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THE CANADA
EDUCATIONAL MONTHLY
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FEBRUARY, 1896.

CRAM-PROOF TEACHERS.

BY ERNEST COOMBS, M.A., PRIN. H. S., RICHMOND HILL.

OUR Education Department is certainly a progressive institution. It has been its custom to take one step every five years; but at the close of the last quinquennium it seems to have taken two, and no one need question the wisdom shown in such an advance. The whole tendency of the new order of things under the new curriculum is to thoroughness and breadth of learning. The institution of an examination for First Form pupils, with the additional stimulus of Honors for them, will certainly put an end to haphazard and unworthy promotions, and will be a matter of great satisfaction to all concerned, and then the addition of languages to the Junior Leaving curriculum is a step which will compel boys to begin at the right time the languages which have heretofore been put off, and finally crammed up for matriculation, after a Junior Leaving had been taken in Science. For a pupil who prepares the matriculation work in two or three languages, in one year, has certainly neglected a very important factor in his education, namely, time.

But with these additions to the High

School curriculum, the teachers are brought face to face with a most appalling question, and this refers in a greater degree to two-teacher and three-teacher schools, and here is the question, Where are we going to find time to teach *all the subjects*? Can we really teach them or shall we simply cram them up in order to pass as many pupils as possible?

And this question is certainly aggravated by the keen competition between neighboring schools. Men and women have begun to judge the efficiency of a staff of teachers and the school by the number of certificates obtained at the July examinations, and less than a week ago our daily papers contained a speech (made by a newspaper man who has wide influence because he is a member of Parliament and is also a graduate of Toronto University) in which a comparison of work in High Schools was made in a most dangerous way. The speaker, referring to one of the larger High Schools of the Province, pointed out that, with a staff of four teachers, that school had passed more pupils than four of the smallest schools in the Province whose teachers aggregated eleven. It is needless to

point out the danger of such comparisons. The tendency is certainly to make schools and teachers aim wholly and solely at shoving pupils through the examinations. To my mind, if the staff of that High School, which was so loudly praised, wish to prevent cramming, they should way-lay this false eulogizer and compel him to retract every statement on the subject, on penalty of a severe chastisement. For there is no doubt that every one is too apt to count heads rather than to look at the thoroughness of the work done. And anything which tends to increase this spirit is debasing and even actually sinful. For what our country needs to-day is not crammers but cram-proof teachers.

And this brings us to the point that thoroughness is seldom obtained by a single reading. We all know that that which is but once read is likely to be soon forgotten, and yet some one is sure to find fault if a pupil is taken over the same work twice or three times, and we are led to ask ourselves the question, Is review and repetition in the High School course necessary? We have not to think long in order to answer that satisfactorily. If we go to the World's Fair and take two hours in each building we will soon have seen it all; but how much will we remember when we get home. So in the field of studies. We may go over all the studies once, but what sort of an education have we when we have done it. It certainly follows that education means *time* and *repetition*. The question resolves itself into this—Shall we learn *much* or learn *well*? Shall we always strive to say and read something new? or shall we not hesitate to repeat the good which has been said and read a hundred times, it may be?

And in pupils, too, this cram system has reached alarming proportions. How frequently we hear pupils speak

of examinations as the chief end of their year's work! How we see them read over examination papers, in order that they may anticipate the style of question which will be propounded to them at the end of the year! How they dislike certain studies whose usefulness for educational purposes are unexcelled, but which they study simply because they have to. For instance, we know of a case where a pupil told a teacher that he wished to drop Latin and Algebra and Euclid and rhetoric and give his time to some *useful* study, as, for example, reading and figuring. The teacher asked him if he did not wish to drop geography, too. But the pupil said that geography was of infinite importance to a man. For supposing he wanted to go to Alaska or Borneo how would he find the road without a knowledge of geography. But, of course, the utter fallacy of such an education as that pupil wished for, from a psychological point of view, is very manifest. Very little argument is necessary in order to show the value of every subject on the High School course, and to show this value, in my opinion, is part of a teacher's work. Far too many pupils have utterly false ideas of the real end of education.

If a pupil passes an examination by small effort, we may be very sure that the practical result is even smaller. We have heard men boast that they prepared for an examination in a single evening or night, and many times have men barely scraped through and have shown themselves off as having taken distinguished courses. Sorry, indeed, would we be to entrust the education of the young to teachers of such mushroom growth. And that is what they are. For at present I can think of only one thing which came to maturity in a single night; and that is Jonah's gourd. But the lamentable part of that story is that

the gourd withered the next day when the sun rose, and education which is acquired in a day, will wither when tested by the strong light of the sun.

Our contention, therefore, is plain. We must, in the process of education, have at least two factors—*application* and *time*.

But as we are, in this paper, dealing with the last one, let us briefly indicate why it is necessary.

The neglect of the factor, time, leads to rashness and difficulty. The proper observance of it, to stability and soundness. Had the Stuarts taken time to deliberate, Charles I would likely have had his head longer than he had it; Charles. II would not have ended his life in sorrow; James II would not have been compelled by the strain of circumstances to leave the throne; the pretenders would have foreseen the uselessness of attempting to recover the throne from sovereigns so firmly settled on it. Even the modern Grover Cleveland, had he taken more time to think, would hardly have led his country into the ridiculous position in which we at present find it. Yes, it is psychologically true that reason can be developed only by *time*, and as reason is the end of education, it logically follows that in the process of education there is every necessity for *time*.

And, again, if we neglect this factor we are going to fail in another respect; for by so doing we give no time for reflection and at best can only teach facts and words, whereas we should be teaching ideas. A teacher who was cramming his pupils for examination told his Latin class that "Nihil praetermise" meant "I have left nothing undone." A few days after, one of the pupils came to the sentence, "I have left no stone unturned," and instead of catching the idea of "Nihil praetermise" he wrote "nullum lapidem reliqui" and

looked in the dictionary for the word for "unturned." This one example will serve to teach us the absurdity of educating our pupils in anything except ideas, and if we teach our pupils ideas, no pupil will want to give up Latin, algebra, etc., because he cannot see the use of such subjects.

It is absolutely necessary to demand that our pupils *reproduce* what they have learned. For no man knows a thing until he has reproduced it, and, in fact, until he has reproduced it in his own natural way. For as soon as a man can make clothing for his thought, that thought becomes his own. But to *reproduce* means to take *time*. It also means to *reflect* and also to *master*, and this is the end for which we are fitting our pupils.

It may be that, up to this point, I have said little that is new. But whether this attack upon the cram system be old or new this one fact remains: that cramming is to-day frightfully common among the educators of Ontario, and with its evils so apparent, why do we not stamp it out? A true teacher is the truest kind of a patriot. But a teacher who hastily feeds his pupils with the unripe facts which may be hastily plucked from the school text-books is committing a worse crime than feeding green apples to young children, and when the summer time of life dawns upon them he will, with horror, behold the offspring of his teaching die of a more dread disease than cholera morbus.

"The heights by great men reached
and kept,
Were not attained by sudden flight,
But they while their companions slept,
Were toiling upward in the night."

Be thou the first true merit to befriend;
His praise is lost, who waits till all
commend.—*Pope.*

THE INFLUENCE OF THE HIGH SCHOOL UPON EDUCATIONAL METHODS.¹

JOHN DEWEY, UNIVERSITY OF CHICAGO.

THE high school is between two fires. More than any other portion of our educational system its work is marked by divided aims, and this through no fault of its own, but through opposed demands made upon it. About the function of the primary school at one end and of the university at the other, there is no dispute. Questions there may be, and are, about the best ways of realizing the end, or just how much the end shall include; but there is no question as to what the school in its main features shall stand for. But the high school occupies no such assured place. I do not refer to those who deny its utility completely. I wish to treat all opinions respectfully, yet I do not think that this question before this body¹ needs discussion or would suffer it. Carlyle says that a final question about every society is whether or no it possesses *lungs*; whether or no it can take capacity, talent, power for service, born in any section or stratum of society, and bring it to the place where it can do its work. Even though statistics should indicate that a much smaller percentage of pupils than is the case reach and pass through the high school, so long as that institution selects some choice youth and brings them forth to larger opportunity and more efficient service, it shall stand justified.

No, I refer to the opposed aims actually set before the high school by the conditions under which it exists. It must, on the one hand, serve as a

connecting link between the lower grades and the college, and it must, upon the other, serve not as a stepping-stone, but as a final stage, as itself the people's college, to those who do not intend to go, or who do not go to college. The academy which is distinctly a preparatory school does not have to contend with this difficulty. While we are thankful for the increasing number and the increasing efficiency of our distinctive preparatory schools, we must also be thankful that the split is not wholly between schools which prepare for college alone and those which do not; but that the division of energies exists within one and the same institution. However difficult the problem for those in charge of the high school, they have the consolation of knowing their sufferings are vicarious—that both primary and university education are reaping the benefits of their struggles. It is a helpful thing for the lower schools, and for the colleges that this conflict has to be faced and fought out within the limits of one and the same school.

It is of these interactions of the high school that I wish to speak—the influence it has exercised upon the rest of the educational system because of the peculiar place it occupies; not so much formally as informally, not so much of conscious purpose as through the conditions it has created. The proposition I wish to put before you is that the high school has been an intermediary in a very real sense; it has been the intermediary between the college, and the non-college business and professional public.

As this intermediary, it has oper-

¹This paper was read at the School and College Conference, at the University of Chicago, November 15, 1895.

ated to reflect back into the lower grades as much as possible of college ideal and method, thus solidifying and elevating the intellectual possessions of the public which never sees the college doors. There has been university extension by unconscious permeation, by indirect radiation. On the other hand, by practically compelling the college to adjust itself to the conditions of its preparatory constituency, it has served to break down the monastic and scholastic survivals in education, and to so modify the college aims and means as to bring them into much closer contact with everyday life. There are those who regret this as a departure from the self-included literary aims and spirit of the college, but to them I do not address myself. It is not necessary to be a spiritual recluse in order to escape being a Philistine.

First, as to the effect upon the university. As long as the academy existed primarily as a mere preparatory school for the college, its influence upon the college was of necessity slight. Action and reaction did not appear to be equal. But given a high school having other aims than those supplied by the college, another constituency to which it is responsible, and the college faces a serious problem. It must adjust itself more or less to the conditions thus created; it must meet the competition of this other environment of the high school, and so modify its courses and methods as to offer equal or superior attractions. It is led out into the struggle for existence and must exhibit its fitness to survive.

The fact is that certain changes in the policy, curriculum and methods of the college were initiated more promptly in the West than in the East, and were carried out with less discussion, almost from necessity, and with little consciousness of their radical nature. In the East these

changes came, if at all, only as the results of long discussion, and often of the strong will of some educational reformer. The difference is due, I think, more than to anything else, to this fact; in the West the college was dependent upon a high school to whose independent volition it had to adjust itself; while the eastern college was in relation to a preparatory school which had to follow, almost blindly, the lead of the college.

As the outcome, the logic of the situation brought on certain changes in the West as a matter of practical wisdom, as a matter, it might be said, of obvious business prudence. These changes grew out of the educational soil. In the East, these changes had to be tenderly matured and skillfully grafted by some university gardener. The main changes in the college curriculum of the West during the last twenty-five years, changes in which the West preceded the East, were precisely those required by the status and needs of the high school. I refer to such matters as the co-education of the sexes, which in the West corresponded to the mixed high school, just as the separate colleges of the East were the logical complements of the boys' preparatory school and the young ladies' seminary; to the diversification of courses; the introduction of Latin, modern language and science courses into the curriculum upon the same level with the Greek course, instead of in side schools, or as temporary concessions to the weakness of the human mind. That this diversification is not yet ended is evident from the fact that the university, within whose walls we are gathered, made provision, in its original statement, for a course in commercial and political science. When this precedent is generally followed, it may be said that the action of the high school upon the college, in the way of securing a complete

outlet for itself, will be complete. Add to these things the introduction of greater range of studies, and, in a less formal way, the introduction of consultation and coöperative methods between high school and college, and we have a broad, if sketchy, picture before us of the great changes wrought in the college curriculum and methods, in virtue of the conditions created by the high school. It is not empty conceit for the high school representative to congratulate himself upon having been an important factor in bringing these changes about.

But the high school has been an intermediary in another direction. It has not only brought a pressure upon the college, which has turned the latter to walk more closely parallel with life, but it brought pressure from the college and discharged it upon the lower grades. This reflex influence upon primary and intermediate work has arisen upon its face, through the need of securing a better preparation for college, doing more work in the same time and doing it better. But the outcome has been to give a deeper and a higher preparation for life to those who never see or think of college—who never even reach the high school.

The weakest point in our school system has been the grades from the fourth to the eighth, whether tested by methods used or results reached. Before this time the child has had a sense of power in learning to read and write; after this, instead of using his powers to master new fields, he goes on reading and writing. He has been gaining skill in drawing, in mastering numbers—he now goes on drawing and figuring. At the outset he has had the delight of an introduction to a new and expanding world; suddenly, the horizon walls shut down, and the child is confined to filling in his narrow world with more or less repugnant details. From the satis-

faction that comes by contact with the new, he has been switched off into the dissatisfaction that comes with the endless turning over of the old. The benumbing mechanical influence which is the serious evil of the average American school to-day is in full operation.

