river steamer to Montreal. Then you enter one of the magnificent cars of the C. P. R., and are transported to Vancouver, 2,535 miles further west, with surroundings of comfort absolutely unknown on our European railways. You arrive at Vancouver at fifteen o'clock (the Companies reckon time there by the twenty-four hours) and you have just time enough to go on board the huge white steamer lying at the wharf. On this fast vessel, provided with every luxury, you reach Yokohama in ten days, and three days afterwards you are at Shanghai. Here you leave the steamer of the C. P. R. to embark on one of the vessels of the P. and O. On the boats of this company you return to England by the way of Singapore, Colombo, Aden, and Suez.

Here is the itinerary in a few words: Liverpool to Montreal, 2,799 miles; Montreal to Vancouver, 2,535; Vancouver to Yokohama, 4,283; Yokohama to Shanghai, 1,047; Shanghai to Hongkong, 810; Hongkong to Colombo, 3,096; Colombo to Port Said, 3,488, and Port Said to London, 3,215. These figures make a total of 21,273 marine miles. Thus you pass seven days and a half on a

transatlantic steamer, five days and a half on a railway, twenty-two days on the C. P. R. steamer, thirty more on the P. and O. boat, and the tour of the world is made.

For those who are more pressed for time, it is a very simple thing to go from Liverpool or Queenstown to New York and take the railway from New York to Montreal. By that you gain a day. Then, on the return voyage, you can leave the P. and O. steamer at Brindisi, and take the mail train across France and the Pas de Calais, by which you gain eight days. Altogether, then, it requires but sixty-five days to make the circuit of the globe. It is true that the journey is not taken at the equator, and that you are cheated out of 327 miles, but nevertheless the traveler ought to be content.—*Goldthwaite's Geographical Magazine.*

THE NEW BRIDGE ACROSS THE THAMES.—A new bridge has recently been built across the Thames River, London, England, just opposite the famous London Tower. It has been built on the bascule principle so as to allow ships to pass to and fro. It consists of three spans with two immense piers stationed 270 feet from either bank. These pillars, built of finely jointed Cornish granite lined with brick masonry, rise 240 feet above a foundation set 27 feet in the river bed. Inside these piers are hollow chambers in which are placed the heavy weights that balance the leaves of the lower roadway. This lower roadway is about thirty feet from high-water mark and is used for all kinds of traffic. When ships wish to pass, the hydraulic power raises the 2,000 tons weight in two minutes, and in five minutes the ship has passed and the bridge is ready for the teams to cross. Pedestrians are not obliged to wait even that time. Two parallel bridges are placed 135

feet above high-water mark across the centre span. Stairways lead up to these roadways and elevators with the capacity of carrying thirty persons at once are provided for the public.

—*The Educator.*

A PROJECTED SHIP CANAL.—It is proposed to build a Ship Canal between Bordeaux and Narbonne; that is to say, from the Atlantic Ocean to the Mediterranean Sea, and a definite statement as to its dimensions and estimated cost has been published by M. Rene Kerviller, an eminent French engineer, who says that the canal would be 320 miles in length from sea to sea, and from 144 to 215 feet broad, with a depth of from 28 feet to 33 feet, so as to admit the passage of the largest ironclad. There are to be sidings three-quarters of a mile long at intervals of every eight miles, so as to facilitate navigation and avoid delays of traffic, while there are to be 22 locks, each of which is to be about 650 feet long by 80 feet broad, with a fall of from 20 to 60 feet. The ships using the canal are to be towed or drawn by fixed engines.

THE LONDON STONE.—In the heart of the city of London stands an old house of worship—the church of St. Swithin. It was rebuilt upon its former foundation by Sir Christopher Wren, who was also the architect of St. Paul's Cathedral.

The traveller who visits it, must pass through the crowd of hucksters of fruit and vegetables, and of women with baskets of flowers, which surround it, until the foundation is reached, and there among the bluish stone slabs, of which it is formed, will be found a large oblong, gray stone. This is London Stone. It was erected by the Romans, fifty years before the birth of Christ, to denote the central point of their possessions in Britain.

VANCOUVER'S DEFENCES.—British engineers have recently been planning an elaborate system of coast defences for the Esquimalt and Victoria harbors on the island of Vancouver, British Columbia. Fully two hundred men have begun work on these defenses, under the direction of Major R. E. Muirhead, an expert British engineer.

