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Editorial Notes.

A CORRESPONDENT, in a private note, says: "I am well pleased with your paper, and appreciate the improvement in last copy. I wish, however, that more teachers would give practical hints, as the paper should be, I think, more 'an exchange of thoughts' than many of us are making it." We heartily endorse this opinion. Nothing would please us better, or help us more, than a ready compliance with this suggestion by our friends in the profession.

WE are very glad to be able to give our readers the colored cover again in this number. This feature, which we hope to continue permanently, means, it will be observed, three additional pages of educational or literary matter every issue, besides the portrait or other fine picture in each number. We thus virtually increase the size of THE JOURNAL by one-fourth. Will not every old subscriber do his best between the present date and the first issue after the holidays—September 1st—to add one-fourth to our list of subscribers?

IN the Primary Department of THE JOURNAL of April 15th, the wish was expressed that someone would give us some account of the process of making maple sugar. In response to this wish Mr. J. Harold Putnam, of the Ottawa Normal School, very kindly gave us an interesting article on the subject, which appeared in the number for May 15. This pleasant description of what actually took place on one farm was, we are sure, read or listened to with both pleasure and profit, not only by multitudes of children, but by many of larger growth, who no doubt were glad to be let into the mysteries connected with the manufacture of this sweet luxury.

THE truly astounding result of the experiment described by Mr. Seymour C. Cooper, in his note in another column, should prompt other teachers to try the same experiment with their pupils. It

would add to the value of the facts elicited if the ages of the children who are found unable to distinguish colors, and the ratio of the number so deficient to the whole number examined, were carefully noted. We are disposed to agree with Mr. Cooper in believing that the defect is probably due, in most cases, to the lack of eye-training, or to want of training in the use of the distinctive names, rather than to native color-blindness. But, in either case, it is important to know, and we should be glad if other teachers would give us the results of similar observations in their schools.

IN the last two numbers we have had much pleasure in presenting to our readers portraits of the well-known features of the Minister of Education and of the Principal of the School of Pedagogy, respectively. We have equal pleasure in setting before them, in this number, the features, probably less familiar as yet to some, of the Deputy Minister. By a coincidence, we have just received, too late for detailed examination before going to press, Mr. Millar's new book, "School Management." It is a handsome volume of nearly three hundred pages, dealing in a clear and practical manner with such themes as the function of the school, physical, intellectual, and moral development of pupils, discipline, and many other questions of prime importance to every teacher. We notice that it also includes, as an appendix, the Public School Act, as amended at the late session of the Legislature.

THE little incident given us by Mr. J. H. Putnam, in our correspondence columns, is quite suggestive in regard to the way in which the child acquires its vocabulary. We thank him for sending it. No doubt many of our readers could send us similar interesting incidents out of the stores of their own observation and experience. We should be glad if they would freely do so. They might thus furnish material for a new and instructive chapter in child-study, as well as in language-study. An incident came under our own notice the

other day, illustrative of the tendency of the child-mind to substitute definite for unknown numbers. A four-year-old takes great interest in watching the movements of two or three cows, which are usually tethered on a common within view of his bedroom window. The other morning the number had been increased to, perhaps, ten or a dozen. On rising and looking out of the window, the little fellow, who can count only to eight or ten, exclaimed: "Oh, mamma, look! There are *twenty-one* cows in our field"; not only exaggerating the number, but, in English baronial fashion, appropriating the common as well.

WE often find occasion to use such expressions as training the "conscience," obeying "conscience," developing "conscience." "Now what is 'conscience,' anyway?" asks a correspondent in a recent letter. "Is it not influenced by education and environment?" Most certainly it is, we should say, replying to the last part of the question first, else it would be mere trifling to talk about training or developing it. To attempt a categorical reply to the first part of the question would be a bold venture, in view of the fact that philosophers differ widely upon the point. The main difference, however, apart from the question of its origin, which is too large a one to discuss here, is whether, and to what extent, it can be relied upon as an inborn, infallible guide in all matters of right and wrong. In our humble opinion, however, parents and teachers cannot go far astray if they content themselves with teaching that conscience is that faculty whose office it is to cause us to know and feel that there is a right and wrong in human actions; that it further causes us to feel that it is our highest obligation, at all times and under all circumstances, to use every means within our power to find out what is right and what is wrong; and that, having to the best of our ability settled this question, we are, by the constitution of our being, laid under the most solemn and weighty of all obligations to do the right and to refrain from doing the wrong.

Special Papers.

A CRUSADE FOR EVERY DAY—HONESTY AND TRUTHFULNESS.

GEO. W. HOSS, PRINCIPAL SCHOOL OF ELOCUTION AND ORATORY, WICHITA, KANSAS.

Eminent speakers and writers have iterated and reiterated the statement that our public school system was inaugurated not so much to make business men and professional men scholars as to make good citizens. Accepting this as true, we may ask: (1) What are some of the ingredients in good citizenship? (2) Are these elements lacking among our people? (3) If so, what can be done to secure them?

First, ingredients of good citizenship. The politician and "Fourth of July" orator will tell you of his patriotism, readiness to defend your country, sword in hand, etc., yea, even readiness to die for one's country. This is all well enough when the occasion demands, but happily occasions seldom come when it is necessary to prove your good citizenship by the sword, and we pray that the occasions may become fewer and fewer as the years go on. While we accept the above as one of the ingredients in extreme occasions, there are others for use on all occasions. Among these we find industry, economy, sobriety, candor, honesty, and truthfulness. All these and more are needed for the full measure of good citizenship. We are, however, on this occasion to deal with the last two, namely, honesty and truthfulness.