But a change has been occurring, and evidences multiply that the demand for the change is reaching an acute point. Within a dozen years, the university has thrown back an additional year's work upon the high school; within twenty, it has probably thrown back almost two years, besides demanding better work in quality. The high school has been able to meet this demand, and will be able to meet further demands which the college is likely to make, only by turning back and demanding better work, and work different in spirit and newer in method, from the lower grades. Much of this movement is in promise, rather than in evidence. But the signs are many and multiplying. There is the introduction into the lower grades of geometry and algebra, taught by rational methods, in place of the numerical contortions of the average arithmetic; the substitution of literary masterpieces as wholes for the grind of continuing to learn to read broken off fragments after one has already known how to read several years¹; the acquaintance with history at something like second-hand, at least, instead of the memorizing of text-books; the extension of science work and the introduction of simple experimental and observational methods; finally, the introduction of foreign language work (whether ancient or modern, I will not dogmatize) to that degree found to be advis-

¹ It is a common statement (and a common fact) that the child, upon entering the eighth grade does not read aloud with as much ease and effectiveness as upon entering the fourth.

able to give any child command of his own powers, whether he go to college or not.

Now all this intensification and enriching, past, present, and especially prospective, is very largely the outcome of the pressure of the university upon the high school, reflected down and back. No other influence, save the introduction of manual training, has compared with this; and that has been largely induced and fostered by the introduction of engineering courses in the college, and the founding of higher technological schools.

Is the influence of the high school upon educational methods exhausted in the lines already spoken of? There is one great possibility, as yet unrealized, so far as any systematic effort is concerned. This is the preparation by the high school of teachers for the lower grades. The simple fact is that this is one of its chief functions at present, but the high school is doing it only incidentally and unsystematically. My query is whether the high school must not awaken to consciousness of what it is already doing by the way, and make that one of its chief functions. The query is whether the high school stands quite justified before the community, until it shall recognize and equip itself for this task; whether the performance of this function would not do away with the last vestige of grumbling about, and attack upon, the high school.

Certain facts stand out beyond any peradventure. Fact one, there is not a sufficient recognition of the need of professional training to send all would-be teachers to the normal school; fact two, the normal schools are not numerous enough nor well enough endowed at present to fit all possible teachers; fact three, the normal schools have at least half their time taken up, at present, with high school, non-professional work; fact

four, the average school board will rarely go outside its own town and school system for a teacher in the "grades." Conclusion; the high school is the chief source of supply, and, therefore, *must be the chief hope and mainstay*, in the matter of furnishing teachers for the lower grades.

This being the case, the only cause for surprise is, not to hear put forth the idea that the high school should consciously assume this responsibility, but that the public has so long tolerated the fact that it has not assumed it. It is true that many of the high schools now have training classes, as graduate courses, annexed to them. This is undoubtedly a great help. But this is not precisely what I have in mind. I mean that the high school, in its own organization, should regularly provide for the training of capable teachers for the lower grades.

Now I suppose the feeling of many of you in sympathy with the general trend of these remarks is that, under existing circumstances, such an undertaking is impracticable. The curriculum is already overcrowded; we want fewer courses rather than more; fewer studies rather than more. We are already at our wits' end because of the pressure from the university, on one side, and that of the business sense of our community on the other and lo and behold; here is a proposition to add still more to our burden; I reply "amen" to the spirit of this response. But I believe that when anything really requires doing, the attempt to do it will introduce order and ease rather than confusion and hardship. I believe we are bound to assume this even if we cannot see our way clearly through in detail. But there are certain suggestions which may be made in the line of indicating where the principle of order and economy will be found.

1. In the first place, the introduction of a training course would give a

practical motive for doing much work now done without any sense of its bearings. We all agree—or almost all—with great cheerfulness to the proposition that character, not information, is the end of education, and then tamely submit to, or wilfully create conditions which make it impossible that the school should be an active force in character building. But the greatest of these conditions is that the information gained does not find outlet in action. Absorption, income is the rule—and then we wonder whether learning tends to selfishness! I do not believe any more helpful inspiration could come into any school than the conviction that what is being learned must be so learned that it may be of service in teaching others.¹ This is not the place to discuss ways and means of practice work, but I believe the solution of this difficult problem will be in the discovery that it is stupidity to suppose that there is no alternative between no practice teaching, and the turning over of whole classes to the pupil-teacher at the outset. The latter method of necessity throws the teacher into a mechanical attitude, it not only does not tend to, but it hinders, the development of sympathy and psychological insight. The proper place of the pupil-teacher is as a helper, here, there and anywhere that he can discover something to do, dealing with a few individuals in their personal difficulties, rather than with the "teaching" of a class *en masse*. This personal relationship once secured, the pupil-teacher will be in a healthy attitude when dealing with a

class as a whole. Moreover this method would go far to relieve that congestion where one teacher deals with from forty to sixty pupils.

2. A training course does not mean so much new subjects for study as a new interest in, and a new point of view for existing subjects. I do not think physiology would be any the less well learned as physiology if emphasis were thrown upon questions of ventilation, of hygienic seats and postures, of the importance of correct muscular attitudes and gymnastic exercises, of the use and education of the senses of touch, sight and hearing, and a thousand other points. What is true of physiology is true in kind, even if in less degree of all the sciences. It is not so obviously true of the languages and of history, but even here contact with the needs and methods of younger children would serve to fertilize rather than to deaden the material. What is required in any case is a selection and adjustment of subjects already taught, rather than a large number of new studies.

3. Two new studies however are required. These are psychology and social ethics. If asked eight or even five years ago about the admissibility of introducing the subject of psychology into the high school, I hesitated and doubted its wisdom save under very exceptional circumstances. For various reasons, the danger was great that psychology would be made a formal thing, the study of a text-book, with its definitions and classifications, rather than of psychical life itself, a study pursued by memorizing very largely. There was a possibility, if not a probability, that the text-book used would be a rehash of the state of the subject as it was fifty years ago. But this is now changed. One can have these out-of-date books and follow dead and mechanical methods if he will, but other and fresher possibilities are easily open. There are plenty of

¹ I hope I may be pardoned for repeating what an instructor of one of our best high schools said to me in private conversation—it went so much beyond what I dared say. It was that no person ought to be allowed to graduate from the high school until he had put to use his knowledge in teaching; that this was the best test and the best guarantee for sure assimilation.

new books, new in material and methods; there are simple experimental appliances and methods to be utilized; the whole subject of child-study has grown up. Psychology, for the high schools, has undergone a change from a mechanical thing fossilized and mummified in out-of-date books, and pigeon-holed to rigidity, into a living human thing.

None the less, it will be said, this means the introduction of a new study into a crowded curriculum. I won't suggest that certain things might give way and that the study of the human nature which lies in us, and in whose expressions we live and have our deepest contacts and relations, has claims equal to various and sundry subjects which I will not mention. Such a suggestion might seem extreme and utopian, and I'll not make it.

But a few facts may be selected indicating that this new study would serve to relieve rather than congest the course of study. In the first place the period covered by the high school is the age of adolescence. This is the natural age of introspection. There is no time of life when the interest in self, and in the relations and adjustments of self to others is so pressing and conscious as at this time. If metaphysics is a disease, like mumps and measles, then this is the time when it is epidemic. The failure to utilize this interest is a pedagogic blunder. It is a blunder in the economy of the school; it is a blunder from the standpoint of the pupil, who has one of the most educative of all interests left without direction and so liable to perversion and distortion. So far is it from true that psychology would lead to morbid self-consciousness, that in many cases the tendency to morbidness both in one's self and in relation to others is a harassing and grievous fact; and the conscious direction of this tendency in a scien-

tific channel would be one of the greatest, if not the greatest, means, for purging it of its morbidness. Moreover many of the studies of the high school would be greatly reinforced in interest and greatly lessened in difficulty by the judicious introduction of the right sort of psychology. If we take literature on its formal side, rhetoric and grammar, it is psychology, and logic allied to psychology; a failure to recognize this psychological basis and import means the erection of artificial difficulties. Of literature in its content, its æsthetic and moral values, much the same is true. The teaching of literature is continually swinging from a sentimental and falsely philosophic standard on one side to the dwelling upon merely technical matters of information, etc., on the other. The student is either required to descant upon the moral lessons conveyed, to formulate appreciations of the various kinds of beauties presented (formulations of necessity conventional and second-hand), or the text becomes a peg upon which to hang the dictionary and encyclopædia. A rational introduction of some of the recent methods and results regarding the imagination and the emotions would do more, I think, than all else put together to give both freshness and substance to the study of literature. History affords the same opportunity for discussions of questions of habit and character, purpose and motive. The study of the sciences demands some account of the processes of observation and reasoning and the main types of inference, etc.¹

¹ Professor Munsterberg says (p. 19 of an address before the Mass. Schoolmaster's Club): "The chief facts of seeing and hearing, attention and memory, perception and imagination, feeling and will, dreams and illusions, could become an extremely important and suggestive part of the school education, not as a special branch of the school curriculum, but sprinkled into the whole school work."

By social ethics, I mean, again, not a study of a formal text-book but the observation and discussion of certain obvious phases of actual social life. The adult's interest in social life has become so specialized and so technical, and also so much a matter of course, that he continually fails to realize the force and vividness with which social interests and problems press upon the inquiring and observing child.

Political economy has had much the same history as psychology in the high school; first introduced, and then, upon the whole, discredited, and both rightly so, without doubt, under the circumstances. But there is a study of economic forces and interactions actually at work which is highly interesting and important as well as of ethical content, and which forms the basis for unifying work in history, geography and the sciences—as the numerous points where physics and chemistry touch processes of manufacture and distribution.

To sum up the matter in terms of the current agitation of the correlation of studies, psychology as a concrete study of human nature in the individual, and sociology as a concrete study of human nature in its organized forms, are the natural bases for unification of studies in the high school, whether we look at the dominant interests and impulses of the

pupil at this age, or at the material studied.¹ This seems to me to constitute a fair basis for the claim that these studies would introduce order rather than confusion, work for ease rather than for hardship in the high school economy.

The schools already have a certain running machinery, a certain prescribed and acquired *modus operandi*; teachers have their acquired tastes and habits. It is not easy to readjust these. I do not propose what I have said as a model to be at once and everywhere conformed to. But I believe the high schools must soon face the question of affording a course of training for would-be teachers in the lower grades, and that it behooves those who have any responsibilities in the shaping of the educational structure to give serious attention to this matter, and to shape the modifications which continually occur in this direction. When this function shall be taken in by the high school, I believe the influence of the high school upon educational methods will be at its full tide—a tide which will never ebb.—*The School Review.*

¹It will be noticed that I have said nothing of the separate study of systematic pedagogy. The omission is not accidental, but the reasons cannot be given here. There is a certain division of labor in the training of teachers with reference to which I hope to write in the future.

THE TEACHING OF LOCAL HISTORY.

BY MARY SHELDON BARNES.

THE life of history is in the sources. These are whatever the men of a bygone age have done, or made, or written, and left to us living men, as embodiments of their own spirit, endeavor, and ideal. The ruined brick church at Jamestown, the crumbling abode at San

Diego, the burial mound at Marathon, the façade of St. Mark's, these are monumental sources; the old colonial uniform, the old delft plate, the broken glass from Hadrian's villa, are what we might call bric-a-brac sources; while of records the world seems full, when once your attention

is turned that way ; old letters, with strange old stamps and broken seals of red ; old sermons, the cramped hand crowding close to the margin of the paper ; old charters of curling yellow parchment, with royal seals dangling at the end ; old maps, out of all proportion, and strangely scribbled over with uncouth names, but giving a vivid notion of the mysterious nature of the world in which their makers lived ; endless newspapers and books, in the great libraries ; endless autobiographies and diaries, of soldiers, written in camp and field ; of pioneers, written on the lonely adventurous frontier ; of statesmen, written after long days of hard debate ; of women, written in weary, anxious hours, while men were fighting, or plowing in the shadow of Indian-haunted woods—such are some of the sources in which the life of the past comes down into our life ; and in their study alone, can we enter the past to which they belong, and of which they alone remain.

Two chief advantages arise from the use of the source in history : first and foremost, the source brings us into the closest possible relation with the past. The men have passed away ; their deeds and spoken words have fled with time, but their records still remain ; things which they have made and written with their own hands, and which we may touch with ours ; things which their eyes and ours alike may look upon ; the fossils, the imprints, the casts of a bygone time which reveal to us its life, its paths, its points of view, its loves, its hates and dreams. The student gains a sense of reality from the source that nothing else can give, for through the source the men of the past give their message directly without any middleman to explain their meaning away or to make their words suit his own particular theory.

This is a use which sources have

for the student of history ; to the teacher they have this use also ; and added to that, a special pedagogical use, in that they force his pupils to look at history in its bare and rugged aspect ; and to re-create for themselves the living man from the broken torso, the narrow world of Indian life from the old arrow-head, the narrow and intense thoughts of the Puritans from the blunt intolerance of the cobbler of Aggawam. With the sources in hand, he is compelled to re-create for himself, to enter into new points of view, to see and understand other standards than his own and those of the men of his own time. So he learns to enquire, judge, sympathize ; and prejudice, which is only a kind of darkness, vanishes in light.

The study of local history has an especial advantage from this point of view ; for in local history alone can the teacher most nearly bring his pupil face to face with all the sources, and give him the best training that history has for him in accuracy, the nice weighing of evidence, the sympathetic interpretation of the past. In the second place, through local history, the citizen finds a close and intimate connection with the great whole. The hills and valleys of his childhood take on the glamour of romance that always comes from the touch of a bygone life. Here the Indians smoked about their council fires ; here passed a Spanish knight, armed *cap-a-pie* ; here a pioneer first broke the soil, and stood ready, gun in hand, to protect his home from all invaders, whether wild beasts or wild men ; here men sprang armed to conflict ; here they suffered and died for liberty, independence, or perchance for human freedom. Thoughts like these add beauty, pathos, and meaning to the poorest landscape, and give to common life the touch of poetry. The traveler in Europe realizes this, as he sees the pride and

love with which the common people look upon their historic monuments. The great cathedral of Siena, the exquisite bronzes of Florence, the memories of Tell among the Swiss mountains—from these breathe poetry and wonder for the child, and an atmosphere of charm which always lingers in his mind and eye.