The Victoria and Esquimalt harbors, on the southeastern point of Vancouver's island, are separated by a small peninsula. On this peninsula the defenses are to be built, extending back far enough to protect both land and sea. All the modern scientific war inventions are to be used, and it is expected that it will take at least two years' time and many thousand pounds sterling to complete the works. An elaborate system of underground tunnels will connect the pits, magazines, etc., and several parapet forts will be placed on the surrounding hills, so that British guns will prevent an enemy from setting foot on any part of the island.

This port will become the great British coaling and repairing station on the Pacific coast, and will give Great Britain the key to the north-west Pacific coast, including Puget Sound.

#### A LITTLE SONG.

“Who'er the solitary be  
 Helps God about His gracious  
 task,  
 And feeds the feathered family  
 That may not ask,  
 He gains three gifts will sure  
 amend  
 Some lack in that lone life  
 above,  
 A little song, a little friend,  
 A heart of love.”

—*M. E. King.*

## DISCUSSION.

## RELIGIOUS EDUCATION.

IT is so far satisfactory to know that the article in *The Week* on which we recently commented did not mean all that it seemed to say. But the article in which it explains itself is not quite what we should like. In the first place, there is a slight want of ingenuousness—unconscious of course—in the use which the writer makes of our illustration from the Jewish Theocracy. But we need not waste words over an illustration.

We are certainly glad to find that the writer does not want to divorce religion and true morality, as we certainly understood him to say that they could not be combined in the teaching of our public schools, whilst our contention was, that an earnest effort should be made to combine them. We mentioned several ways in which that might be done. Experiment and experience alone might enable us to decide as to the best way of teaching morality with a religious sanction. But at any rate we thought that, in an essentially Christian country like ours, the attempt should not be abandoned. If the writer in *The Week* agrees with us so far, we are glad and thankful. We have at least a common starting point.

But we are rather startled to find further on that religious teaching, although desirable, is not practicable. This is hardly the language of faith or of reason. If a thing is right it should be done. If a thing seems good, it cannot be lightly abandoned as unattainable.

As regards the best methods of imparting religious instruction, there is no reason in the world why it should be the same in all places. In large towns the system of separate schools might be extended. In some places

the school board might appoint a teacher who should undertake to give religious instruction at the beginning of the day to children whose parents were willing that they should receive it. This seems a very dreadful suggestion to the writer in *The Week*. It would be shocking, apparently, that a hundred Christian children should be taught by a Christian teacher. It is not at all shocking that ninety-nine children of Christians and one child of an agnostic father should be taught by an agnostic. Is this what is meant by the State not interfering with religious teaching? Is this what is meant by religious liberty? On this ground it would appear that we are to consider the feelings of unbelievers, sceptics, agnostics, who cannot be supposed to have any very acute feelings on these subjects, but not the feelings of Christians, to whom the faith of Christ is a matter of life and death. Besides, we have repeatedly declared that the convictions of the parents are to be respected by an honestly-worked conscience clause.

There are some astonishing remarks on the teaching of religion in Europe. For example, we are bid to go to Russia—a semi-barbarous country—to learn its effects! Then we are told to go to France. What of the United States? The fact is, these short and easy methods are most fallacious. Would Russia be better without her schools and her churches. It is possible that the writer in *The Week* may be better acquainted with the social condition of France than the present writer. But we fancy his notions are of that general kind which is derived from a glance at Paris or at some of the great cities. If he will acquaint himself with the population of France, not as they appear in the streets of Paris and in the col-

umns of the newspapers, but in their schools and their homes, he will probably form a different opinion as to the teaching of religion in French schools. But we are happy to think that these reasonings do not represent

the real mind of the writer. Whilst he tries to prove that religious instruction has done no good—a very difficult thesis—he still allows that religion and morality cannot be separated. A PROVINCIAL.

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### EDITORIAL NOTES.

The National Educational Association of the United States will hold its annual meeting at Asbury Park, N. J., July 6th to 13th.

At a recent meeting of the Senate of the University of Toronto, a statute creating the degree of Bachelor of Pedagogy was read a second time and passed. It prescribes: (1.) That the candidate must hold a degree in arts, obtained after a regular course in some university in the British dominions, and also a first class public school or an assistant's high school professional certificate from the Ontario Education Department; (2.) he must pass an examination in psychology, the science of education, the history and criticism of educational systems, school organisation and management, and methods in English, mathematics, Latin, and one of following: Greek, natural science, (biology, physics and chemistry), French and German.