Second, we are to see, as above indicated, that these qualities are wanting among our people. It takes but little investigation, at most but little experience in dealing with men, to be assured of this fact. That fact, that sad fact, reveals itself in nearly all walks of life. Instances are almost too numerous and too obvious to need mention. Instances like the following are without number—Hire a man to do a small job of work at a given hour. He promises definitely, and you put aside your regular work to be present to direct or help. You go to the place a mile or two distant, promptly on time, but no workman. You go to his shop or home and find that another had offered him a little better job, and that ended all.

You buy a load of corn, hay, or wood, and fix the day and hour for delivery, and remain at home to see to proper placement of the article. The hour comes and goes, and no load; another hour with the same result. Meeting a neighbor next day and narrating your disappointment, he surprises you by telling you that he saw the same man sell his load to another party for \$7.25, which proves to be 25 cents more than you were to pay. This twenty-five-cent gain explains it all; this *great* gain is entirely a sufficient reason (in his estimation) for breaking his promise and leading to the waste of your time in waiting, and probably to a much larger waste in making a second purchase of the article wanted. Again, you are to pay a small debt, say \$40, on a certain day. In order to make this payment you must make a collection of \$20 from Mr. A., one of your debtors. You call on him and ask him if he can make payment by such a day. He very promptly answers, yes. You, with great caution, emphasize your need, saying this amount is to help you keep your promise in making payment to Mr. B. He says, all right. You go about your business resting easy as to both his payment and yours; but when the day of the payment comes, behold no man, no money, not even an explanation. 'Tis a broken promise, business dishonesty and nothing less. Only one day till your promise is due, and you in school or otherwise engaged so as not to be able to go out and hunt up some other creditor, or make sale of goods, chattels, etc., and hence a great sacrifice on your part, or a failure to keep your promise. This both annoys and humiliates you, but the matter does not end here. Your creditor had promised \$500 on the day after you were to pay him. Your failure to pay him compelled his failure to pay \$500 to another creditor and his creditor failed for \$3,000 to a third, and thus this seemingly endless chain goes on until a merchant is broken up or a factory shut down. This chain, as others, was no stronger than its weakest link, and that weak link was the lack of honesty in the little sum of \$20.

These are only types of what is occurring almost every week in every business community. While these are serious, there are others often

much more serious. Among these are exaggerations and misrepresentations, not to say falsehoods, in business advertisements, as "best in the city, or state," "cheapest in the state," "largest house in America," "closing out at cost," with no thought of either closing out or selling at cost, and thus on to the end. Added, are the broken promises of politicians, office-holders, and added to these are bought voters, bribed witnesses, perjured jurors, and thus on till you are ready to exclaim with David, "All men are liars"; or, standing on the more appreciative side, you say with Pope, "An honest man is the noblest work of God." Without further enumeration, we think the evidence sufficient, painfully sufficient, to prove the fearful lack of honesty and truthfulness.

Third, what can be done to secure these virtues, the virtues of common honesty and truthfulness? Writing for an educational journal you almost anticipate the answer, namely, let these be faithfully and rigidly taught in the public schools. Were we defining the work of these schools we would say, morality in general, including the fundamentals of Christianity; but as this is wide of our intent we limit our discussion to the theme in hand, namely, honesty and truthfulness. Without argument as to the mode of this work or its efficiency, it is enough to state the almost axiomatic truths:—"Train up a child in the way he should go, and when he is old he will not depart from it."

"'Tis education forms the common mind."

"Just as the twig is bent, the tree's inclined."

What you want to appear in the life of a nation should be put into the schools of that nation.

Hence let the above-named virtues be ingrained through the school life; and they will crystallize into character in manhood, and, as a consequence, we shall have a generation of honest dealers and truth-tellers. What a "consummation" and how "devoutly to be wished"! What a relief would come to the business world! What safety to government! What trust among neighbors! What sweet confidence in cherished friendship and plighted vows!

Teachers, will you consider and see what you can do in developing in your pupils sterling honesty and rigid truthfulness?

"Provide things honest in the sight of all men."

"Lie not to one another."—*Indiana School Journal*.

THE PROBLEM OF THE BAD BOY.

BY SARAH L. ARNOLD, OF BOSTON.

It is an ever-recurrent problem, ever old and ever new. However the genus may be described, the individual presents a new type. Nothing that has ever been said about other bad boys exactly applies in the crisis in which our individual figures, and yet he is very like the rest.

How easy would the discipline of the school become if Jack and Jim were somewhere else! How pleasant all the work seems on the days when they are kept at home! How natural for us to think that the best solution of the problem would be for them to stay out of school altogether!

What shall we do to them? The question is brought home to our minds because it has been recently discussed by the primary teachers, who have been making a special study of exceptional children, in the hope of growing more closely into sympathy with their lives, and so becoming the better able to help them. While endeavoring to answer the question, the other side presented itself.

"What shall we do with the bad boy?" we have constantly inquired. "What does the bad boy do for us?" we ask in turn.

Out of a hundred teachers who described troublesome children, and questioned the best means of helping them, but one proposed that the boy should be removed from school. Without exception, they felt that the boy should be improved through the influence of school life. They stated, unhesitatingly, "He is better because the children help him. He is learning to show more self-control; he tries more to please me; he has more self-respect. I think I am learning how to deal with him."

But teachers often say: "Think of the effect upon the school!" The children see Jim performing as they cannot—their lessons are interrupted—their time is stolen from them—the teacher's patience is entirely exhausted, and her nerves are

worn, because she must watch this child, in constant fear of some vicious misdemeanor. How much the other children would gain if he were out of the way! How much happier and better the teacher would be!

Would she gain more, would she be happier and better?

If the aim of school life were simply to read, write, spell, and solve problems in arithmetic, then it would follow that every moment taken from that work lessens by just so much the good results of the school. But if the child goes to school for something more—if he has to learn to live with his mates—to work with them—to play with them—to sympathize with them—share their joys—learn from their virtues and their faults as well—have we wisely measured the gain of which we have spoken?