In America our local history has not yet received its full development. We have been careless of our monuments and relics, which, to be sure, are of a different sort from those of Europe, though no less interesting and important to preserve. We have, as yet, slight growth of song and story, clinging with living grace to the broken fragments of the past. Worst of all, we do not know our local history. All this the teacher can do much to change.

First of all, let him ask himself, what are the connections of my city, town, or vicinity, with the general history of the country? Take, for instance, my own native place, Oswego—a dull little city on our northern frontier, lying asleep by the blue waters of Ontario. Commonplace enough it looks, and no great man, no great deed has signalized it; but let me tell its connections. First of all, its Indians were the fierce Iroquois, best of all the fighting tribes. Their songs and traditions still live among their descendants; their manners and customs, their village and forest life, are minutely described in the *Jesuit relations*. In the soil are still found their arrowheads, and on their reservations they still make their primitive wares and fabrics. In the Colonial period, we have connections with Champlain, the Jesuits, and the fur traders. There was still a trace of the old French settlement left when I was a child. There are old maps to be seen, showing Oswego as a wild wilderness with a fort, a river,

a few canoes and huts. In the French and Indian war, we were an important frontier post, for which the French and British fought back and forth. Of the old forts there still remain the well-authenticated sites. With the Revolution we had but little connection, but with its close the period of our growth began. We were in the swim of the great commercial and industrious boom that sprang up from the opening of the Welland and the Erie canals. The lake was white with sails, and every wind brought in the lumber of Michigan and the wheat of Ohio and Illinois. There stands our noble lighthouse, and the long stone pier, badly fallen to ruin, the green grass springing up between the stones, and old wharves, grass-grown too, where idle boys fish long afternoons in the sun, while the tall elevators have, one by one, been turned to other uses or have fallen to decay; for our greatness and wealth passed away with the opening of the railroad, whose great line of the Central passed to the south of us. Our fine canal with its locks suffered decay as well, and the old taverns with their wide piazzas were deserted and haunted places. Still, life went on in Oswego, and when the Civil War came we sprang to arms with the whites North; our fields were white with tents; in a long shed by the lake shore our soldiers ate their rations; along our streets they marched away amid tears and loud huzzas. To many a house came back the story of its hero, freezing, fighting, starving, dying for what he deemed the right. We children picked lint for the hospitals; one of our women marched away with her husband, and became a nurse, well remembered and much beloved; a stanch old preacher, white-haired and ruddy-faced, almost worshipped by his people, prayed to the God of battles

every Sunday morning to strengthen the hands and hearts of the North.

But I need go no further, though this by no means tells the story of the dull little town. What I have said is enough to indicate the lines of inquiry. The next thing is to see what the Oswego teacher will do, with all this wealth at his command. We have already seen the value and the power of the source in history; the Oswego teacher in Oswego can use this for all that this is worth. In the library he will find the great series of the documentary history of New York. In these volumes the old maps, the old Jesuit relations, the lists of New York governors, the old military reports, are all embodied. He will set the children hunting there; ask one to find the first map which has Oswego placed upon it; another to find who were the first people who came there, and what they came for; he will exhaust these books of all they can tell about Oswego. He will go with his pupils to the county clerk's office and see what they can find there of the early government, of the first mayor, of the first common council, the first board of education, and, above all, he will hunt up the old maps. He will take his pupils to the fort, and let them see why it is placed well for defence; take them to the soldiers' graveyard, lying desolate on the hill, let them wander among the graves and read the old inscriptions; take them along the wharves and the pier, and setting them in the sun, let them write out, pencil and paper in hand, as well as they can, a description of how it looked in 1830. He will set them to ransacking their own homes for old letters, old newspapers, old relics, old bits of pottery, old costumes, old weapons. He will ask some old soldier of the Civil War to come to the school and tell his story of the camp and the field.

This work with the sources must

precede all else; this will make the pupil familiar with places, persons, and things. Now must begin the next work. After the material is all gathered, then comes the time to question it. From these sources, the teacher and his pupils must reconstruct the local history in its orderly proportions. Now is the time for essays, classified collections, public exercises, notebooks, and all the rest of the paraphernalia of study.

The question which should guide the study, in the case of Oswego, would be something as follows:

First of all, what was the Indian population here? What were their manners and customs, their thought and belief? What was their welcome to the white man, and what has become of them now? Then, who were the first explorers and settlers? Where did they come from, and why did they come? Why did they settle in this particular place? What were their character, their education, their ideals, faith? How did they make a living in their new home? What were the routes by which they came and by which they were tied to the general net of civilization?

Had we any connection with any of the wars of the republic? Were any of our people at Valley Forge, at Yorktown, at Lundy's Lane, at Gettysburg? Who were our heroes in these wars? Again, what connections have we had with the political, intellectual, and artistic worlds? Has there been a scholar, a statesman, a poet, who was born in Oswego, or who loved Oswego as a home?

I have been thus particular about questions which should be asked, because I could thus most easily reveal the wealth which this vein of local history may possess.

One important outcome of these local studies should be the formation of local historical collections. These

should be the result of the joint labors of the pupils and teachers of the whole locality, working together in a club. This museum should gather to itself the visible remains of the whole history; it should contain Indian relics, pictures of native Indians, photographs of historic sites and buildings; all the historic maps of the locality, photographs or other pictures of citizens who have been prominent at critical periods; old costumes and uniforms; old dishes, utensils, and tools; coins, stamps, and portraits—everything, in short, which serves as a material link between then and now. There, too, should be found the files of local newspapers, which should be made as complete as possible, and as soon as possible firmly bound. Letters, diaries, manuscripts, which have a local historic value, should be collected and bound, or preserved in legible and authentic copies, the originals being preserved for the occasional reference of scholars. All the literature that has gathered about the place should also be gotten together—any poems, novels, biographies, which celebrate the place or its citizens. The old people, the old soldiers, should write out or dictate their recollections, and these manuscripts be added.

There is still another class of sources we should save from oblivion, those of our foreign immigrants. In every town, in every place, there is a large body of European immigrants. Where did they come from? Have they any pictures of their old homes? Why did they select this for their new home? What differences do they find between the old and the new? Perhaps they were Irish driven out by famine, Germans driven out by the conscription, Italians by heavy taxes and an extreme of poverty of which we do not dream. In nine cases out of ten their stories will be found to have interest and meaning,

and should find a niche of their own in the museum and library of local history.

But should we, in local history, deal with all the dull periods; make it a point to know the history thoroughly year by year, or deal with the salient points, the vital connections? Are we to mention such details as smuggling a dozen china handkerchiefs, or a bushel of salt, or the complaint of a citizen that his street is not kept in good order, or that there was a squabble in the courtroom on such a day, or that a refractory mustang on a certain California journey tried to throw an imperial commissioner as he was crossing a stream, or that the said commissioner was seasick on his return, or that John Mulligan, a native of Tullybhaman, Ireland, came to live in Syracuse?

As teachers, we may deal with salient points, with points of vital growth and large connection. But in order to gain these points, to make these connections, somebody must search through large masses of material that may seem of very little use, and may yield little of significance. But there lies the way; if we are to know that at a certain time, in a certain place, men lived without law and order until their misery and confusion drove them to some effective government, you can only reach this conclusion, if you are working with the sources, by reading in detail about this bushel of salt smuggled in, that fatal quarrel that ended with a shot, the disappearance of this herd of horses, rifling and murder on this or that lonely ranch. Or if you would know that the population of a certain place came mostly from Ireland or from Spain, how can you know it except from just such details as you may learn from the tombstone or the marriage record, in short from such details as that John Mulligan, native of Ireland,

came to live in Syracuse? The pettiness disappears when the petty detail is one of a thousand strokes that paint a great and beautiful picture. Or supposing that the petty detail is essentially petty, has no significance in proportion to the general whole, is but a splash of paint on the wall—is it not worth something to learn what to reject as well as what to accept? To know what has no worth, as well as to know what has a story to tell, a place in the picture?

So local history has its place in study and teaching, a place which nothing else can fill. There lie finally the labor, the reality, the very ground of history. There the citizen finds his home in the great world of time as well as in the great world of space. There he learns how to interpret history through the toil and heroism of some few men whose works he has seen, whose words he has read, in whose footsteps he himself daily treads.—*Educational Review.*

THE PROFESSIONAL PARENT.

“I AM the professional parent,” said a witty schoolmaster not long ago to the present writer. Miss Buss, the schoolmistress whose life has just been brought out by Miss Annie Ridley, was essentially the professional parent. She began her profession early and she carried it on late. From fourteen to sixty-eight she was never out of the schoolroom, and during that time she tells us she never once quarrelled “even with the most absurd” amateur of the same calling. During her lifetime the education of middle-class girls underwent a revolution, a revolution affecting its whole scope and meaning. And Miss Buss meant by education not so much learning as training. She desired to be a great deal more than an instructor, and was more anxious about the characters than the capacities of her pupils. Judging from Miss Ridley’s account, we should say Miss Buss used rather too freely that excellent instrument of discipline the moral lecture. But this is almost an inevitable snare to the professional parent of daughters. The weapon is light and very effective, productive, too, in certain rather morbid natures of great affection for the skilful wield-

er. Naturally she is apt to look for occasions for its use.

Miss Buss began her career in her mother’s little private school, which contained the germ of these public day-schools for girls which are now killing the boarding-schools, and alas for her, poor thing, the incompetent governess; killing too a more substantial foe, the snob of the upper middle-class, who preferred that his girl should grow up ignorant at home rather than that she should receive a good education on the same form with the butcher’s daughter. Thirty years ago, for the first time, the commissioners of education began to take account of girls’ schools, and summoned Miss Buss as a prominent schoolmistress to give evidence before them. Five years later Miss Buss turned her private school into a public one, putting it into the hands of ten trustees, and remaining herself as a salaried head-mistress, drawing £1,000 a year, and head-money amounting to another £300. Part or the whole of this latter sum she several times sacrificed for improvements in the school. One would imagine that it cannot have been very easy for a woman like Miss Buss to work with a

committee, after working alone so long and so successfully. At first there must surely have been rubs. But the letters Miss Ridley publishes contain very few complaints; one we must quote as a warning to inconsiderate members of Councils. "They ask me for information that it takes me hours to work out, and when I have found it they no longer want it." In another letter, written while her school was her private property, she gives some amusing advice to a friend who is trying to form an educational committee: "I advise you not to allow two committees, one of gentlemen for money matters, and one of ladies for internal arrangements. They always clash sooner or later. The mistress disagrees with the ladies, the gentlemen interfere, and the usual result is that the ladies resign in a body."

Men and women to govern, but only women to teach, seems to have been Miss Buss's rule, a principle which has been adopted by nearly all the public day-schools. If the aim of the girls' school is to give the best training possible to the greatest number, we think the day-schools are right. Given a man and a woman of equal ability as teachers, the woman will undoubtedly raise the average standard of a large class to a higher level than the man, who, disregarding the slow and inattentive, will teach the few clever girls all that they can learn, touching lightly in individual cases on any part of his subject where a special difficulty has been found. The woman, on the other hand, will expend nearly all her force in trying to turn the class inside out, and haul the bottom up to the top: then she will be conscientious even with the cleverest, and not let them follow too exclusively their own bent. The result, we think, is that clever girls like to be taught by a man, and attain to most scholarship by his help; but

the large body of anxious parents who want to do their best by average children prefer that they should be taught by a woman. Men-teachers will never quite lose the feeling that knowledge is only for the few women. A girl may learn if she likes, a boy must learn if he can. Of course one great reason (we gather it to have been Miss Buss's chief reason) for keeping high-school teaching for women is that it preserves for them one-half of a good profession, a profession for which a training is easily obtained, and in favour of which there is a prejudice in the public mind. Types of youth altar. Every ten years there is some change. We are interested to find that Miss Buss thought the most marked difference between the girl of the last decade and her mother is a great increase of reserve. We wonder if their growing independence is answerable for this, or if it is merely the effect of living among a great number of people, many of whom may be antipathetic to each individual. Is this the reason for the schoolboy's reserve? Picking and choosing, in other words, suspicion and proving of companions, begins for little high-school girls as early as for boys. Whether or no this masculine power of standing alone is an unmixed good for all women it is difficult to say. Certainly that increasing number of educated women who must stand alone, are able to do so more happily than their mothers, or, rather, than their maiden aunts ever were. To quote a clever pupil of Miss Buss's: Britannia has now so many middle-class daughters that,

"As all of them possibly cannot be wed,

She must give them a good education instead."