It was resolved to change the date of the annual senior matriculation examination from September to June, the examiners being the same as for the supplemental junior matriculation, and the examination being open to all candidates who have not taken the first year examination in the preceding month.

### BUSINESS.

We would respectfully call the attention of our readers to the fact that in the large majority of cases their subscriptions have not been paid. We find, upon examination, that *less than one-quarter* of those who are regularly receiving copies of the Magazine have paid their subscriptions, and of the remaining three-quarters a great many *are in debt for two or three years*. Now, the Business Manager has, over and over again, sent out his bills, and therefore ignorance cannot be pleaded in excuse of this neglect. We are kept in continual financial difficulties from no fault of our own, but simply because our subscribers are too careless to forward the trifling amounts to which they are in debt. Such conduct with regard to any other debt would be considered as bordering upon dishonesty, and while we know that in the present instance it is nothing but pure thoughtlessness, yet we must remind our readers that by this very thoughtlessness we are compelled to trespass very considerably upon the forbearance of our printer. We hope therefore that all who have not already done so will forward the



amounts of their indebtedness.—*St. John's College Magazine, Winnipeg.*

We repeat the above paragraph, because the experience of the *St. John's College* paper is that of this *Magazine*. Will our subscribers kindly act as those of the *Winnipeg* paper are requested to do, and our printer and we shall be glad therefor.

### RECITATION.

Of all the points noticed in the report of the committee of ten, the one which would produce the widest beneficial effect, is the statement that no pupil of a Secondary school should have, in a week, more than twenty-five lesson-recitations; even less than this number would be better than more. We wonder if the learned chairman of the committee penned that sentence when he had in his mind's eye secondary schools which have from thirty to forty-five lesson recitations per week.

No one need be astonished at the cry of over pressure which has arisen in Ontario, when we have some of our high schools requiring forty-five recitations in a week.

The consequence is, on the part of the pupil, failing health, poor, puny young men and young woman, "good for nothing" when they finish their literary work; quite unfit for the common but trying work of life. The culpability of any head master who deliberately by direct and indirect methods compels our young people to consume their growing energies in order to secure a record for his school, is only paralleled by a low class of men we do not care to mention. An educator should jealously guard the springs of life. This caution we very specially commend to the attention of the Education Department and its officials. *The fad* known as succession of studies does not meet the evil.

### PEEL COUNTY TEACHERS' INSTITUTE.

The annual meeting of this Institute was opened on April 19th at Brampton the president, Wm. L. Judge, presiding. Addresses were given by Wm. Houston, M.A., Inspector Embury and W. J. Fenton, Classical Master of Brampton High School. Discussions followed on the various subjects contained in the addresses.

On the evening of the 20th a concert was held in Grace Church under the joint auspices of the Institute and the Epworth League of the Church.

The highest salary paid to any public school teacher in the county is \$800, while the average salary is \$257.

The following applies equally well to C. E. M. These friends are needed at all times but especially at the present.

NEW YORK, February 24th, 1894.

"MY DEAR MR. GOLDTHWAITE :

"Herein you will find my check for \$5.00 for which you will please advance my subscription on your books as far as that amount will take it. You will recognize me as one of your subscribers from the first, but as we are not personally acquainted you may not understand my motive for this advance payment. Let me outline it in a few words.

"In conversation with a gentleman largely connected with the distribution of periodicals in this country, a few days ago, the subject of the serious effects that these hard times are having on some of our most deserving journals was introduced, and your praiseworthy struggle against heavy odds was mentioned as one case in point. Your magazine has been so free

from any word of this sort that I had only its irregular appearance during the past fall to judge by; Therefore, I was surprised to know how serious the fight, that you have been waging for so long, really was. My informant gave it as his opinion that if a fair proportion of your magazine's friends and well-wishers (and who among its readers is not both of these?) could understand the situation, appreciating the effort to popularise geography and its cognate sciences that you are making, they would promptly come to your aid with advance subscriptions, with the subscriptions of everyone they could interest in the magazine, and with free-will offerings of MSS suitable for your use.

"This idea struck me favorably as eminently practical. I cannot contribute to your pages, unless you see

fit to publish this as such (minus my name, please) but I can spare the enclosed, I wish I could spare more, and I hope to be able to scare up a dozen or so new subscribers for you among my acquaintances.