I have seen many a school which numbered among its pupils a child maimed by some physical injury. Invariably this child has been treated with the utmost consideration by both teachers and scholars; his injury called forth their sympathy and pity; their constant effort was to smooth his path, to help to make up to the child for the loss and pain which he must suffer.

But the child who is troublesome because he is bad seldom receives such sympathy. Why? He, too, has been maimed, has received injury worse than physical. He has received for his heritage a hasty temper or a vicious tendency against which he must forever fight; or he has been dwarfed, and blinded, and defended by sordid environment. Is the child to blame? Of the two, which has the greater need, which calls more loudly to us for the help which we can give—the boy with the twisted knee or the one with the twisted temper?

If we ourselves could separate the offence from the offender, we could deal more justly and generously with the child. If we could recognize the bitter need of the bad boy's life, our sympathy would go out to him as to the sick and suffering, not with a weak sentimentality, but with an earnest desire to help, which would give us the infinite patience which is necessary in order that we may help.

It is evidently meant for us all that we should meet in life children, and men, and women who have not learned, in all ways, to do what is right. If the child learns in school to hold out the helping hand to the troublesome member of the school family, to keep from laughing at the smart sayings, to be patient while the teacher corrects, to recognize "Jim's way" as one which sadly hinders him, and which should never be copied by the others, will he not be better fitted to help those who most need his help, in this battle of life, when he has grown to manhood? Is it not well for him to learn in school how to judge, how to avoid the misdeeds of others, at the same time, as he grows strong, to help the author of the misdeeds?

Trust, and courage, and patience, and, oh, how much of all three do we need in order to deal wisely with the troublesome boy! But are not these lessons set for us to learn, plus the reading, and writing, and arithmetic? Can we not make it the business of our school to help the bad boys, knowing that this will react upon the school in a growth which is beyond price? For the boy's sake and for our own sakes we must do all we can to help him before we decide to turn him into the street. For the problem which is before us now is not whether we shall keep the child in school or send him to a school specially prepared, under favoring conditions, for such as need close care and watchfulness. The alternative is the street or the saloon. Knowing that, let it be a last resort when we decide to assume this responsibility. Let us help all the children to take hold of hands, in the effort to sympathize with and to help the boy who so sadly needs all the help which we can give.—*The American Teacher*.

USES OF COLLEGE TRAINING.

"It is not entirely safe to claim that every kind of success, even of legitimate success, will be promoted by a college training," writes Rev. Charles H. Parkhurst, D.D., in *May Ladies' Home Journal*. "If I had a boy for whom it was my supreme ambition that he should become rich I should not send him to college. So far from helping his prospects in that direction it would probably damage them. Money-making is a trick. The easy acquisition of it is a knack. It involves the condensation of

interest and faculty along a particular line, and that a narrow line. There is nothing to hinder a very small man from being a very wealthy one. Shrewdness does not imply big-mindedness. I might say with a good deal of assurance that it implies the contrary. And shrewdness has more than anything else to do with the acquisition of gain. . . . There are a great many things that can be best done by the man who does not know too much, or, at least, by the man whose intelligence is concentrated at a single point or along a single line. The mechanic who has come to be known among us as the 'Wizard' would, perhaps, have been more of a man if he had gone to Harvard, but it would probably have spoiled him as a 'wizard.' Genius is presumably always a species of mania, and liable, therefore, to become something very ordinary if successfully subjected to the processes of the asylum. They had better be kept away from college if the design is to make them experts. College will be able to give them a character of 'all-roundness,' but a knife cannot be round and sharp at the same time; neither can a boy. . . . If we are going to do large, intelligent work, the prime condition is the possession of an intellect trained and stocked in the same general and comprehensive way. College training is simply the process of intellectually getting ready, not getting ready for this, that, or the other specific mental service, but simply getting ready—planting down a broad foundation of preliminary big enough to support any breadth or height of superstructure that there may be need or opportunity to put upon it. The college course and the requisite preparatory training costs about seven years of the best and most possible period of a man's life. But if a young man hopes to do a large, solid work in the world, a work in which intelligence of a broad kind is to play any considerable part, and there is no antecedent obstacle in the way, he makes an irreversible mistake if he considers seven years too much to pay for a liberal education."

THOUGHTS SUGGESTED BY THE TERM APPERCEPTION.

Only a year or two ago the simple mention of the term *apperception* would cause a gentle ripple of smiles to play across an audience of teachers. In fact, the same merry response would greet the use of this term to-day in many educational gatherings. But by those teachers who know its meaning the term is already accepted, its value appreciated, and the spirit of controversy centres now around other ideas, such as concentration, child study, culture epochs, etc. There are probably thousands of teachers who are not yet familiar with the word *apperception*, but its message will be delivered to them in due time.

It is very natural for those long accustomed to use other words or phrases of like import to resent the introduction of a new term in psychology or pedagogy. Many thoughtful teachers see nothing more in this word than in the old familiar maxim, *proceed from the known to the unknown*, and it certainly includes this idea. Yet it has an intenser meaning, and probably a wider one, than that old phrase. It vitalizes the notion *from known to unknown* by showing the energies resident in our accumulated knowledge and experience when properly gathered up and focussed upon any new thought-problem. The question is how to economize mental effort, how to make quicker and firmer conquests in new fields of knowledge by organizing the interpretive force of familiar ideas, and bringing them to bear upon the new lesson. From the standpoint of *apperception*, our acquired knowledge is not a static accumulation of ideas, but old ideas in motion toward new goals. Old ideas are constantly flowing on, modifying and interpreting new experiences. So constant and imminent is this *apperceiving* energy of old ideas that it is present in all our unpremeditated thought as well as in voluntary mental efforts. *Apperception* is a deep undertone in all our thinking. The question is how far this natural energy of *apperception* may be increased by the forethought and skill of the teacher, as he guides the minds of children along the paths of acquisition.