Miss Ridley points out how strongly Miss Buss felt about the necessity for physical training for girls, and how firmly she set her face against

overwork, even going so far as to refuse to keep a girl whose parents insisted on allowing her to work over the allotted number of hours. No girl, she thought, should work after 7 o'clock at night or before 9 o'clock in the morning; and she liked them to have Friday evening free, and the whole of Saturday after 12 o'clock. She was, of course, like all such women, most successful in choosing helpers. Mrs. Bryant, her successor, was chosen by her and writes:—

“It is needless to enlarge on her possession of the administrator's gift of relying with generous trust upon her tried helpers. This, too, was in her a matter of the heart quite as much as of the head. She felt about them as one with her in a joint work of which in all its phases she spoke as “ours” not as “mine.” It was pleasanter, more natural to her, to be the controlling centre of a plural will than to be a single will governing others with more or less allowance for their freedom. As regards the

question of the relation of the head to her assistants, this might be described as the theory of her practice, elastic as all theories must be in a mind of truly practical genius. She believed thoroughly in the legal autocracy of the head as the best form of school government, but in her view of the autocrat's standard for himself she expected him to exercise rule with due regard for ministers and parliaments.”

We have to be grateful to Miss Ridley for the portrait of this strong, capable, successful schoolmistress, and for the little intimate touches which show us the rare but not less pathetic repinings of a lonely woman so useful to so many, but not quite necessary to one.

I would not waste my spring of youth
In idle dalliance: I would plant rich
seeds,
To blossom in my manhood, and bear
fruit,
When I am old.—*Hillhouse.*

LANDMARKS IN HISTORY OF EDUCATION.

A TRAINING TEACHER.

LEAVING the Oriental countries and following the march of educational progress we find ourselves opening the doors of the ancient classical nations, Greece and Rome.

Beginning with Greece, because of her greater antiquity, let us think of the area as about one-half that of the state of Pennsylvania, the natural form as almost insular, and the coast line of greater proportional length than that of any other country in the world.

The position, form, size, and contour, often largely determine the history of a nation's civilization; and of no land is this more true than of

Greece. Wonderful physical advantages, an atmosphere indescribable in its loveliness and most favorable to health and long life, beauty and variety of scenery unequalled, combined to make the marvellous history of the Hellenes.

Whether the first emigrants from Asia found it occupied there is at present no means of deciding. The Greek alphabet is unquestionably of Phœnician origin, and that the Egyptians as well as Phœnicians arrived at a very early period bringing with them arts, culture, and religious rights is undoubted.

Greek education received its earliest impressions from Lycurgus, Pythagoras, and Solon, the central idea of the system being that the child was the property of the state, and that all domestic and personal interest must yield to those of the nation. Lycurgus placed his imprint upon Sparta and all Laconia, while Athens traces the encouragement of education in Attica back to the influence of Solon. For the student of educational history these two cities, Sparta and Athens only need claim attention.

Every Greek child was under public inspection from the hour of his birth, and was trained with special reference to military service. The new-born babe, male or female, was brought before a body of judges, which pronounced upon it the sentence of life or death. If promising and perfect in form, it was permitted to live; if deformity or disease were indicated, it was sentenced to death by exposure.

Until the age of seven years all children, in Sparta, were permitted to remain in the care of their natural guardians. After that age, as was the custom in Persia, the boys were taken from the care of their mothers, and placed in public institutions of learning, so called. Here they were trained to the severest bodily exercise, to habits of obedience, extreme dexterity, and to a precision and conciseness of speech which is yet proverbial.

The conditions of this life were more than severe; they were cruel. The food was coarse and meager, the clothing poor and insufficient, being the same in all seasons, and the beds rough and cold, made from rushes gathered from the river bank, by the naked hands of the children. To strengthen the body to endurance, gymnastic practice was almost constant, and consisted in running, leaping, wrestling, hurling the spear, and throwing quoits.

Reading and writing were neglect-

ed; but by constant association of the young with the old much wisdom was gained, dignity of manner acquired, and judgment cultivated. The education served a double purpose. The elders were more circumspect in manner and conversation because of their desire to influence youth. Self-control, temperance, fortitude, modesty, obedience, and respect for age, were the forms of ethical instruction. Theft was encouraged, and detection, which was considered the crime, met with severe punishment.

The education was national in the fullest sense of the term, being given to both boys and girls of the conquering and ruling classes. Girls received nearly the same instruction as their brothers, and the women of Sparta became celebrated for their strength, beauty, and courage,—a race of Amazons, in whom love of country surpassed maternal and all other loves. When met on the field of battle, and facing the enemy, the death of son, father, or brother was a matter of joy and rejoicing.

The informing idea of Spartan education was to make the body the ready servant of the will, and the mind equally prepared to rule or obey. The word *martial* alone can most fittingly characterize it, for even the music was chiefly military and heroic.

Though severe to cruelty and seemingly not intended to develop the best or spiritual side of the child's nature, the means used and the ends sought were perfectly conformable to the culture of the time. The aim was to make a powerful race of warriors independent in the midst of enemies.

If the greatest perfection of any art consists in making the thing created perform perfectly that which falls within its sphere, then the Spartans in their methods command our respect and admiration. They lived up to

their ideals and produced Leonidas, who with his brave band won for himself and his country immortal honor, and left to the world a standard of heroism which has elevated the patriotism of all nations, and brought victory where without it would have been defeat.

Leaving Sparta and trying to forget the little bare feet marching over rough roads, the bit of black bread taken from a miserable wallet and eaten by a wayside spring, the uncombed hair, and the unclean chiton of her brave boys, let us go north to Athens where we shall find all is changed.

What Lycurgus was to Sparta, Solon, living in the sixth century B. C., was to Athens. Here he laid the foundation for the outworking of the most perfect form of civilization possible in a heathen land. Education, both mental and manual, was encouraged, and the way opened for the great work of Pericles in the Golden Age, when means of instruction multiplied, literature flourished, and Athens became the center and school of civilization.

When over the temple of Apollo was placed the motto, "Know thyself," blind obedience to custom passed away, and the dawn of the era of free enquiry began to appear. People were encouraged to look for reason in all things. Education among the Athenians had not become "the sum of the intentional actions by means of which man attempts to train his fellows to his own ideas of perfection," it was, on the contrary, a result almost unpremeditated.

Athens, however, with her brilliant philosophers, artists, poets, and historians, could not be without well-defined notions of pedagogics. Like the little Spartan, the Athenian child was left with his parents until the age of six or seven years. This first period was full of joy. Games occu-

ried the greater part of the time. The boy learned to skip shells, as we do stones, on the Mediterranean. He played at leap-frog, ball, and rolled hoop as it by magic. He learned the game of leap-frog from the Persians, who played it long before the Greeks. Ball he played to train his attention, to make him supple, quick and prompt in decision. He rolled a hollow hoop with sweet-toned bells concealed within, and which gave musical chimes as the hoop revolved.

But the seven years pass quickly, and at their close the nurse is exchanged for a pedagogue, and our little Greek enters upon the regular duties of school life. He wears a simple garment called a chiton, made of linen and without sleeves, fastened at the shoulder with a single button. He has sandals bound to his feet, but no hat on his head. His pedagogue accompanies him to school, goes with him to his games, and watches over him that he may learn no evil habits. The duty of the pedagogue is also to assist in studies, and as occasion presents itself, to call the attention of his little charge to the good and beautiful.

The better schools have comfortable rooms provided with seats, waxen tablets with the stylus for the younger pupils, and sometimes parchment and ink for those older. The younger boys—the girls are not educated—begin at once to learn to read and recite poetry. The favorite reading books are the "Iliad," the "Odyssey," and the "Fables" of Æsop, the Egyptian.

Before the pupils can write they begin orally the study of the grand and heroic in literature. The master is very careful as to articulation, gesture, position of head, arms, and hands. Graceful movements and attitudes only are permitted. When they can read, write, and count, the lessons in music begin. All Greeks

must be able to join in the sacred songs sung in honor of the gods, to join in the soul-stirring pæan when going into battle, as well as to give pleasure to themselves and their friends. They must be able also to run swiftly, as a soldier who could not run swiftly was only half a soldier.

Swimming was taught almost universally, and the greatest contempt was expressed by, "He knows neither the alphabet nor swimming."

At the age of twelve years, the great mass of boys relinquished study, and the wealthy entered upon the higher course, which embraced grammar, poetry, music, rhetoric, and philosophy.

The end of Greek education differed from that of the Spartan as widely as the means. The Spartan sought strength of body, while the aim of the Greek was to acquire the highest degree of beauty. The means employed by the one brought a coarseness that

might be said to be repulsive; the other a refinement that easily might degenerate, as it did, into effeminacy.

It failed in that its highest aim was to form a *beautiful* Greek. It was imperfect because it was pagan. The Greek and Spartan exposed infants to a cruel death.

Christ took little children, deformed or diseased, into His arms and blessed them. By Christian education they are regarded as the heritage of God, and parents are commanded to "bring them up in the nurture and admonition of the Lord." By pierced hands they were lifted into newness and fulness of life. Christian education alone grasped the idea of the value of the individual to himself, and the way for it was prepared by Pythagoras, when he recognized as early as the sixth century (B.C.) one omnipotent Ruler, and by Socrates, in his belief in immortality—of whom more again.—*Primary Education.*

DEPARTURES IN LIFE.

BY THE REV. JOHN WATSON, M.A. (IAN MACLAREN).

PERHAPS Hebrew literature with its unsuspected tender-nesses and winsome simplicities, does not afford a more felicitous figure than the comparison of the changes God is pleased to send upon His children to an eagle stirring up the nest in which her young are resting. With instinctive wisdom the mother bird has chosen a ledge where the home can be built safe from intrusion and alarms; with laborious effort she shapes it stick by stick, padding the hardness with plumage from her own breast. The eaglets are brought forth in the fastness of the everlasting rocks; they are kept beneath the

shelter of their mother's wings. Day by day she goes forth into the unknown to get their food, and they open wide their mouths as she returns. While the young birds are still helpless, the eagle does everything for them; as they grow and their wings gather strength, she invites them to fly. It is natural that they should be afraid to launch into that awful depth with their untried pinions. While a nest remaineth they will never dare to fly, and therefore—so the story goes—the mother deliberately wrecks her own labour of love till it lies in ruins, and the fledglings have no shelter on the windy height. She

then allures them into the air—making short flights by way of example, and safe-guarding them beneath with her wings. Driven from their security and tempted into the blue, the young eagles make their great venture.

Very tenderly and very carefully does our Father prepare for His children an environment in this life, that at no time we may be defenceless. One nest after another, is built out of many circumstances, all touched and softened by the Divine Love; from the beautiful world into which we are born, to the house that a hundred sacred associations have made home. We settle down in each nest with a sense of rest and finality, and have no wish to risk ourselves in the depths outside our little life. Left to ourselves we had never cherished any spiritual ambition; we had never wished to use our wings. But Providence, sometimes by rude shocks, sometimes by gentler compulsions, dislodges us from our place and casts us forth where we must fly or be dashed to pieces. The great changes of life are moments of supreme adventure, when we bid good-bye to the homes which, with a hundred familiar surroundings, bid us stay and commit ourselves to the unknown, with its depths below and its heights above. Every new departure is an abandonment of security; it is an expedition into an unexplored and mysterious region. It is a venture of the soul.

Changes are one of the surest means for bracing and quickening character. Within the bounds of uneventful and secured circumstances, where from childhood to old age life flows evenly, smoothly, slowly, with no rapids, no pools, no rocks, a type of character is formed that is not without beauty. It is gentle, tender, thoughtful, but it cannot be strong. Where life has had its emergencies, its agonies, its surprises, its specula-

tions, it has its highest possibilities. When men have put forth from the shore in search of a new world, when they have staked their all upon a new enterprise, when they have faced a revolution in life, they grow resolute and strenuous. It was his emigration from his father's house into an unknown country that brought Abraham to his height. The crisis in Moses' career was his surrender of princely luxury, and his identification of himself with a horde of slaves. A handful of Jewish peasants have changed the face of the world, because there was in them the heart to answer the call of Jesus. No one can ever imagine what power may be lying unused and hidden till a man is driven off his ledge, where he has been fed and warmed, without fear and without thought. Do not judge him while he has only fluttered his wings at the coming of food; wait till he stretches them to go up to heaven. It is in the throes of a revolution a nation comes to birth; it is in the moment of change the soul awakes.

Among the various changes in ordinary life four are conspicuous, and the first comes when one leaves home for the first time, and makes his plunge into the world. It does not matter very much whether he is going to a public school or to business in a great city: he is beginning life on his own account. As the day draws near—a day no one can ever forget, when he passes out of the old homestead for the first time—there is a tumult in the heart. The unspeakable privileges of a good home—the daily oversight, the spoken advice, the kindly offices, the sense of protection, the warmth of love, suddenly arise before the memory and are appreciated to the full, just as they are about to be lost. The vague dangers of the new life, its strange faces, unaccustomed duties, lonely circumstances, unexpected temptations, pos-

sible hostilities, powerfully affect the imagination and darken the future. The lad does his best to show a smiling face, for the sake of those he is leaving, and he recognizes that this outgoing is inevitable, but there would be something wrong with him if his heart did not sink and his eyes were not dashed with tears at the turn of the road. These emigrations are very trying for those that go and those who stay, but both live to appreciate their purpose. Within a few years, and perhaps not without a few bitter experiences, the raw, unformed lad changes into a man, with a sense of responsibility, with serious views of life, with a knowledge of affairs, with brave plans of service. It had been a cruel kindness to save him from this experience; it is a happy condition of things after all that sends us forth from the best of Edens on our "wander year."