"These have been wretched times, but they will seem doubly wretched to many of us if the G. G. M. stops coming to our library tables. You owe it to us all to keep it going, if you possibly can; but we surely owe it to you to lend shoulders for the wheel. Here is mine; I only hope it may prove to be one of a thousand to join together in the good work!

"With the sincerest wishes that in some way my good intent may benefit you and that times may soon be better for us all, I am,

"Ever yours, geographically,"

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## CONTEMPORARY LITERATURE.

*St. Nicholas*, always interesting, is a welcome visitor to anyone's library table. A new serial by Howard Pyle, and beautifully illustrated by the author, begins in the April number. Mrs. Jamieson, the author of the pretty stories "Lady Jane" and "Toinette's Philip" is the subject of a biographical sketch which is sure to be eagerly read by her thousands of young friends. The verse, the articles, and the smaller contributions, which go to make up the number are all up to the high standard of *St. Nicholas*.

The April *Eclectic* is a good number, containing several important papers, among which we notice Sir Robert Ball's "Significance of Carbon in the Universe," and Mr. W. S. Lilly's "Philosophy of Crime." A most interesting review by Sir Mount-

Stuart Duff, of the "Life and Letters of Arthur Stanley" also appears, and Professor Mallock's discussion of "Fabian Economics," in which the arguments of Socialists are carefully reviewed, is a valuable contribution.

*Table Talk* for this month opens with a sensible article on "The Effect of Competition upon the Terms of Domestic Service." Nine pages are then devoted to "Housekeepers' Enquiries," and the remainder of the magazine contains recipes, hints, novelties, letters, etc. This is always a good magazine.

The April *Scribner's*, as usual, is beautifully illustrated by A. B. Frost and other artists. An impressive short story by Thomas Nelson Page is entitled "The Burial of the Guns," and the serials by Geo. W. Cable and W. H. Bishop are continued. Art

is represented by "French Caricature of To-day," and "A Word about Painting"—the latter dealing with present tendencies in American art. Everybody will read "At Tully's Head," by Mr. Austin Dobson, and every Canadian will feel special interest in Duncan Campbell Scott's verse.

The March *Overland* publishes an important editorial (presumably by President Eliot, of Harvard) on the recent report of the N. E. A. on Secondary Studies. From an educator's point of view, this is the most important feature of the magazine, but the short stories and articles are fully up to the standard.

A recent issue of the *Youth's Companion* contains a short story by Clark Russell, and a most readable account, by Grace Greenwood, of the Prince of Wales' hunting on Grande Prairie, Illinois. Short anecdotes and verse make up this excellent weekly paper.

Recent issues of *Littell's Living Age* have been specially noteworthy for the important articles on English political and social questions. Two articles from *Blackwood's* appear in a recent number—one by Frank Beddard, "The Newest about Earthworms," and one by Moira O'Neil, on "The Power of Dante." The verse in the same number is by Christina G. Rossetti and others.

In the May *Lippincott* Prof. Charles G. D. Roberts, under the title of "The Young Ravens that call upon Him," gives a strong and interesting sketch of the wild life that possesses such a charm for him. Among the verse is a short poem by Florence Earle Coates, the spirit of which reminds us of her beautiful lines, "My Ideal." The story is by a new writer, Elizabeth P. Train, and is called "The Autobiography of a Professional Beauty." "Genius at Home" is an

article on a subject of perennial interest.

Professor Charles G. D. Roberts and Miss Florence Earle Coates are also among the contributors to the April *Century*, a number of great interest and strength. Miss Coates' article on "Matthew Arnold" is appreciative and clever, and Roberts' verse "The Quest of the Arbutus," is sweet and pure in tone. Aldrich writes of Ellen Terry in "The Merchant of Venice;" Margaret J. Preston of "The Poet's Rose," and F. Marion Crawford contributes an illustrated article on "The Gods of India." These are a few of the attractive features.

The latest issue of the *Athenæum Press* is a convenient, accurate and well-executed edition of Gray's poems, with portrait, edited by Prof. Phelps of Yale.

A fourth edition of the "New Geography" has just been issued by Messrs. Moffatt & Paige (London, Eng.).