It may be that the psychologist can get along without this term, using other terms in its stead, but in pedagogy it stands for a new impulse and a new insight into educative processes. The great

strength and scope of this doctrine of *apperception* (as compared with the old idea *from known to unknown*) is best seen in the aggressive encroachments it is making upon the old notion of *formal mental discipline*. The theory at the bottom of this long-cherished notion of mental discipline is that the power gained through the discipline of certain studies remains, even though the knowledge be totally lost. Power to achieve, to overcome difficulties in the problems of life—does it depend upon knowledge accumulated and retained, or upon severe mental discipline once endured? Our course of study and our methods of teaching have been based heretofore (mainly) upon the idea of formal mental discipline. *Apperception* lays great stress upon the accumulation of the best ideas, upon their organization and constant use. It recognizes the positive power and influence of any person in a given field who has mastered and organized its materials so that he can bring them to bear on a given point when needed.

Apperception, therefore, not only has a word to say about the method of teaching or learning any subject, but about the selection of the best studies of the school course, and about the proper relation and interdependence of these studies.

Apperception covers the whole field of child experience, not simply the intellectual, but the feeling and willing also. It has been the custom in discussing instruction to think only of the intellect and will, and their exercise. But the feelings also are subject to this law of *apperception*; to appreciate the feelings of others and to sympathize with them, we recall our own feelings under similar conditions. In the same way our previous acts of will come in to reinforce our efforts in present emergencies. It is not intended to imply that knowing, feeling, and willing are distinct modes of mental action, but one or the other may characterize a mental state.

The broad scope of *apperception* is also manifest in the stress laid upon knowledge not gained in school. Knowledge or experience, gained from whatever source, is significant according to its interpretive power. In fact, knowledge picked up by children in the stirring, and often impressive, scenes of home and neighborhood exercises much greater influence upon the mind-development of children than the ideas gained in the school.

It is only too manifest that this close dependence upon the children's own experience and accumulated ideas and feelings compels the teacher at every step to work from the standpoint of the child, and not of the child in general, but of the particular personality and bundle of experience with which he is dealing. When applied to the work of instruction and of discipline, the principle of *apperception* tends powerfully toward a sympathetic, kindly *apperceptive* treatment of children and to a watchful regard for their individual traits and peculiarities. It points, therefore, unerringly to the pedagogical side of child-study. In the midst of his school work and worry, the teacher should be habitually and by second nature, if not by first, a close and sympathetic observer of child-nature.—*Public School Journal*.

Hints and Helps.

SUGGESTIONS ON TEACHING LITERATURE.

We are told that the way to become a good writer is to write; this sounds plausible, like many other pretty sayings equally remote from fact. No one thinks that the way to become a good medical practitioner is to practice; that is the method of quacks. The best way to indeed become a good writer is to be born of the right sort of parents; this fundamental step having been unaccountably neglected by many children, the instructor has to do what he can with second or third-class material. Now, a wide reader is usually a correct writer; and he has reached the goal in the most delightful manner, without feeling the penalty of Adam. What teacher ever found in his classes a boy who knew his Bible, who enjoyed Shakespeare, and who loved Scott, yet who, with this outfit, wrote illiterate compositions? This youth writes well principally because he has something to say, for reading maketh a full man; and he knows what correct writing is in the same way that he knows

his friends—by intimate acquaintance. No amount of mere grammatical and rhetorical training, nor even of constant practice in the art of composition, can attain the results reached by the child who reads good books because he loves to read them. We would not take the extreme position taken by some, that all practice in theme-writing is time thrown away; but after a costly experience of the drudgery that composition work forces on teacher and pupil, we would say emphatically that there is no educational method at present that involves so enormous an outlay of time, energy, and money, with so correspondingly small a result. To neglect the teaching of literature for the teaching of composition, or to assert that the second is the more important, is like showing a hungry man how to work his jaws instead of giving him something to eat. In order to support this with evidence, let us take the experience of a specialist who investigated the question by reading many hundred sophomore compositions in two of our leading colleges, where the natural capacity and previous training of the students were fairly equal. In one college every freshman wrote themes steadily through the year, with an accompaniment of sound instruction in rhetorical principles; in the other college every freshman studied Shakespeare, with absolutely no training in rhetoric and with no practice in composition. A comparison of the themes written in their sophomore year by these students showed that technically the two were fully on a par. That is weighty and most significant testimony.

If the teachers of English in secondary schools were people of real culture themselves, who both knew and loved literature, who tried to make it attractive to their pupils, and who were given a sufficient time-allotment to read a number of standard books with their classes, the composition question would largely take care of itself. Mere training in theme-writing can never take the place of the acquisition of ideas, and the boy who thinks interesting thoughts will usually write not only more attractively, but more correctly, than the one who has worked treadmill fashion in sentence and paragraph architecture. The difference in the teacher's happiness, vitality, and consequent effectiveness is too obvious to mention.—*The Century*.

Correspondence

KNOWLEDGE OF COLOR.

To the Editor of THE EDUCATIONAL JOURNAL:

SIR,—In one of your papers I noticed an article on the limited knowledge exhibited by school children in the matter of detecting and distinguishing color. I catechized my school on this line last week. Pointing to a yellow tulip-flower in the school, and asking its color, one child informed me it was blue, another green, another pink, while a small proportion pronounced it to be yellow. I then pointed to some dead cedar leaves used in making a motto. One pronounced them green, another pink, another light red, another gray, and only a few brown, or light brown. One child declared her very blue dress to be pink. All seemed to recognize red.