Another momentous change, and one whose effect on character is greatly overlooked, is marriage. It will ever remain a chief mystery of human experience, that at the sight of a face and the sound of a voice that yesterday were strange, or rather at the vision of a soul, and the sense of an established harmony, a whole life will be turned upside down. A new-born passion, joyful, masterful, inspiring, seizes the nature, and in a day has eclipsed the affections of youth, and erased the plans of early manhood as if they had never been made, so that one could leave father and mother, and could change his country and his calling. No words can appraise the suddenness and sway of love, before which prudence and selfishness yield and vanish. It is natural that literature should give a solitary place to love among the motives of life: it is amazing that ordinary people never seem to take love at its full value. Surely there can be no doubt that, excluding cer-

tain profound religious experiences given to few, love is the most irresistible force in the story of the individual, and marriage the most dominant event. For two human beings to enter into this unreserved and irrevocable relationship with its committal of body and soul, of joy and peace, of all life's labour and ideals, into one another's hands, is a supreme act of trust and a last risk. A divine instinct calls us, and is justified in the end. Some lives may be broken in this flight, or done to death in black chasms of suffering and shame, but for most marriage becomes a perfect discipline of character. Thoughtful and serious people come nearer still to the heart of things, and see the veil lifted from the mysteries of being. Careless and frivolous people are solemnised by an immense responsibility and are deepened by an unselfish passion. No experience will teach the lesson of sacrifice so successfully, none invest it with such charm. The laws of life have many exceptions, and some choice souls have come into their full estate in solitude; but for most this daring experiment has been the crown of life.

The third change is more prosaic, and yet in its way very trying and very influential, and it is shifting one's home. After one has lived for some time in the same place, he acquires a feeling of permanence. He has grown into his house till it fits him like a shell; he has completed a circle of friends who among them afford all he needs; he has fitted the routine of the day to particular hours, to a certain road, to various expedients; he has a pew in church, where alone he can enjoy a sermon; he has found a piece of work that is suited to his powers. Here he has lived, here he expects to live, and here he expects to die. In fact, he is in a nest, and one sees him every year snuggling

down into its comfort with great content, when, perhaps without any warning, he is sent forth. Another environment, with a new house, new faces, new customs, a new church, is no light trial to any man above middle age. Why should Providence, which fitted up this home so mindfully not have left me in it till I changed into the house not made with hands? Very likely because the change will vivify and renew the soul, as a visit to foreign parts quickens the intellect grown jaded and commonplace. A new voice may give a new evangel. Breaking up conventionalities may lay the mind open to fresh ideas. A variety of service may afford the opportunity for inspiration. The change may be into a wider place, where the wind of God blows as it listeth round the soul—nothing between.

Some changes can be avoided—whether for good or ill is another matter; but one awaiteth us all, when the whole circumstances of this life shall be shattered in a moment, and, willing or not willing, every one of us shall go forth into the unseen. This is the final venture of the soul, and a most tender Providence prepares us for it by many hints and warnings. A sharp illness, some failing of mind, a general decay, or the departure of a friend, are all a loosening of the nest and a commatid to be ready for

flight. What an outgoing it is, over the brink, where we can see nothing below or above, where we can feel nothing under our feet! Is it cowardly for the average person to tremble at this last emigration—this departure into an untried and vacant abyss? Yet let us not lose heart or be unfaithful. A great abyss it is, as if one should cast himself from the height of a precipice into the air. But it is not untried, for with every change from childhood an excursion has been attempted into the unknown. It was only a flutter on the edge, but still it proved that we had wings, and we came back to our resting-place unhurt and undismayed. This time we shall not return; our wings will have to serve us longer. And the abyss is not empty, for never have we gone out in any journey of the soul but God was with us, guiding us when we had no longer our earthly father, revealing Himself through the sacrament of human love, dwelling where we dwell, as with the pilgrim patriarchs. The hands that curiously constructed this kindly nest are the same that will take it down. The wings which covered us in our callow childhood here will bear us up out yonder. The God who is here, is there and everywhere. The wide and open space is full of sunlight, and underneath our souls for ever shall be the everlasting arms.—*Sunday Magazine.*

NOTES FOR TEACHERS.

CULTURE TEACHING IN THE SCHOOLS.—A long experience among children of all nationalities, and especially among the very poor, leads me to see the importance of culture. By this I mean that rough way of doing things that separates the lower from the upper.

(1) I found it to be of benefit to greet each pupil in the morning and to say farewell at night. I explained to them that no one went into a friend's house without a word of greeting. Then I always met them pleasantly. If they had been sick or any one in the family had been I inquired

about this. I know many pupils come to school solely to tell me of home matters and ask my advice. I was to them one who was interested in what was going on at home.

(2) I gave attention to the manners, personal habits, etc. Picking the nose and teeth, scratching the head, yawning, blowing the nose (no handkerchief being used), and the whole train of animal habits I set them against. I told them that animals, not human beings, did those things. I deemed success in this a valuable end attained.

(3) As to cleanliness I insisted upon clean hands and faces; the shoes and clothes brushed, and the hair combed. To reach this for a time I kept a comb, a hair and clothes brush, and a box with shoe brushes. This last the boys kept supplied with blacking. There was a daily inspection of the hands. The pupils marched before me and laid their hands on a book for a long enough time for me to decide whether they should be washed or not. Those who had clean hands received a card marked "Hands Clean;" to the rest I say nothing. I have an inspector to look at the shoes. To poor clothes I say nothing, only I do say, "Poor clothes are not a disgrace, but unclean ones are." This inspection and comment has wrought great moral effects in my class. Especially do I praise a child with poor clothes who is clean.

(4) Quite a number of my pupils bring their lunch; I saw they wrapped it in newspaper and ate roughly. I insisted on a clean napkin being used to wrap the food in and that it be spread on the desk before them and the crumbs be gathered in it and shaken in a basket or out of the window and not brushed on the floor. Nor would I allow them to walk about, but sit and eat decently and slowly. Sometimes one pupil reads funny things while the others eat. I dis-

cussed home eating with them and this incident grew out of it:

A girl of 15 came to me one morning and told me she had determined to effect a revolution at home; that the table always sat up against the wall and usually there was no tablecloth; that each helped himself, etc. I encouraged the idea and in a few days she told me that she had the table drawn out for dinner, a clean cloth put on, the father was persuaded to put on his coat, and all but she were seated; she did the waiting; all had napkins. She had fried some oysters and when her father ate one he cried out, "Why, this is all like Vanderbilt!" It was evidently a great and an unusual day. This girl shed tears telling me and I shed tears, too, for I sympathized with this effort to bring culture into her own home. It may seem to some that it will be impossible for all pupils to furnish napkins in school as proposed. In my case I got two dozen given to me by a lady to whom I told my need, for use in the school. I told the pupils they need not get costly ones, and showed them some made from salt bags. I told my pupils that Pope said, "Manners make the man," and explained the meaning; that boys, when they applied for places, were judged by their manners. A boy came to tell me he had got a place and that he heard a man say, "He has good manners." He felt it was this that had got him the place.

In my visits to parents it is not that they are poor that I pity them, but their lack of knowing how to live more decently than they do. I was only lately consulted by a mother as to what her daughter should do (she had not been a pupil of mine); she was nearly 17 years of age and too evidently lacking in manners to enable her to get a place as lady's maid or housekeeper above the grade of a servant; indeed she could hardly

aspire to be a waitress in a boarding house, and yet the parents were Americans. The first step to advancement in the lower class is learning the manners of the higher class. We as teachers must attend to this; we are recognized as belonging to this higher class; we ought to belong to it. In a class in my Sunday-school the manners are simply atrocious; the teacher it trying her best to save their souls and neglects to have them treat her and each other with respect. In our work we must insist on good manners at all events, and I hold they will learn and think all the faster for having good manners.—*E. T. Fairchild, in the School Journal.*

HOW SOME TEACHERS WASTE TIME.—By: 1. Ignorance in organizing classes. 2. Giving unnecessary directions. 3. Coming to school without a definite plan of work. 4. Speaking when pupils are not giving attention. 5. Giving orders and immediately changing them. 6. Speaking too loud and too often. 7. "Getting ready" to do something. 8. Allowing pointless criticisms, questions and discussions. 9. Asking pointless wandering questions and going off on "tangents" in recitations. 10. Explaining what pupils already know. 11. Explaining what pupils should study out for themselves. 12. Repeating questions. 13. "Picking" at pupils. 14. Repeating answers after pupils. 15. Giving muddy explanations to conceal ignorance. 16. Using the voice where the eyes would be more. 17. Asking questions that can be answered by yes or no. 18. Failing to systematize knowledge.—*Educational Record.*

THE MAXIM GUN.—Maxim's is the latest improved machine gun. It is somewhat like a small brass

cannon, or swivel gun, and may be pointed in any direction: "The gun loads itself. It utilizes the recoil, so that (as the cartridges are strung on a belt, that carries from 150 to 400 rounds) every kick of the gun throws out the exploded cartridge on one side of the gun, and on the other throws the next cartridge into place, so that the discharge is incessant. As long as one keeps his finger on the button, the firing goes on, the gun throwing 11 minie bullets a second—666 a minute!"—*The Mining and Scientific Press.*

BAD DAYS.—There are good days and bad days in school. There are days when even good children are naughty—or may be made to be. The cause of the bad day has not been satisfactorily assigned; but such days must be provided for. The teacher should be sprightly and smiling on the bad day; then she is full of encouragement and ready with devices; there will be bright songs and novelties that break the charm and cause the tendency to laziness, mischief, and disobedience to disappear. To meet the rising tide of evil with force shows bad judgment; the bad day is often brought on by want of tact.—*Educational Record.*

YOUR THOUGHTS—As if a man were author of his own thoughts any more than of his own existence! A man can but so live with the life given him, that this or that kind of thoughts shall call on him, and to this or that kind he shall not be at home.—*George Macdonald.*

The spirit which animates the teacher, and the intellectual and moral qualities which distinguish him, will always be worth more than the best processes.—*Compayre.*

PUBLIC OPINION.

OTHER PEOPLE'S OPINIONS.—

While we recognize that there may be honest differences of opinion on all subjects of inquiry, and that we should be tolerant of those who differ from us, it does not follow that all opinions are entitled to equal respect. Each is to be judged by itself and on its own merits. We may, and indeed should, dispute the opinion that we believe to be erroneous, that out of the debate we may reach the truth, whatever it may be. But this does not imply intolerance exhibited toward those who hold the wrong opinion, especially when we know they are conscientious and have done some honest thinking on the subject. We should rather welcome those who dispute with us because they honestly disagree with us, than the so-called friends who play upon our vanity by pretending to agree with all we say.—*Minneapolis Times.*

The *Normal Index* has the following sensible words upon professional ethics, which is a subject too often neglected by some classes of teachers: "A lawyer will not criticise the conduct of another member of the bar outside of the court room. Neither do ministers condemn one another. If a mistake has been made, they are the last to believe evil reports. They uphold rather than condemn, until convinced of the guilt of the accused party. No physician will try to injure the practice of another physician. Professional courtesy is found everywhere except among teachers. All seem anxious to rise, though many others may be pulled down. It is no wonder that they are not respected as members of an honored profession should be. But few work for the profession. Each one is looking out for himself. If by unjustly criticising the work of another he can secure a good position, it is all right."

GEOGRAPHY.

The town of Deseronto, in Canada, where there are several large lumber mills, is partially lighted by gas made from sawdust. The sawdust is charged in retorts which are heated by a wood fire, the gas from the retorts passing into a series of coils and thence into the purifiers which are similar to those used for coal gas. Lime is the principal purifying agent employed. When it passes out of the retorts the gas possesses an odor much less disagreeable than that of ordinary lighting gas, and resembles somewhat that of the smoke from a fire of green wood or leaves. The works in use are small, turning out

daily 540 cu. meters of gas, for the production of which about two tons of sawdust are required. A man and boy furnish all the labor needed at the works. The gas in an ordinary burner gives an illumination of about 18 c. p. The best quality comes from resinous woods. A quantity of 100 kg. of sawdust leaves a residue of 20 kg. of charcoal.—*Engineering and Mining Journal.*

ICELAND AND THE DESERT OF SAHARA, ELEK. ZEIT, DEC. 12 — Various towns of the island are to be connected by telephone, the plant being installed by an American com-

pany. It is thought that it will not be long before the island will be connected with Europe by telegraph by way of the Shetland Islands, the cost being borne partly by England, France and the United States, which countries take part in the fishing and are also interested in obtaining weather reports from the island.—*The Electrical World.*

ST. MONANS, FIFE.

BY J. K. LAWSON.

There it rests, with its back to the brae,

The jumbled, zigzag, grey old town ;
Roofs red and brown—roofs purple
and grey,

Blue-dim through reek from the chimneys blown ;

Roofs slanting, triform, jutting, square,
With skylights yawning wide for air,
And gables—gables everywhere !

Low in the lap of the land it lies,
On the knees of the shore serene and grey ;

The earth's green arms about it thrown,

Its feet on the rocks where the sea-mew flies,

And ever with mournful monotone,
Ebbing and flowing the sea-tides sway—

Ebbing and flowing forever and aye.

Dark on the sunset's ruddy gold,
The old church-tower on the western height ;

The sturdy church, six centuries old,
On the edge of the wave, with the town in sight ;

Where pray the living, where find repose

The generations whom no man knows.

Boats in the harbor—nets on the brae,
Sunbrowned fishers upon the pier ;

Women light-ankled, deft-handed,
gay,

Ready to answer with joke or jeer ;
Children who make the old village ring

With the games they play, the songs they sing.

Oh, here Life steps to a heartsome strain ;

Each for the love of them works for his own ;

And not for any man's single gain,
For a master's profit to sweat and groan :

And blithely the sails with a stout "yo ho !"

To the mast-head rise as they outward go.