Two valuable books on "Agricultural Chemistry" have just been published by Messrs. W. Blackwood & Sons (Edinburgh and London). The first is a new edition (the Seventeenth) of "Johnston's Agricultural Chemistry," which has been thoroughly revised and largely re-written by the present editor, Professor Aikman. The companion volume is "Manures and Manuring," a very complete and excellent work, by Professor Aikman.

Johnston's work on "Agricultural Chemistry" has of course been well known as a good text-book for many years. The present edition was rendered necessary by modern research and progress; the part relating to geology is practically unchanged, but the editor's additions are important, especially the chapters on "Milk and Dairy Products."

Professor Aikman's work on "Ma-

nures and Manuring" is divided into three parts: I.—Historical Introduction; II.—Principles of Manuring; III.—Manures. There are also a number of appendices, statistical and other, one of the most important being an account of the celebrated Rothamsted experiments.

It will be seen that these books are of value to many Canadians, and we heartily commend them to all our readers who may have any interest either in farming or chemistry. The general reader will also find a large part of both books interesting. A good index is added to both volumes.

An exceedingly useful book to students beginning microscopic work is that on "Practical Methods in Microscopy," by Principal Clark of Sanborn Seminary. (Boston: D. C. Heath & Co.) It is often the case that textbooks in science assume much that the student has never had an opportunity of acquiring, but must make out as best he can, in regard to the best way of using his instrument, preparing his work, etc. We therefore think this book is sure of a cordial reception. The figures, plates, printing, etc., are excellent, and there is an index.

A late volume (and an excellent one) of the Athenæum Press Series is a "Selection from the Essays of Francis, Lord Jeffrey." (Boston: Ginn & Co.) The editor, Professor Lewis E. Gates of Harvard, has discharged his duty with care and skill. The Selections include the essays on "The Dramatic Works of John Ford," "Hazlitt's Characters of Shakespeare's Plays," "The Lady of the Lake," "Crabbe's Poems," "Childe Harold's Pilgrimage," and others.

Macmillan's School Library. The Story of the Odyssey. By A. J. Church, M.A. New York: Macmillan & Co. We could wish that

all children's books were printed in such beautiful type as this. The volumes of the School Library are very suitable for Supplementary Reading in Schools, and the present number is a skilful condensation of Homer's wonderful story, such as any intelligent pupil would find interesting.

"The Stickit Minister and Some Common Men," by S. R. Crockett, a collection of Scotch stories, probably known to many of our readers, has just been published by William Briggs, Toronto. The author's style somewhat resembles Barrie's, and the book would do anybody good. Let anybody read "The Rev. John Smith, of Arkland, prepares his Sermon," for instance.

A work on rhetorical analysis is needed at present and our readers will find a little book by Mr. Williams, Principal of the Collingwood Collegiate Institute, of assistance in this subject. It takes up the work for 1894 and contains many hints and exercises. (Collingwood: D. Williams.)

Messrs. D. C. Heath & Co. issue this month Prosper Merrimée's "Chronique du Règne de Charles IX." and Del Testa's *L'Oro e l'Orpello*," both well edited and annotated.

Messrs. Ginn & Co. have published an examination manual prepared by G. A. Wentworth and G. A. Hill, on "Plane Geometry." It is intended as an aid to students in handling original problems and to supply useful text-papers for teachers, and is an excellent manual for the purpose.

"A Brave Baby" is the name of a collection of stories by Sara E. Wiltse, originally published in different papers and magazines, and especially suitable for the reading of school children. (Ginn & Co.)

## SCHOOL WORK.

## EXAMINATION PAPERS.

N. ROBERTSON, B. A., H.M.,  
RICHMOND HILL.

There was a mistake (typographical) in the definition which I gave of a "figure of language," in connection with my paper in March, on "The Lady of the Lake," and third-class literature. The passage should stand thus:—"A figure of language is a distinguished mode of speech which expresses a thought, mostly with some additional idea, and always more to the purpose of a writer or speaker than ordinary language would be and which naturally results from a state of mind suited to itself."

## PROSE.

"Every class of the population, English and native, with the exception of the ravenous pettifoggers who fattened on the misery and terror of an immense community, cried out loudly against this fearful oppression. But the judges were immovable. If a bailiff was resisted, they ordered the soldiers to be called out. If a servant of the company, in conformity with the orders of the government, withstood the miserable catchpoles who, with Impey's writs in their hands, exceeded the insolence and capacity of gang-robbers, he was flung into prison for a contempt. The lapse of sixty years, the virtue and wisdom of many eminent magistrates who have during that time administered justice in the Supreme Court, have not effaced from the minds of the people of Bengal the recollection of those evil days."