These facts astounded me. What a great amount of pleasure, true pleasure, must be lost, if color cannot be distinguished and appreciated! Let all the teachers test their schools on this important and necessary piece of knowledge. I believe the reason for this lamentable defect is the lack of association with colored, or well-colored, pictures; and the inability of many parents to name the colors themselves.

I have added these few words to those of others that have deplored the dwarfing of the æsthetic faculties of the child-mind. I have a speculative, but—in working—a practical remedy, as no other is of any use; but first let others speak.

Yours cordially,
SEYMOUR C. COOPER.

Lion's Head, Bruce County, Ont.

THE best political economy is care and culture of men.—*Emerson*.

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Editorials.

WHAT IS WRONG?

WE sometimes point, with a degree of justifiable pride, to the exactness with which the various parts in our system of education dovetail into each other—common school into High School, and High School into college and university. It is very desirable, of course, that such adaptations should exist, so far as they are compatible with another and still more desirable object, which, it may be feared, is not always kept so steadily in view—that is, the completeness of each course of instruction in itself. As but a small percentage of Public School pupils ever enter the High School, and but a small percentage of High School pupils ever enter the university, it is clear that to the great bulk of the population the Public and High Schools, respectively, furnish the only education received.

Evidently, then, in the interests of the many, the courses in these two classes of schools should be made as rounded and complete as possible, as a preparation for the duties of after life. Is this done? We fear not. Unless we greatly err, the majority of teachers will admit that in

each case the courses and programmes are arranged mainly or solely with a view to preparing pupils for the next higher grade or institution. The teaching, too, must necessarily be almost completely subordinated to the same end. This is inevitable under the circumstances, as the efficiency of the Public School is gauged by its success in preparing pupils for the High School, or Collegiate Institute, and that of the latter, in its turn, by its success in preparing them for matriculation in the university.

No one can, we think, believe that the results of these methods are the best for the masses, who look to the primary and secondary schools, or to the primary alone, for their education. It would be interesting to hear the opinions of practical teachers on these points. Here is a test question: If it were taken for granted, as well it may be, that the great majority of Canadian boys and girls, for many years to come, would have no educational advantages beyond those afforded in the Public Schools, and if it were further agreed that these schools would be conducted primarily in the interests of this majority, without reference to the requirements of any higher school, would not the courses of study and the methods of instruction be greatly modified, or completely revolutionized? Would not a renovation of a similar kind be required, on the same principle, in the High School courses and methods? The question is a very important one, and vitally related to the future well-being of the whole population.

Upon close enquiry it will be found, if we mistake not, that the main obstacle in the way of a reform of the kind suggested grows out of the competitive examinations. Were the element of competition eliminated from these examinations, were pupils in each case admitted to the school of higher grade on the sole ground of fitness to profit by the course of study and instruction therein prescribed, and were the competent teacher of every grade not only at liberty, but expected, to work solely with the aim of doing his best to develop the minds of his pupils, and to impart those intellectual and moral tastes and impulses which would tend to make them useful, self-respecting citizens, would not the schools assume a very different aspect from that they now present?

These questions are asked tentatively. We do not doubt that such a system would make the work of the teacher more arduous and responsible. A heavier draught would be made upon his individuality, but the true teacher would be more than repaid by the new sense of freedom and power which would accompany the new responsibility.

MORAL TRAINING IN THE SCHOOLS.

A RECENT utterance of one of our most experienced judges has naturally attracted a good deal of attention. Speaking from the bench, in connection with the trial of some young culprit, the learned judge took occasion to refer, to the common opinion that the prevalence of juvenile crime in Canada is mainly due to the importation of children, many of them of the gutter classes, from Great Britain and other countries, and to say very clearly and emphatically that this view does not accord with the result of his experience. On the contrary, a wide and careful study of the question, in the light of his own observations on the bench, convinced him that the young criminals came, to a very large extent, from the ranks of our own native Canadian children, and that many of them were former Public School boys, and had, in many cases, received a very fair education. The ready inference was that, whatever the merits of our Public School system in other respects, it was largely a failure so far as the formation of sound moral character in its pupils is concerned.

This statement, coming from so high a source, contains matter for much serious thought on the part of Canadian parents and Canadian citizens. The judge was disposed, if our memory serves us—we have not the report of his remarks within reach as we write—to attribute the deplorable fact to the lack of proper religious and moral instruction in the schools. Many newspapers, in their comments, seem to be also inclined to that opinion. The *Globe*, on the other hand, regards the judge's inference as unwarranted by the facts, points out that no one supposes school education to be a sure antidote to criminal propensities, and points to the Regulations of the Education Department, in which the teacher is enjoined "to inculcate, by precept and example, respect for religion and the principles of Christian morality, and the highest regard for truth, justice, love of country, humanity, benevolence, sobriety, industry, frugality, purity, temperance, and all other virtues." A tolerably comprehensive catalogue, we admit. But the mere issuance of such instructions falls far short, as all must agree, of affording any guarantee that this great and vitally important part of the teacher's duty will be effectually performed. Two conditions, at least, are indispensable to the successful discharge of the obligation. The first is that the teacher shall, in all cases, by reason of personal character and mental

maturity and strength, be fully competent to inculcate such virtues effectively; the second, that time and opportunity be given for doing the work. Does our system make satisfactory provision for these?

With regard to the first, we prefer, at present, to say little. We are happy to know and feel assured that many, very many, of our Public School teachers are men and women of the highest personal character; that they are admirably adapted to exert a good moral influence upon all who come under their instruction and influence; and that they are daily and hourly making the force of their characters and influence felt by those who are under their direction and control. But do not even these find themselves constantly fettered in this, which they will regard as their highest work, by the want of suitable time and opportunity for discussing questions of right and wrong, and so developing the moral faculties of their pupils? It would be interesting and useful to have the testimony of some experienced teachers of this class upon the point.