Come luck, come lack, one deal to each :

Nor fear nor favor the fisher knows,
As he sails away from the happy beach,

When the fish are rife and a fair wind blows ;

And what though a grave in the sea his lot ?

Holds it one hollow where God is not ?

Ah ! still do I dream of that grey old shore,

Its murmur of waves, its sheltering calm ;

The hearty speech and the open door,
And the welcome word that fell like balm—

Till over my soul in a flood-tide free,
My long-lost faith flowed back to me ;
Yea, the heart of my youth I found in thee.

Oh grey St. Monans, beside the sea.
—*Chambers' Journal.*

"You may be perfectly sure that if you thoroughly prepare yourself for a place of influence, the place will one day be given you."—*Marcus Dods.*

EDITORIAL NOTES.

OLD BOYS' ASSOCIATION.

The members of the old school, which has at present its home in the school building on Jarvis St., had a most successful and enthusiastic gathering on the night of the 30th of last month. The Old Boys' Association has made a good beginning. The spirit and unity shown at the meeting will assuredly secure most valuable ends, both for the school and for education. We give the text of the constitution in full, (it may prove useful to other schools) also the list of officers. The address of the Secretary, Rev. William Carter, M.A., is 899 Queen St. West, and that of the Treasurer, Mr. Robert C. Donald, Barrister, 28 Toronto St.

OFFICERS :

Hon. President, Arch. MacMurchy, M.A. ; President, Prof. Baker, University of Toronto ; Vice Presidents, F. F. Manley, M.A. ; G. A. Chase, B.A., Jas. Ryrie, Merchant ; Secretary, Rev. William Carter, M.A. ; Treasurer, Robert C. Donald, Barrister.

DIRECTORS :

C. H. Ritchie, Q.C. ; H. H. Dewart, County Crown Attorney ; Geo. E. Shaw, B.A. ; Sam. Hughes, M.P. ; Bernard Jennings, Banker ; Angus MacMurchy, Barrister, G. T. B. Gurnett P. O. Insp. office ; Walter Merrick, C. J. Currie, undergraduates.

CONSTITUTION OF T. G. S. O. B. A.

PREAMBLE.—It having been considered advisable to form an Association of members of the old Toronto Grammar School and its successor institutions, it has been decided to organize such a union, to be called the Toronto Grammar School Old Boys' Association.

NAME, OBJECTS. I.—The objects of the Association shall be to maintain and increase the friendly relations existing among all those who are and have been members of the School, and to co-operate in every legitimate way in advancing the welfare of the institution.

MEMBERS : II.—The Principal, Masters and ex-Masters, boys of the Fifth and Sixth Forms in the School, and all male ex-pupils are eligible for membership.

OFFICERS : III.—The Officers of the Association shall be, an Hon. President who shall be the Principal of the Collegiate Institute, Jarvis St. a President, three Vice-Presidents, Secretary and Treasurer, together with nine Directors and shall constitute the Executive Committee. The President, Vice-Presidents, Secretary, Treasurer and Directors shall be elected by ballot, at each regular annual meeting of the Association, and shall serve till their successors are appointed.

EXECUTIVE COMMITTEE : IV.—The duties of the Executive Committee shall be to arrange a programme for the Annual Meeting, to report on proposed amendments, to consider all matters pertaining to the Association which have not been referred to a Special Committee, and to prepare previous to each Annual Meeting a list of the nominations received for officers and members of the Executive Committee, which list shall be sent by the Secretary to each member with the notice of the Annual Meeting. These nominations

shall not be obligatory on the Association, and additional nominations shall, always be in order.

MEETINGS : V.—The regular Annual Meeting shall be held at such time in September or October as may be decided by the Executive Committee.

The Secretary shall send a notice of this meeting to each member of the Association, at least 10 days before such meeting takes place.

VI.—The order of business at the Annual Meeting shall be : (a) Reading of Minutes. (b) Reports of Committee. (c) Unfinished and new business. (d) Election of Officers.

SPECIAL MEETINGS : VII.—Special meetings shall be called by the President, when requested in writing by five members of the Association, the objects of the meeting being stated in this request. The Secretary shall, not less than two weeks previous to such special meeting, notify each member, or have the notice of the meeting published at least twice in two Toronto daily papers. The objects of such meeting shall be stated in this notice and no business not mentioned therein shall be transacted.

QUORUM : VIII.—Twenty-five members, 15 of whom shall be pupils, shall constitute a quorum at any regular or special meeting.

FEES : IX.—(a) The annual membership fee shall be \$1.00 payable at, or before the Annual Meeting for the ensuing year.

(b) Scholars of the fifth and sixth forms while attending the Institute shall be exempt from fees.

(c) No member who is in arrears shall be entitled to vote at any meeting of the Association.

AMENDMENTS : X.—This Constitution may be amended, at any Annual Meeting of the Association, by a $\frac{2}{3}$ vote of the members present. Notices of amendments must be sent to the Executive Committee on or before September 1st. These notices of amendments must be forwarded by the Secretary to the members of the Association, with the notice calling the meeting.

SCHOOL WORK.

ALGEBRA, PRIMARY.

PROF. N. F. DUPUIS, QUEEN'S.

BY MISS ETTA REID, M.A., KINGSTON.

1. Find the factor by which $x^3 + y^3$ must be multiplied to produce the product $x^5 + x^4y + x^3y^2 + x^2y^3 + xy^4 + y^5$.

The factor may be found by factoring. It is readily seen by inspection that the results are the same when x^3 is taken from the first three, and y^3 from the last three terms. $x^5 + x^4y + x^3y^2 + x^2y^3 + xy^4 + y^5 = x^3(x^2 + xy + y^2) + y^3(x^2 + xy + y^2) = (x^3 + y^3)(x^2 + xy + y^2)$. and the required factor is $x^2 + xy + y^2$.

The factor may also be found by division.

2. If $a = y + z - 2x$, $b = z + x - 2y$, $c = x + y - 2z$ find the value of $b^2 + c^2 + 2bc - a^2$ in terms of x , y and z .

$b^2 + c^2 + 2bc - a^2$ is the difference of the squares of $(b + c)$ and a , and

therefore is equal to the product of $(b+c+a)$ and $(b+c-a)$. Upon substituting the values of b , c , and a the factor $(b+c+a)$ becomes zero.

$$\therefore b^2 + c^2 + 2bc - a^2 = 0,$$

3. Prove that four times the product of two consecutive integers differs from a square integer by unity.

x and $(x+1)$ are consecutive integers.

$4x(x+1)$ = four times their product = $4x^2 + 4x$. It is evident that $4x^2$ and $4x$ are the first terms of the square of a binomial. Add one to complete the square and subtract one to leave the value unchanged and

$$4x^2 + 4x = 4x^2 + 4x + 1 - 1 = (2x+1)^2 - 1 = \text{a square integer} - 1.$$

$\therefore 4x(x+1)$ differs from a square integer by unity.

4. Solve the equation:
$$\frac{x+1}{x-1} + \frac{x+2}{x-2} = \frac{2x+6}{x-3}$$

Divide each numerator by its denominator and the equation becomes:

$$1 + \frac{2}{x-1} + 1 + \frac{4}{x-2} = 2 + \frac{12}{x-3} \quad \therefore \frac{2}{x-1} + \frac{4}{x-2} = \frac{6}{x-3}$$

Clearing of fractions, and reducing, $3x^2 = 5x$. Since x is a factor of both sides of the equation, $x = \text{zero}$ is one value of x which satisfies the equation. It is evident that the other value is $1\frac{2}{3}$. Also since clearing the original of fractions would give an equation of three dimensions in x , one value of x is infinity.

5. (a) Simplify the fraction
$$\frac{(2x-3y)^2 - (x-2y)^2}{3x-5y}$$

The numerator of the fraction is equal to the difference of two squares.

Hence the fraction =
$$\frac{(2x-3y+x-2y)(2x-3y-x+2y)}{3x-5y}$$

$$= \frac{(3x-5y)(x-y)}{3x-5y} = x-y$$

5. (b). Factor $7x^2 + 8xy - 12y^2 - 16x + 28y - 15$.

(1) Each factor must evidently contain x , y and a numerical term.

(2) The x terms and numerical terms of the factors must, on multiplication, give those terms of the expression which do not contain y . The y terms and numerical terms of the factors must, on multiplication, give those terms which do not contain x .

These considerations lead us to (1) reject in succession the terms containing y and x , and factor the remaining trinomials, and (2) determine by trial whether the x and y terms of the factors thus formed give the term containing xy in the product.

$$7x^2 - 16x - 15 = (7x+5)(x-3); \quad -12y^2 + 28y - 15 = (-6y+5)(2y-3)$$

In these factors 5 occurs with $7x$, and also with $-6y$: hence $7x$, $-6y$ and 5 form the factor $(7x-6y+5)$. Similarly, the remaining factor is $(x+2y-3)$. By trial it is evident that the x and y terms of these factors give the term $8xy$ in the product. Hence the given expression can be factored and the factors are $(7x-6y+5)(x+2y-3)$.

6. Find the G. C. M. of $x^3 - 2x^2 + 3x - 2$ and $x^4 - 2x + 5x^2 - 4x + 3$.

Evidently the expressions have no common monomial factor. Perform the operations upon the co-efficients alone. (See Dupuis' Algebra)

Let $A = x^3 - 2x^2 + 3x - 2$

$B = x^4 - 2x^3 + 5x^2 - 4x + 3$

$A \dots 1 + 0 - 2 + 3 - 2$

$B \dots 1 - 2 + 5 - 4 + 3$

$B \dots 1 - 2 + 5 - 4 + 3$

$2B \dots 2 - 4 + 10 - 8 + 6$

$$A' \dots 2 - 7 + 7 - 5$$

$$2B'' \dots 2 + 2 - 2 + 4$$

$$A'' \ 9 - 9 + 9 \text{ reject factor } 3$$

$$\text{reject factor } 9, A''' \dots 1 - 1 + 1$$

$$A' \dots 2 - 7 + 7 - 5$$

$$B' \dots 3 + 3 - 3 + 6$$

$$B'' \dots 1 + 1 - 1 + 2$$

$$A''' \dots 1 - 1 + 1$$

$$B''' \dots 2 - 2 + 2$$

$$\text{reject factor } 2 \ 1 - 1 + 1$$

The result being identical shows that the G. C. M. is $x^2 - x + 1$.

7. Four places are situated on a straight road in the order of the letters A, B, C, D. The distance from A to D is 34 miles. Three times the distance from A to B is equal to twice the distance from C to D; and one-fourth of the distance from A to B added to half the distance from C to D is three times the distance from B to C. What are the respective distances?

Let x = the distance from A to B

Then $\frac{3}{2}x$ = " " C to D

And $\frac{1}{3}x$ = " " B to C

$$\therefore x + \frac{1}{3}x + \frac{3}{2}x = 34 \text{ miles.}$$

$$x = 12 \text{ miles; } \frac{1}{3}x = 4 \text{ miles; } \frac{3}{2}x = 18 \text{ miles.}$$

8 If $x = 2a - 3b$, and $y = 3b - 2a$, prove $(mx + ny)^3 + (nx + my)^3 = 0$
 $(mx + ny)^3 + (nx + my)^3$ is the sum of two cubes, and therefore can be factored. One of these factors is $[(mx + ny) + (nx + my)]$. and, $mx + ny + nx + my = (m + n)(x + y) = 0$.

Therefore, since one of the factors is zero, $(mx + ny)^3 + (nx + my)^3 = 0$.

9. Given $(3a - x)(a - b) + 2ax = 4b(a + x)$ to find x .

$$3a^2 - ax - 3ab + bx + 2ax = 4ab + 4bx.$$

$$ax - 3bx = 7ab - 3a^2$$

$$x = \frac{a(7b - 3a)}{a - 3b}$$

SCIENCE.

Editor.—J. B. TURNER, B.A.

THE HIGH SCHOOL JUNIOR LEAVING
AND UNIVERSITY PASS MATRICULA-
TION.

PHYSICS.

Examiners: R. R. BENSLEY, B.A.;
C. A. CHANT, B.A.; A. P. KNIGHT,
M.A.

NOTE.—(a) Give diagrams whenever possible.

(b) Experiments are to be clearly and definitely described, and must be such as can be easily performed in an ordinary school.

1. A bullet of mass 50 grams is shot vertically upward with a velocity of 200 metres per second. Taking the acceleration of gravity in the

centimetre-gram-second system to be 980 and neglecting the resistance of the air, find

(a) how long it takes to reach the highest point;

(b) its (potential) energy at the highest point, and also its (kinetic) energy on reaching the ground again;

(c) its momentum 2 seconds after leaving the gun.

Give the units in each case.

2. (a) Show how a wind-mill, used for pumping purposes, transforms energy of one kind into another.

(b) A uniform beam is 4 feet long and weighs 8 pounds. It lies on a horizontal table, 1 foot projecting over the edge. How great a weight can be placed on the outer end before the other end, upon which a 5-pound weight is placed, will leave the table?

3. A rectangular vessel has the fol-

lowing dimensions: 5 centimetres wide; 10 centimetres long, and 20 centimetres deep. It is filled with sulphuric acid whose specific gravity is 1.8. Find the total pressure on the bottom, and on each of the four sides.

4. (a) A mass of iron, weighing 15 kilograms and having a specific gravity 7.5, is attached to a string and suspended in the water. Find the tension on the string.

(b) How would you find the specific gravity

- (i) of a piece of lead;
- (ii) of some turpentine?

5 (a) State Charles's Law, and also Boyle's (or Marriotte's) Law.