1. What, and where found, is the subject of this paragraph? Ans. In the second sentence.

2. How is emphasis gained for the subject? Ans. By isolation.

The first sentence is subordinate, and, in accordance with the paragraph law of "due subordination," should have its rank indicated, thus:—"Although every class, etc., cried out loudly against this fearful oppression, the judges were immovable." Macaulay, however, always has an eye for emphasis, and, to secure it, often raises subordinate to the rank of principal clauses.

3. Point out the violation of the law of parallel construction contained in the paragraph.

4. Show that the law of Consecutive Arrangement is observed, as also that of Indication of Theme."

Note Macaulay's mastery of the vocabulary of invective, exemplified in "ravenous pettifoggers who fattened on the misery and terror," "miserable catchpoles," "insolence and rapacity of gang-robbers." The vituperation is intensified by the figurative language in "ravenous pettifoggers who fattened." The paragraph exemplifies the quality of style called strength ("maleficent strength").

"High School Reader," Page 386, 2nd paragraph.

The paragraph, "Let us reflect——if what is said is true." What is the subject of this paragraph, and where found? The pupil will readily perceive that the subject is indicated in the first sentence, and is made up of two parts. The theme of the paragraph may be thus stated:

Death, a gain, whether it is (*a*) a state of unconsciousness, or (*b*) a migration of the soul from this world to another. The handling of the theme follows the order stated in the subject, and, as the latter part of the theme is conceived to be the more important, there is more space given

to the development of it; thus exemplifying the law of "due proportion." Enumerate the advantages of death, under the second head. By what name would you designate the order in which the particulars are arranged?

It will be observed that the relation of the sentences to one another is what is technically called "cumulative."

What phrase indicates what advantage Socrates held to be most important, and by what technical term is it designated? Of course, the phrase is "above all," and the designation is "explicit reference."

How is the phrase, "professors of justice in this world," to be understood, literally or figuratively? If figuratively, mention the figure.

Note the stroke of concreteness in "Minos and Rhadamanthus and Æacus and Triptolemus," and state its effect.

What effect has the repetition of the conjunction "and?"

Note that energy of expression is gained by the interrogations (*eroteses*), and the state of mind they indicate.

Note, again, the repetition of "and" (*polysyndeton*).

"And finds the true judges who are said to give judgment there, Minos and Rhadamanthus, and Æacus and Triptolemus," etc., is not accurately punctuated. The passage should read thus: "And finds the true judges, who are said to give judgment there,—Minos and Rhadamanthus," etc. The dash is mainly a rhetorical pause-mark, and should be employed here to give expression to the rhetorical *echo*. By the way, I may here take occasion to remark that the "High School Reader" and the other readers used in our schools are punctuated in a slovenly manner,—another indication of the low estate of scholarship when it has degenerated into the hands of our rabble of ecialists.

Resuming, it may be observed that "converse" is repeated too often, and is an offence against the elegancies.

The distribution of emphasis in the last sentence could be improved, thus: "For, besides being happier in that world than in this, they will, if what is said is true, be immortal." "Immortality is the thing," and so should be made to occupy a position of dignity suitable to its greatness.

#### CHAPTER 23.

Nactus. In what situation do we find this verb used? Distinguish it from *invenio* and *reperio*.

When does *idoneus* take *ad* with the accusative?

What is the position of *ferē*?

A *quibus cum paulo tardius*. With what meanings does *cum* (*quum*) take the subjunctive mood?

In temporal clauses what is the rule?

See for *quum*, an excellent study by Prof. G. W. Hale, now professor in Chicago University, in Cornell Classical Studies.

Give the force of *tardius*.

*Cujus loci haec erat natura*. *Cujus*. Note the same usage as in chapter 14.

*Haec*. Explain. Why not *hoc*?

*Conspexit*. What verbs are conjugated like *facio*?

*Aque ita montibus angustis mare continebatur*. Translate this idiomatically. Try to account for this peculiar use of *angustis*.

What is the exact translation of *ex locis superioribus*?

Note, again, the usage with *idoneum*,—*idoneum ad egrediendum*.

*Eo* *convenient*. Discriminate between *eo* and *ibi*.

Give the syntax of *dum* in clauses like *exspectavit dum naves eo convenient*.