This leads to the second point. We examine the school programmes in vain for time and place for anything in the nature of such ethical training. Studies adapted to exercise and cultivate the intellectual faculties we find in superabundance. But any provision of place and time for the consideration of problems touching conduct and character, anything adapted in any way to produce the conviction in the child-mind that these are the highest of all considerations, anything, in short, designed to have the same effect in the way of disciplining and developing the moral faculties—the conscience, if you please—which arithmetic, grammar, geography, etc., are designed to have in the intellectual realm, we fail to find.

Is this not a grave, a lamentable defect in our school courses? We are not speaking of dogmatic religious instruction in the schools. We know the difficulties, the impossibilities, in regard to any such instruction. We doubt its desirability, even were it possible. But can any thoughtful educator doubt that the two things are so far distinct that it is quite possible to give a large place to the study of questions of right and wrong—in other words, to the training of the moral faculties—without in any way trenching upon the domain of doctrinal or sectarian religion?

Contributors' Dept.

BOARDING AROUND.

BY RUSTICUS.

Have you ever tried it, gentle reader? Probably not. The custom died, I suppose, a good many years ago, before you entered the profession. In fact, I do not know whether it ever prevailed to any considerable extent in Ontario, Upper Canada that was. On the other hand, it may, for aught I know, still survive in some remote corner of the land, though

there is, I believe, no place found for it in the school laws of Ontario. But these ancient customs linger long and die hard.

One thing I know. Forty years ago, in one, at least, of the Canadian provinces, which shall be nameless here, it was in the country districts almost a matter of course that the teacher should "board around." When a school became vacant, or a new and ambitious settlement had reached the point of progress at which a school was deemed a necessary adjunct, the first step was to find a suitable candidate for the pedagogic honors and emoluments. If any influential member of the community had a son or a daughter who was considered pretty well up in "the three R's," it was not usually necessary to look beyond for a candidate, nor would it be worth while for an outsider, whatever his qualifications, to contest the constituency. A form of subscription list was drawn up, somewhat as follows: "We, the undersigned residents of this district, hereby agree to engage the services of Julius Schoolman, as teacher, for the period of six months, and to pay him at the rate of £1 2s. 6d. for each and every pupil we hereunto subscribe or send to the said school; and we further agree to furnish him with board and lodging during the specified term, in proportion to the number of pupils here set opposite to our respective names. Signed, John Jones, 2½ pupils; Peter Sims, 1½ do.; Henry Smith, ¾ do., etc."

Armed with this document, either the embryo schoolmaster himself, or some friend on his behalf, would perambulate the district to solicit each head of a family to subscribe his name, putting opposite to it the largest number of pupils for whose school fees he was willing to become responsible, in the above fashion.

These preliminaries completed, a log or frame shanty having, of course, been previously provided, the teacher would commence operations. I am not now about to introduce you to his workshop, or to describe his modes of operation. I may do that in some future issue, if the subject seems likely to prove interesting. For the present I am concerned with the teacher's position out of school. On this topic I feel qualified to speak, for—the readers of THE JOURNAL will pardon a bit of the expressive slang of the day—"I've been there."

One of the first duties of the new teacher was to go over the list of subscribers and ascertain, by a careful arithmetical process, the exact number of weeks and days for which he was entitled to board and lodging at the house of each of his respective patrons. The next step was to find out, by personal or written inquiry, at what time it would be most convenient for each family to open its doors to him. These preliminaries settled, he duly presents himself at his first billet.

The receptions accorded him would be, of course, as varied as the feelings, dispositions, and circumstances of the householders, or, more strictly speaking, of the presiding divinities, of the feminine gender. In many places he would, of course,

soon feel himself at home. In these he would be made tolerably comfortable, and be spared the constant humiliating feeling that he was regarded in any degree as a trouble, an interloper, or a mendicant. But in too many instances, alas! the case was different. The overworked mistress of the house would receive him with an involuntary sigh, called forth, no doubt, by the suggestion of an increase of labor and care. The affrighted urchins—some of whom had, perhaps, received a caning at "the master's" hands a few hours before, for these were the days when the time-honored British and Scotch methods were everywhere in the ascendant—looked at him askance from under their eyebrows, and spoke to each other with bated breath. If the weather was too cold for him to occupy the parlor, unwarmed and unused save on special occasions, he was relegated to a wood-bottomed chair in some corner of the busy kitchen, in full view of all the mysterious processes by which the evening meal was being prepared.

Well does the writer remember his first experiences in this delightful phase of the professional life of an earlier day: the old farmhouse; the bare floors; the hard seats; the utter absence of anything in the shape of books or other literature; the children swarming in every corner; the little bedroom, whose sole furniture consisted of bed and bedding, on whose hard floor he reclined for lack of chair and table, evening after evening, for hours after he was supposed to be in bed, reading, by the feeble rays of a tallow candle, the ponderous volumes of Dr. Dick's philosophies, which had been kindly loaned him by a friend, and which were devoured with an eagerness begotten of a genuine hunger, though out of all proportion to the literary merits of the work.

Well, too, does he remember the two champion scolds of two districts in which he was successively located, each of them, strange to say, the wife of the village blacksmith. The husband of the one, a brawny Irishman and devoted Catholic, could neither read nor write, but yet was, and is, if still living, a fine specimen of an honest man, straightforward and honorable in all his dealings. On him the glowing periods from the tongue of his Xanthippe fell innocuous. They had no power to ruffle his constant equanimity. Indeed, it was currently said, though I cannot vouch for the truth of the report, that, when tired of the interminable infliction, he used quietly to remove his long boots, set them up in a conspicuous place, and, mildly requesting his better half to talk to them for a change, retire tranquilly to another apartment, or to the open air, to indulge in the pipe which was his constant companion. The other, poor man! was under better subjection, and when attacked, as would often be the case, regardless of company, by his hot-tempered, red-faced little spouse, would present a picture of a brow-beaten benedict such as might well excite the sympathy of the beholder. Other memories—some of them, happily, of a more pleasant type—come thronging back as I recall those memorable days.