(b) A quantity of gas, measured at 10°C. and 750mm., is 500 c.c.; find the volume at 0°C. and 760mm.

6. (a) Explain briefly a simple method for finding the specific heat of iron. State where the method is defective and also how it could be improved.

(b) Explain why in a cold room iron or stone appears much colder to the hand than the woollen carpet.

(c) How would you show that water is a poor conductor of heat?

7. (a) Explain the terms *ohm*, *volt*, *ampere*, and indicate approximately their values by reference to ordinary pieces of apparatus.

(b) The resistances of iron and copper, relative to silver, are 6.46 and 1.06, respectively. The resistance of 700 feet of No. 24 copper wire is 20 ohms; find the resistance of a mile of iron wire No. 18, whose diameter is twice that of the copper wire. (Answer to three decimal places.)

8. You have four gravity cells, each of E.M.F. 1.1 volts and internal resistance 3 ohms, and you wish to send a current through a coil whose resistance is 4 ohms. Show, by diagrams, the three ways of connect-

ing the four cells, and estimate the current in each case.

9. Draw a diagram of a telephone circuit connecting two places a considerable distance apart, and explain definitely the action of the receiver and the transmitter.

II.

The following are answers to questions 4, 5, 6, 7 and 8 of the Junior Leaving Chemistry paper of 1895.

4. It is assumed in this solution of question 4 that the coal gas is at standard temperature and pressure.

The following equations represent respectively the reactions which take place in the combustion of the several ingredients of the gas. $2\text{H} + \text{O} = \text{H}_2\text{O}$; $\text{CH}_4 + 4\text{O} = \text{CO}_2 + 2\text{H}_2\text{O}$; $\text{CO} + \text{O} = \text{CO}_2$; $\text{C}_2\text{H}_4 + 6\text{O} = 2\text{CO}_2 + 2\text{H}_2\text{O}$; $\text{C}_4\text{H}_8 + 12\text{O} = 4\text{CO}_2 + 4\text{H}_2\text{O}$; $\text{H}_2\text{S} + 3\text{O} = \text{H}_2\text{O} + \text{SO}_2$. Neither nitrogen nor carbon dioxide are combustible and consequently need not be taken into consideration in the solution. The water which is formed in several of these reactions will not remain as a gas at the given temperature and pressure, and need not be considered unless it is desired to compute the volume of the liquid as well as gaseous products.

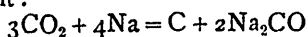
35 litres of methane, yield 35 litres of carbon dioxide; 7 litres of carbon monoxide, yield 7 litres of carbon dioxide; 4 litres of olefiant gas, yield 8 litres of carbon dioxide; 2.4 litres of butylene yield 9.6 litres of carbon dioxide, and .3 litres of sulphuretted hydrogen yield .3 litres of sulphur dioxide. The gaseous products thus occupy 59.9 litres at 0°C and 760mm pressure. At 20°C and 750mm pressure they will occupy $59.9 \times \frac{273}{273-20} \times \frac{760}{750} = 65.15$ litres.

5. (a) The affinity of sulphur for iron is sufficient to decompose sulphuretted hydrogen, consequently the reaction is represented by the following equation: $\text{Fe} + \text{H}_2\text{S} = \text{FeS} + \text{H}_2$.

(b) The sulphur dioxide extracts an atom of oxygen from the nitrogen peroxide thus:— $\text{NO}_2 + \text{SO}_2 = \text{SO}_3 + \text{NO}$.

(c) The heated sodium decomposes the carbon dioxide thus:— $\text{CO}_2 + 4\text{Na} = \text{C} + 2\text{Na}_2\text{O}$; $2\text{Na}_2\text{O} + 2\text{CO}_2 = 2\text{Na}_2\text{CO}_3$.

Combining these equations we have the equation representing the final result:



6. Ferrous sulphide (FeS) when strongly heated in air, yields ferric oxide and sulphur dioxide, the reaction being represented by the equation, $2\text{FeS} + 7\text{O} = \text{Fe}_2\text{O}_3 + 2\text{SO}_2$.

7. Nitrogen $46.67 \div 14 = 3.33$

Oxygen $53.33 \div 16 = 3.33$

The gases in this compound are in the proportion of 1 : 1. The density of the gas is 15, therefore its molecular weight is 30 \therefore the molecular formula is N_2O .

8. (a) 30cc of chlorine unite with 30cc of hydrogen to form 60cc of hydrochloric acid gas. The gas resulting from the explosion will consist of 60cc of hydrochloric acid and 20cc of hydrogen.

(b) The sodium of the amalgam unites with the chlorine of the hydrochloric acid gas, and sets free 30cc of hydrogen thus:— $2\text{Na} + 2\text{HCl} = 2\text{NaCl} + \text{H}_2$.

(c) From these reactions we obtain the following relation of volumes.

30cc of Hydrogen and 30cc of chlorine form 60cc of hydrochloric acid gas. From this by Avagadro's hypothesis we deduce that 1 mol of H and 1 mol of Cl form 2 mols of HCl.

$\therefore \frac{1}{2}$ mol of H and $\frac{1}{2}$ mol of Cl for 1 mol of HCl. So far as is known at present the hydrogen molecule has not been divided into more than two parts; hence the hydrogen molecule is correctly represented by H_2 .

III.

SOLUTIONS OF THREE EXAMPLES ON THE SENIOR LEAVING PAPER IN PHYSICS, JULY, 1895.

JAMES GILL, B.A., HAMILTON COLLEGIATE INSTITUTE.

1. (b) From formula

$$\text{acc.} = \frac{\text{moving force}}{\text{mass moved}} \text{ g}$$

$$a = \frac{980 \text{ cms}}{2000} = 490 \text{ cms.}$$

$$\text{space described} = \frac{at^2}{2} = \frac{490 \times 1}{2} = 245 \text{ cms.}$$

$$245 \text{ cms.} = 24.48 \text{ cms.}$$

2. (b) One erg of work is done when $\frac{1}{100}$ of a gram is lifted through 1 cm.

\therefore When 50 grams are at a height of 30 cms their potential energy is $(50 \times 980) \times 30$ ergs (1).

In second place to find kinetic energy when it reaches the ground we need to know the velocity and time.

$30 = at^2/2$ when $t =$ time of falling through 30 cms. $\therefore t = \frac{1}{7} \sqrt{3}$ since $a = 980$. Then $v = at = 980 \times \frac{1}{7} \sqrt{3}$

Therefore kinetic energy =

$$\frac{mv^2}{2} = \frac{50 \times (980 \times \frac{1}{7} \sqrt{3})^2}{2}$$

$$= 50 \times 980 \times 30 \text{ ergs (2) same as in (1)}$$

Again let us find the kinetic energy and potential when the body has fallen through h cms or at a distance of $(30 - h)$ from the ground.

When body has fallen through distance h then $h = at^2/2$ or $t = \sqrt{h/490}$. $v = at = 980 \times \sqrt{h/490}$.

\therefore Kinetic energy =

$$\frac{mv^2}{2} = \frac{50}{2} \times (980 \times \sqrt{h/490})^2 =$$

$$50 \times 980 \times h \text{ ergs.}$$

Potential energy at height $(30 - h)$ cms = $50 \times 980 \times (30 - h)$ which added to the kinetic gives $50 \times 980 \times 30$ ergs same as in (1) and (2).

3. A velocity of 30 meters at an angle of 60° to the horizon gives, on resolving, 15m as the initial horizontal and $15\sqrt{3}$ m as the initial vertical.

Time to reach highest point is $t =$
 $\frac{u}{g} = \frac{15\sqrt{3}}{9.8}$ Whole time of flight
 $= 2t = \frac{15\sqrt{3}}{4.9}$ secs.

Range = $15 \times \frac{15\sqrt{3}}{4.9} = \frac{225\sqrt{3}}{4.9}$ meters.

Greatest height obtained from $u^2 = 2gh$ $(15\sqrt{3})^2 = 2 \times 9.8h$ or $h = 47\frac{1}{2}$ metres.

QUESTIONS ON CÆSAR.

BOOK V. CHAPTERS 49-58.

I.—Translate into good idiomatic English chapter 49. *Erat magni* —*possit*.

1. Parse *haec*, *millium*, *angustus*.
2. Classify the ablatives in the first sentence.
3. Account for the case of *Ciceronem* and the mood of *veniat* and *possit*.
4. *tantulis*. Exemplify as many other diminutive ending in Latin as you can.
5. *viarum*. Draw a plan of a Roman camp, marking the position of the *portae* and *viae*.

II.—Translate chapter 52. *Longius* —*cognoverat*.

1. Construction of *detrimento*, *copiis*, *virtutem*.
2. *intercedebant*. When is *quod* (because) followed by the indicative and when by the subjunctive?
3. *testudines*. What is meant here? In what other senses is the word used?
4. *munitiones*. In what three ways may nouns be formed from supines?
5. *prosequi*. Give all the active forms of this verb.

III.—Translate chapter 58. *Nulla* —*occidunt*.

1. Parse *responso*, *dispersi*, *nactum*, *quos*.
2. *Nulla* —*responso*. Substitute an equivalent Latin clause with the verb in the active.

3. *quod fore*. Parse *quod* fully.
4. *occiderint*. Why subjunctive?
5. *redeuntes*. Give 3rd plural of each tense indicative and subjunctive.

IV.—Translate idiomatically.

(a) *Pronuntiari jubent*, *seu quis Gallus seu Romanus velit aute tertiam horam ad se transire sine periculo licere*; *post id tempus non fore potestatem*.

(b) *Neque ullum fere totius hiemis tempus sine sollicitudine Cæsaris intercessit*, *quin aliquem de consiliis ac motu Gallorum nuntium acciperet*.

(c) *Missis ad Cæsarem satisfaciendi causa legatis*, *cum is omnem ad se senatum venire jussisset*, *dicto audientes non fuerunt*.

(d) *De suo ac legionis periculo nihil timebat*; *ne quam occasionem rei benegerendæ dimitteret cogitabat*.

V.—1. Conjugate *elicere*, *allicere*, *contempserunt*, *arcessitum*, *praesensisset*.

2. Mark the penult of *comprobat*, *admonet*, *consolor*, *diutina*, *evocant*, *defore*, *facinoris*, *instigat*.

3. Distinguish *occidunt* and *occidunt*, *indicat* and *indicat*.

4. What compounds of *facio* make *facio*, *facio*, and *ficio* respectively?

5. Compare *similis*, *vetus*, *bene*, *iniquus*, *diligenter*.

6. Give 3rd sing. perf. ind. act. and pres. inf. pass. of *allatis*, *recipere*. *facta*, *reperios*, *consumit*.

7. Give nom. gen. and gender of *vado*, *paludem*, *cruciatibus*, *manum cespitum*.

8. When should *three* be rendered by *terni* instead of *tres*?

VI.—Translate into idiomatic Latin

1. While these events were taking place our men suddenly sallying from all the gates made a fierce attack on the besiegers, and drove them in such headlong flight that not one of them ventured to halt until they came in sight of their camp.

2. Cæsar warned the chiefs that he

knew what they were planning and threatened to lead his army into their territories and set fire to all their towns unless they gave hostages and promised to do what he had ordered.

3. Not a day passed without their doing this. They felt annoyed that his influence had been increased. You must bear these losses patiently. We shall do this as quickly as possible.

QUESTIONS ON ENGLISH GRAMMAR.

1. Analyse the following simple sentences:—

(a) *Down* the perpendicular faces of these stupendous avenues descend almost continual showers of stony fragments, *broken* off from the cliffs *above*.

(b) *On* emerging from this dark and deadly plain and *beginning* to ascend the lower mountain-stages the traveller is at *once* introduced to a much more pleasing scene.

(c) But the favorite pastime of all, *one* engaged in by all classes and ages, and both sexes, *with* peculiar delight, is swimming in the surf.

(d) *Close* by *may be seen* some cunning fortune-teller with crafty look, explaining to some awe-stricken simpleton his *destiny* in life from a number of books arranged before him and *consulted* with due solemnity.

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

3. Classify the preposition phrases in (d) according to their grammatical value, and give the relation of each.

4. Classify the words in *ing* in (b), (c), and (d), and give the relation of each.

5. Write sentences in which the words *perpendicular*, *faces*, *off*, and *above* have different grammatical values from what they have in (a).

6. Form adjectives from *fragment*,

mountain, *fortune*, *delight*, *number*; and nouns from *scene*, *peculiar*, *consult*, *crafty*, *please*.

7. Write all the infinitive active forms of *broken*, and all the infinitive passive forms of *may be seen*.

8. Write out the separate clauses in full of the following sentences, and tell the kind and relation of each.

(a) If I started to run I had no doubt that the bear would give chase; and although a bear cannot run down hill as fast as he can run up hill, yet I felt that he could get over this rough, brush-tangled ground faster than I could.

(b) Deep in the forest was a little dell

High overarched with the leafy sweep

Of a broad oak, through whose gnarled roots there fell,

A slender rill that sung itself asleep,

Where its continuous toil had scooped a well

To please the fairy folk.

EAST MIDDLESEX PROMOTION AND REVIEW EXAMINATION.

GRAMMAR—3RD TO 4TH CLASS—
TIME, 2 HRS. 30 MIN.

LIMIT OF WORK—The sentence. Clause and phrase. Classification of parts of speech. Analysis and parsing. (The first twenty-six lessons of the authorized text book.)

Insist on neat and legible writing. One mark off for every mistake in spelling. Pupils may have their textbooks in Grammar.