Explain the subjunctives in *cognosset, vellet, postularent, haberent, administrarentur*.

*Et ventum et æstum*—*nactus*

secundum. Note, again, the usage in the case of *nactus*.

*Milia passuum*. Note the construction with *milia*.

It is my conviction that, for advanced classes, and indeed for mere tyros, the questions on the texts read should be put in Latin, and that answers should be exacted in the same language; but, should I attempt to do so in my own classes, I should fear lest a real scholar like Prof. Goldwin Smith or Prof. Hutton, might say, *Tua latinitas haud quaquam pura est, domine*. Who has not been disgusted with gibberish that passes in our Collegiate Institutes for French and German conversation. It evokes the plaudits of the pretentious and the ignorant.

#### ENTRANCE LITERATURE.

PETER McEACHREN, B.A.

#### LOSS OF THE BIRKENHEAD.

FOURTH READER, LESSON III.

(Page 23-25.)

In the notes the figures, 1, 2, 3, 4, refer to stanzas.

1. Why is "flank" and not "right" or "left" used?

Right on our right, or right on our left, would be objectionable.

Why? Of what class of people is "right on our *flank*" the language? Of soldiers.

Is there any correspondence between sound and sense in line 2? Is the speed of the line suited to express rapid motion? Why not? Because there are so many long vowel sounds in it.

Why would not "shout" or "call" do as well as "shriek"?

Which word best indicates horror? How is the time of the occurrence indicated? "Sun went down."

What was the state of the atmosphere? "Crimson sun."

Was it a stormy evening? "Dark repose."

How is the feeling of horror heightened? By the contrast of a crimson sunset on a calm sea, with the shriek of the women.

2. What caused the shriek?

Has a ship power to feel? How is the impression that it has such power conveyed? To what in relation to men are the timbers in relation to the ship compared? Timbers—nerves.

3. To what in an army are the flanks compared? What should be the occupation of a man who uses this comparison? Soldier.

What feeling has the writer towards base cowards who leave their ranks in danger's hour? Contempt.

What is the grammatical relation of planks? Subject of drifted.

4. Why was there confusion? What is the white sea-brink? Why white? The color of the coast or of the breakers.

It was clear—what was clear? For what does "it" stand?

5. "Out—devours." What sort of man said this? Were there many such on board? What is implied in "No officer of ours."

6. We had our colors, sir, to keep without a spot! How does the man uttering this compare with the one who was clamoring?

What were the colors? Discuss the advantages and disadvantages of carrying colors into battle.

7. Distinguish between "loose" and "lose." What is meant by "gave the word"? Formed whom in line to die? Compare the attention given by the soldier to the words of the coward and those of the colonel? What, to this end, is the effect of the capital letter?

8. What is the meaning of "there" in line 1? What is the subject of

"rose," Murmur, or thought? Arrange "our-trained" in natural order. Show clearly how lines 3 and 4 explain line 2.

9. What thoughts, think you, would occupy the minds of the soldiers?

10. "We are as near Heaven by sea as by land." To whom is this saying attributed? To Sir Humphrey Gilbert. Compare with stanzas 10 and 11.

11. "Well, wild, wearing, wounds." Note the initial letters, alliteration.

12. "Joint heirs with Christ;" whence quoted? Rom. 8-17., "if so be that we suffer with Him, that we may be also glorified together."

What effect is secured by linking the self-sacrifice of those soldiers with that of Christ? What saves the statement from being irreverent?

What is the value to the English nation of such poems as "The Loss of the Birkenhead," and "Ye Mariners of England." English supremacy depends upon the fleet. Why?

Whence did the writer of this poem get the noblest sentiments that he expresses? What have Christianity and Patriotism in common? Can a man be a soldier and a Christian at the same time? What was the utterance of the only self-seeking man referred to in the poem? How was it received?

CHAPTERS 32-38.

By H. I. Strang, B.A., Collegiate Institute, Goderich.

I. Translate into good idiomatic English, Chapter 32. *Cæsar id—circumderant.*

1. Parse *aliquid, duas, adorti.*

2. *Cohortes proficisci.* What would this become if *imperavit* were used instead of *jussit*?

3. Compare *ægre, novi,* and conjugate *delituerant, demesso,* and *disperso.*

4. *Circumdederaut.* What compounds of *do* are of the 1st, and what

of the 3rd conjugation respectively? 5. *eam partem, incertis ordinibus.* Give the dative singular and genitive plural of each pair.