**High School Entrance and
P. S. Leaving Department**

EDITED BY

ANGUS McINTOSH

Headmaster Boys' Model School, Toronto, Ont.

With the assistance of several
special contributors.

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HIGH SCHOOL ENTRANCE AND PUBLIC SCHOOL LEAVING EXAMINATIONS.

The High School Entrance and Public School Leaving Examinations will begin this year on Thursday, July 2nd, and will be conducted as per time tables.

ENTRANCE—1896.
Thursday, July 2nd.

- A.M. 8.45.....Reading Regulations.
- 9.00-11.00...English Grammar.
- 11.10-12.40...Geography.
- P.M. 2.00-4.00...Composition.
- 4.10-4.45...Dictation.

Friday, July 3rd.

- A.M. 9.00-11.00...Arithmetic.
- 11.10-12.20...Drawing.
- P.M. 1.30-3.00...History.

Saturday, July 4th.

- A.M. 9.00-11.00...English Literature.
 - 11.10-11.40...Writing.
 - P.M. 1.30-3.00...Physiology and Temperance.
- Reading to be taken on the above days at such hours as may suit the convenience of the examiners.

PUBLIC SCHOOL LEAVING—1896.

Thursday, July 2nd.

- A.M. 8.45.....Reading Regulations.
- 9.00-11.00...English Grammar.
- 11.10-12.40...Geography.
- P.M. 2.00-4.00...English Composition.

Friday, July 3rd.

- A.M. 9.00-11.00...Arithmetic and Mensuration.
- 11.10-12.20...Drawing.
- P.M. 1.30-3.00...History.
- 3.10-5.10...Bookkeeping and Penmanship.

Saturday, July 4th.

- A.M. 9.00-11.00...Algebra and Euclid.
 - 11.10-12.30...Physiology and Temperance.
 - P.M. 2.10-4.00...English Poetical Literature.
- Reading may be taken on the above days at such hours as may suit the convenience of the examiners.

DRAWING.

BY MR. A. C. CASSELMAN.

In a previous paper I spoke of flower drawing as a means of putting new life in the drawing class at this time of the year. Children love flowers and take an interest in them, and whatever interests them they learn without much persuasion from anyone. Apart from gaining a knowledge of nature as revealed in the beautiful wild flowers, they learn to express this knowledge in their drawings. No one can express any more than he feels or knows of anything. Generally the power of expression is very far behind the knowledge or feeling. Then by looking at a drawing we should judge it, not as a picture or photograph of the object, but as a measure of the child's knowledge of the subject he is drawing, provided his power of expression has kept pace with his knowledge.

This brings up another point. There is a so-called "Alphabet of Drawing" which must be mastered first before the child can express himself fully by a drawing. After the merest rudiments of the subject have been learned children should be asked to express the appearance of objects. After a few objects have been learned, these or similar ones should be grouped to express some meaning.

The drawings shown in this issue are by Florence Ross and Kathleen Robinson, Junior Fourth Class, and Alice Hughes and Helen McClain, of the Second Class, Girls' Model School. I may say that this is the first pen-and-ink drawing done by the Second Class pupils, and very little has been done by the Junior Fourth Class. All of these drawings were done from the actual plants. Many examples could be given of the work in each class,



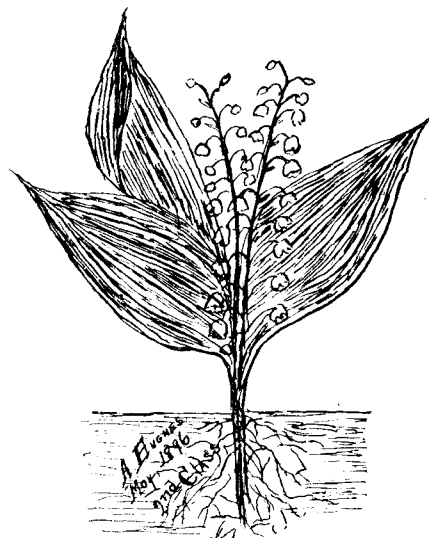
as I have at least twenty drawings from each class to choose from, and in the Second Class some are better than those selected in some particulars. For reproduction purposes those shown are the best.

Next issue some exercises in drawing will be given suitable for Entrance or Public School Leaving.

Question 1.—What method could a teacher take

to study drawing without a teacher. Is it possible to study shading and object drawing?

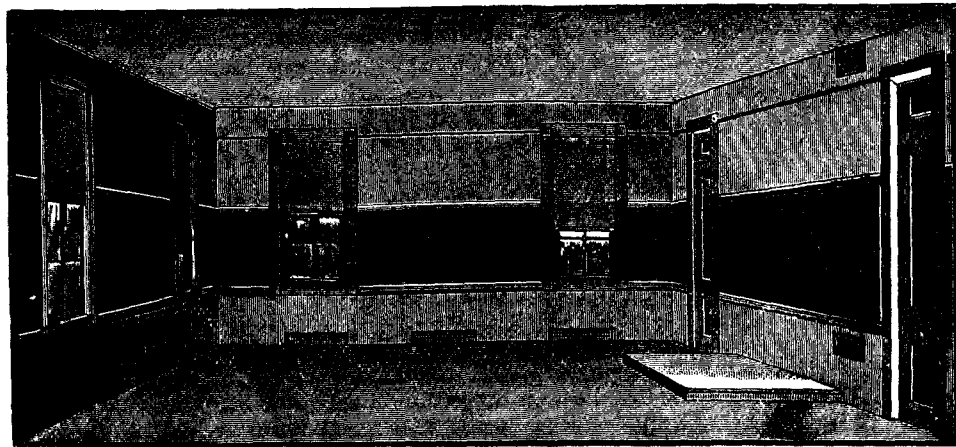
Get the drawing materials, paper and pencil, and the type objects, sphere, cylinder, and cube. Follow the plan described in the High School Drawing Course, Nos. 1 and 2. A director and critic, while studying, is of immense value to a student. When a drawing of an object is made he does not know whether it is right or not, and possibly may go on perpetuating some very simple