1. Fully analyse the following sentences:

(a) A mile away on a little mound Napoleon stood on our storming day.

(b) Out 'twixt the battery smokes there flew a rider.

(c) We've got you Ratisbon.

(d) The Marshal's in the market-place.

(e) The chief's eye flashed.

(f) His chief beside, smiling, the boy fell dead. (24)

2. What is the difference between a clause and a phrase? (4)

3. Give the kind and relation of the following phrases :

(a) At daybreak on a hill they stood.

(b) They saw the bridge of wood a furlong from their door.

(c) In the snow the mother spied the print of Lucy's feet. (12)

4. Give the kind and relation of the (subordinate) clauses in the following :

(a) When I crossed the wild I chanced to see the solitary child.

(b) Her feet dispersed the powdery snow that rises up like smoke.

(c) At daybreak on a hill they stood that overlooked the moor.

(d) They, turning homeward, cried, "In heaven we all shall meet." (16)

5. Parse according to the model at the foot of page 59 in the grammar.

Yet some maintain that to this day she is a living child. (24)

6. Correct the following sentences :

(a) Him and I am going to the sugar bush.

(b) I seen it laying on your desk.

(c) We should of gone by the other road. (9)

7. Define a relative pronoun and show how your definition applies to the example in :

"The bird which built that nest has deserted it." (8)

8. Write sentences using the word *iron* as a verb, as an adjective, and as a noun respectively. (9)

Count 100 marks a full paper : 33 minimum to pass.

GEOGRAPHY—3RD TO 4TH CLASS.
TIME 2 HRS. 15 MIN.

LIMIT OF WORK—Definitions continued : first, accurate knowledge, then memorizing of the definition. The great countries, large cities, and most prominent features on the Map of the World, maps of the County, of the Province of Ontario, of Canada and America. Map drawing. Motions of the earth, seasons, zones. (The first 50 pages of the P. S. Geography, and what can be taught from a map of the Dominion and a good map of the world.)

1. (a) What is the usual cause of a "falls" in a river. (3)

(b) Tell where there is an example in Canada. (3)

(c) What is the difference between a "rapids" and a "falls" ? (3)

(d) When a canal is made to get past a rapids or falls there has to be a lock in it. Describe a lock. (6)

2. (a) Name four things raised in this township that the farmers produce much more of than they need for their own use. (4)

(b) Where is the surplus of these four products consumed? (4)

(c) Name four things that the farmers use much more of than they produce. (4)

(d) From what parts of the world does each of these four things come? (8)

3. British Columbia, Mexico, Brazil, Sweden, Turkey and Hindostan. Concerning each of these tell :

(a) Where it is situated.

(b) One of its important cities.

(c) What kind of climate it has. (18)

Count 100 marks a full paper : 33 minimum to pass.

CONTEMPORARY LITERATURE.

The *Atlantic Monthly* for January shows the altered cover for the first time. It probably is an improvement but we are such creatures of habit that few changes are grateful to the eye. The character of the magazine, however, is not changed, that would indeed be most deplorable. The first article is one of Hawthorne's "Unprinted Note Books." This is followed by a study in Sarah Orne Jewett's best style, and but little farther down the page is "The Fete De Gayant" by Agnes Repplier. The present instalment of the "Seats of the Mighty" displays a strength and at the same time delicacy of treatment that is quite remarkable. Horace E. Scudder has an interesting paper on "The School House as a Centre." There is a short poem entitled "Recompense" by Charles G. D. Roberts.

The leading article in the January *Book Buyer* is on Quiller-Couch, better known by his pen-name "Q." Those who have learned to think kindly of him, and these are many, will be pleased both with the article and the portrait. The lovable personality of Eugene Field—now, alas, withdrawn from us—is sympathetically treated by Irving Way, in "Eugene Field's Verses to his Friends." There are specially charming portraits of Robert Louis Stevenson and Bret Harte further on in the number.

The last issue of *Littell's Living Age* contains a charming piece of verse by Mrs. Jessie K. Lawson, which has been re-printed from *Chambers' Journal*. We have pleasure in reproducing this for the benefit of our readers.

The installment of Mr. David A. Wells' "Principles of Taxation," to appear in *Appleton's Popular Science Monthly* for February, will contain

descriptions of the tax systems of China and Japan, and will show that, although taxation has prompted many of the most dramatic incidents and important movements of history, only two or three works have been devoted to this subject and hardly any use has been made of it in literature.

"Ground Swells" by Jeannette H. Walworth is the complete novel in the February number of *Lippincott's Magazine*. The scene is laid in New York City. Marjorie Richardson has a short tale of a cash boy in a store, realistic, but fortunately on the uncommon subject of worth, not degeneration. "The Child and his Fictions" is a valuable paper by Elizabeth Ferguson Seat. The poetry of the number is by Charles G. D. Roberts, Clinton Scollard and Joseph Wharton.

A rare pleasure has been prepared for all those who love the great, the good, and the pure in English literature. In a series of six books, entitled "The Heart of Oak Books," D. C. Heath & Co., Boston, have issued a small and yet complete library for anyone who needs merely to be young enough to be growing. The first volume begins with "Mother Goose" and the sixth closes with "Abraham Lincoln's Second Inaugural Address." Between these two are to be found almost all that we have loved when children, and never forgotten; in everything there is the rarity of an excellent choice. Charles Eliot Norton is the editor.

"The Arden Shakespeare" is being issued by the same firm. Of this series we have received "Macbeth" and "As You Like It." It is the aim of the editors, to prepare this edition for the student of literature and

not merely for the philologist or grammarian. The text is based on the Globe edition. The preparation in every respect is unusually pleasing.

"English in American Universities." D. C. Heath & Co., Boston. This is a re-print of a series of articles which have appeared in the *Dial*, with the exception of the articles on Johns Hopkins and the University of Michigan. This discussion on the teaching of English has aroused so much interest that its appearance in book form will be welcome. We have also received from D. C. Heath & Co., an edition of "Benedix's Die Hochzeitsreise," prepared for the use of younger students.

We have received from Moffatt & Paige, London, England, Part II of their "Pupil Teacher's Course," which includes the work given in the curriculum under the headings of English Grammar, Repetition, Composition, Music, Geometry, and Arithmetic. An extraordinary amount of information is given in a compact and useful form.

"The Apocrypha," revised version. The University Press, Oxford. This is prepared uniformly with the other revised versions in binding, paper and type, all of a most excellent quality. A deep interest will always be attached to this book, judged to be related to, yet not of the Bible, and in preparing this edition the publishers have placed at the disposal of the public a noteworthy addition to Hebrew literature.

In Longman's English Classics, "L'Allegro, Il Penseroso, Comus and Lycidas," edited by N. P. Trent of the University of the South. Longman's, Green & Co., New York and London. This book comprises those of Milton's poems, intended to be studied for the examinations of 1896; it contains careful suggestions for the use of teachers and scholars, and will be most valuable in the classroom.

"Studies in the Science of Drawing in Art" by Aimee Osborne Moore. Ginn & Co., Boston, U. S. A. In the preface this is set forth as a glimpse at the Philosophy of Drawing. It is intended for the general reader who wishes to understand something of the graphic art, as well as for the artist, the teacher and the student. In the unavoidably limited compass of the work a great deal of ground is gone over, with a surprising clearness of detail. This attention to art in our schools cannot fail to produce good results.

From Silver, Burdett & Co, New York, Boston and Chicago, we have received a brief account of the life and works of Lessing," with representative selections, chiefly from "Nathan the Wise," by E. A. Hughes. This book is intended for use in high schools.

From the same publishers we have received two extremely attractive books for children. "Twilight Stories" by Elizabeth E. Foulke and "Nature in Verse" by Mary J. Lovejoy. The former is a collection of short and simple little tales with a verse here and there, intended to be read by the children themselves. The second is a collection of verse, more especially of the fugitive verse about the seasons, to be found so abundantly in modern magazines. It is intended to cover the first four years of school work although it may well be used at home.

"In Far Formosa," by G. L. MacKay, edited by the Rev. J. A. Macdonald; Fleming, Revell Co., New York, Chicago, Toronto. This is a book which appeals to Canadian sympathies in many special ways. It is, as the phrase is, distinctively Canadian, and while that note may be too often sounded, still when it goes with an appeal from a Canadian to his fatherland it cannot be out of place. To many the vivid and elo-

quent style of the island missionary has grown familiar, and the present volume is a happy elaboration of addresses that have stirred many thousands. Great credit for the attractive form in which the literary material is presented, is due to the editor who undertook from notes and personal intercourse to shape the volume. The type, paper and binding are attractive.

In the English "Men of Action" series, "Nelson" by J. K. Laughton. Macmillan & Co., London and New York; Toronto, The Copp, Clark, Co. Such a subject needs no other inspiration than its own. There is no class among English speaking people who have not an attachment for the great seaman, and the present treatise is an admirable endeavor to present his life and character fairly. The different chapters of the book are devoted to the most important epochs of his history, in which the sad vexed question of his love occurs again and again. If it were possible it would be kind to have less of it, and yet to a great extent it is mentioned only in a just vindication of his character. Along with the whole series this book is successful in encouraging a taste for that which is greatest in history.

The following books we have also received from Macmillan & Co., London, through their Toronto Agent, Copp, Clark & Co.: "Practical Inorganic Chemistry," by G. S. Turpin. This is a careful and systematic description of a series of experiments for the class-room, giving the preparation of the greater part of the work required for study in somewhat advanced classes. There is a list of the apparatus which would facilitate the work of each student. Other articles are mentioned for general use. "Murchee's Science Readers," Books 5 and 6, "Macmillan's Geography Readers," Book 7, and the "New

Literary Readers," Book 3. All these have been recently issued and are successful continuations of series already noticed. The "Literary Reader" is especially good. "Milton's Paradise Lost," Book 4, edited by M. Macmillan, of Elphinstone College, Bombay, has also been recently issued. The notes are of more than usual length and clearness.

The same firm has issued the "Historical Outlines of English Accidence," by the late Richard Morris, revised by L. Killner, with the assistance of Henry Bradley. This work was in contemplation during the life time of the author, and indeed was placed by him in the hands of the present editor. Considerable change has been made in the former edition, mainly in bringing it into coincidence with the latest philological investigations.

From the Copp, Clark Company, "Notes on English Grammar," by A. A. Brockington, of Bishop's College School, Lennoxville. The inductive method is applied in formulating definitions, and considerable emphasis is laid on parsing, both of which treatments are in accordance with recent educational ideas.

"Methods of Mind-Training," "Concentrated Attention and Memory," by Catharine Aiken. Harper and Brothers, New York. By means of various exercises it is possible to quicken into an extraordinary degree of intensity the power of concentration possessed by the mind. Miss Aiken relates first how she came to apply this principle in her school work, and then shows how others may adopt the same methods with equal success. It is claimed that this will lessen to a great degree, if not wholly banish, the drudgery of school work, both for pupil and teacher.

"The Principles of Rhetoric" by A. S. Hill, Harvard College. Har-

per and Brothers, New York. Prof. Hill has revised and enlarged his valuable assistant to the study of English composition. It is a book intended only for the more advanced student, and in the present edition some difficulties have been removed along with such work as the author has considered too elementary.

As we go to press, Mr. Strang's little book on "Grammatical Analysis," which we are very ready to welcome, makes its appearance on the table, from the press of Messrs. Copp, Clark & Co., Toronto. It is divided into two parts, Part II consisting of passages for analysis, selected chiefly from English Classics, and arranged according to difficulty, and Part I being a brief exposition of a method of teaching analysis, with which our readers will be familiar from reading valuable papers on the subject contributed to our columns from time to time by Mr. Strang. This book, we are convinced, will do much to improve the teaching of grammar in our schools. The methods recommended are clear and satisfactory, and the judgment and skill shown in the selections given will be appreciated by all true teachers.

"Map Modeling in Geography," by Dr. A. E. Maltby. E. L. Kellogg & Co., New York. This book has been prepared by an experienced teacher, and will prove of great assistance to anyone beginning instruction in Geography and History. From the same publishers we have received "One Hundred Lessons in Nature about my School House," by F. O. Payne. This is not a philosophical treatise on nature, but a collection of one hundred suggestive lessons which may be given by any teacher to his pupils on the common objects of every day school life.

From the Cambridge University Press "The Epistles to Timothy and

Titus." With this volume the Cambridge Bible for Schools and Colleges is completed. One can but repeat that no more satisfactory help to the study of the Bible for teachers can be found than this. The practical and scholarly method of explanation, and the even and safe mean of judgment which is maintained throughout, cannot but win for it the approval of all those who study it.

THE MUTUAL RESERVE FOR 1896.

The figures which appear elsewhere, and which were submitted at the annual meeting of the Mutual Reserve Fund Life Association, require no addition and but little comment. So uniform and continuous has been the successful progress of this Association that the record of another year is but the natural development for that period. Still it is none the less gratifying to its friends and agreeable to its Managers that the Association passes 1895 and its important changes in administration without interrupting its growth, strength and prosperity. President Burnham has taken up with vigour and intelligence the duties devolving upon him by the death of President and Founder Harper, and closes the first year of his administration with a record of which the company, and he particularly, may well be proud. Last year the company's new business was \$69,000,000; its payments of death claims more than \$4,000,000; and in all its lines it shows a steady increase of business, in income, in surplus and in assets. Its membership now exceeds 105,000. The business in Canada last year amounted to over \$5,700,000. The amount of insurance in force in Canada exceeds twenty millions of dollars, and over one million dollars has been paid out to the beneficiaries of policy-holders in the Dominion.