II. Translate Chapter 34, *Quo facto—demonstraverunt.*

1. Construction of *loco, dies, castris.*

2. Classify the subjunctives in the passage.

3. *Alienum.* How does this word come to mean *unfavorable*?

4. *liberandi sui.* Point out and account for the peculiarity in the syntax.

5. Distinguish *reliqui* and *ceteri*; *prædico* and *prædico.*

III. Translate idiomatically.

(a) "*Quos tanto spatio secuti, quantum cursu et viribus efficere potuerunt, complures ex iis occiderunt.*"

(b) *Qui quum propter siccitates paluduni, quose recipere, non haberent quo perfugio Superiore anno fuerant usi-omnes fere in potestatem Labieni venerunt.*

IV. 1. Conjugate compounds of *sub* and *teneo*, *ob* and *caedo*, *ad* and *capio*, *cum* and *facio*, *pro* and *habeo.*

2. Distinguish *hic huc,* and *hinc*; *idem* and *idem.*

3. Form nouns from *conspicio*, *consuesco*, *facilis*, *navigo*, and adjectives from *onus* and *quotidie.*

4. Nominative, genitive, and gender of *paludum, horis orbe, vulneribus, viribus.*

5. Compare *citissime, diutius,* and conjugate *nactus, consuerint, incensis.*

6. Decline the plural of *superior locus,* and the singular of *omnes nostri impetus.*

7. Write the 3rd singular future indicative of *jussit, delatæ sunt, nolent, consuerint, constiterunt.*

8. Write the perfect infinitive active of *gestis, præstari, ponere, premanetur, coacta.*

9. Write an explanatory note on *supplicatio.*



10. Translate into Latin : To fight on foot, to recover from their panic, to land his troops, we have no place to retreat to, when Cæsar was told of this, to adopt new plans, of whom mention has been made previously.

### QUESTIONS ON ENGLISH GRAMMAR.

1. Classify and give the relation of each *that* in the following sentence, "He told us after that that that that that that boy passed was wrongly used."

2. Write three sentences containing the clause, "That nobody can hear" used with the value of a noun, an adjective, and an adverb, respectively.

3. Use the word *burning* with an attributive, appositive, and predicative value, respectively.

4. Write three sentences, giving the clause, "Who promised to pay for it," a restrictive, descriptive, and co-ordinating force, respectively.

5. Complete "Who do you think" correctly, so as to show two different relations for *who*.

6. Complete "Whom do you think" correctly, so as to show four different relations for *whom*.

7. Use *even* as an adverb modifying a phrase, and *long* as an adverb modifying a clause.

8. Show that an infinitive phrase such as "To do that," may perform at least five different functions in the analysis of a simple sentence.

9. Show that a preposition phrase may occasionally have the value of a noun.

10. Exemplify the four ways in which two clauses may be co-ordinated to each other.

11. Classify and give the relation of the subordinate clauses in the following :

(a) Now that we are all here let us begin.

(b) She wept at the thought that she could never see it again.

(c) That's the very reason that I refused to go.

(d) Are you tired of us that you are going away so soon?

(e) Bear witness that I have tried to do my duty.

12. Write out the clauses of the following in full, and tell the kind and relation of each :

"Be that as it may had I known that in spite of all you said to him he would behave no better than before, I would have suspended him, whether his father approved or not."

Oh visionary world, *condition* strange, Where naught abiding is *but only* *changè* !

. . . . .  
And *bit* by bit,  
The cunning years steal *all* from us  
*but* woe.

*Leaves* are we whose decays no harvest sow.

But, when we vanish hence,  
Shall they lie *forceless* in the *dark*  
*below*,

*Save* to make *green* their little length of sods,

Or deepen pansies for a year or *two*,  
Who now to us are shining—sweet as gods?

Was *dying* *all* they had the skill to do?  
That were not fruitless : but the soul  
resents

Such short-lived service, as if blind events

Ruled without her or Earth could so endure.

—*Lowell*.

1. Write out each subordinate clause in full, classify it and give its relation.

2. Classify and give the relation of each of the italicized words.

3. Justify the form *were* in line 12.

4. Show the prominent force of *that* in line 12, and *so* in line 14, by substituting equivalent words, phrases and clauses for them:

5. Point out any figures of speech