mistake. Don't think that the mistake is in the drawing. It is in the observation. A person commencing drawing needs someone to direct his seeing who is capable of doing so. A teacher can criticize his own drawings by the following method: Make a drawing of the object on paper as it appears to you. Hold in a vertical position between your eye and the object a pane of glass. Make a tracing on the glass of the edges and outline of the object, using a crayon of common bar soap. Compare the tracing with the drawing on paper. The tracing is the correct appearance, provided you have kept your eye, glass, and object in the same relative positions as when the tracing was begun.

Another way is to make the drawing on the glass with soap at once, then hold it up between you and the object till one edge of the drawing hides the corresponding edge of the object. All the other lines should correspond if the drawing is correctly made. If not, you can observe where the drawing is wrong and correct it. In comparing the drawing, keep the eye in one position. Take the glass away and look at the object, and study its appearance till you are confident that you can see it just as the tracing is. By looking through the partly closed eyes, the mass will be observed better because unimportant details will be shut out.

It is not only possible to study shading, but it is possible for everyone to learn to shade, or to suggest shade on any surface. The first thing to do



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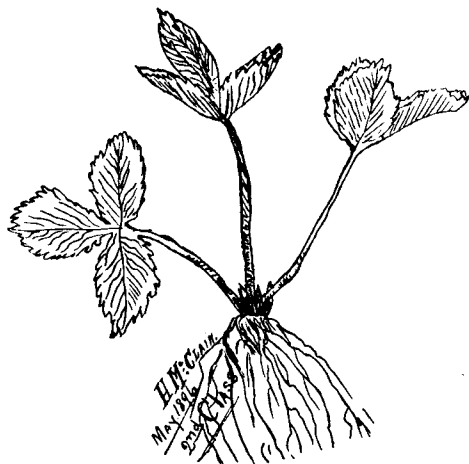
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is to see shade and shadow and the gradations of light and shade. This gradation must be shown in the drawing. For explanation on the suggestion of surface, and shade and shadow, see the last five or six numbers of THE JOURNAL. Follow the suggestions laid down there and in Drawing Book



No. 2 of the High School course. No one can learn to observe correctly, and draw correctly what he observes, without a great deal of perseverance. One must first learn the mental part and then the best method of expressing it. The dexterity necessary to put meaning and feeling into every line you draw is a mechanical process after you know what lines mean. To acquire expertness in this is akin to learning to skate or ride a bicycle, use skilfully a lacrosse stick, baseball bat, or tennis racket, and requires fully as much application, and, like the above sports, becomes fully as enticing when the first difficulties are mastered.

CANADIAN HISTORY.

PART IV.

At the conclusion of the war of 1812, the political struggle for responsible government began. This struggle developed into the Rebellion of 1837-8, and ended in the union of the two provinces of Canada under the Act of Union of 1840, which took place in February 1841.

Grievances in Upper Canada.—(1) The arbitrary conduct of the governor, the executive and legis-



lative councils, aided by the legislative assembly, which was for a time largely composed of officials of the government, in the administration of the affairs of the province. The alliance formed by

the members of the executive and legislative councils and their friends, in order to retain office, became known as The Family Compact. Many of the men who assisted in endeavoring to maintain the irresponsible character of the government were descendants of the United Empire Loyalists.

(2) Abuses in the management of the Crown lands.

(3) The administration of the Clergy Reserves.

(4) The collection of customs duties at Montreal and Quebec on all imports, of which at first only one-eighth (and afterwards one-fifth) was refunded to Upper Canada.

Grievances in Lower Canada.—(1) The most serious difficulty arose from the difference of race, language, and religion in the population.

(2) The governors and members of the councils, who were mainly British, refused to allow the Legislative Assembly, which was mainly French, to control the expenditure of the revenue derived from timber and mining dues, from the sale of Crown lands and from duties on imported goods.

THE REBELLION OF 1837-38.

The extreme opposition party in Lower Canada was led by L. J. Papineau and in Upper Canada by William Lyon Mackenzie. Both were members of the Legislative Assembly. Papineau became Speaker of the Legislature of Lower Canada, and Mackenzie had been elected many times as member for York, and as often expelled.

The Earl of Gosford became governor of Lower Canada in 1835, and Sir Francis Bond Head of Upper Canada in 1836. The disaffected parties in the two provinces were in close sympathy with each other, and their common aim was to secure independence under a republican form of government.

The rebellion began by riots in Montreal. Engagements took place at St. Denis on the Richelieu, at St. Charles, and at St. Eustache on the Ottawa. The uprising was soon suppressed, and the constitution of Lower Canada suspended. A special council, composed of equal numbers of English and French members, was appointed to govern the province.

To aid in suppressing the rebellion in Lower Canada, Sir Francis Bond Head sent all the regular troops from Upper Canada. Mackenzie took advantage of this and arranged to attack York on the 7th of December. The date fixed for the attack was changed from the 7th to the 4th, without giving notice to the leaders in other parts of the province, and as a result only about four hundred men assembled at Montgomery's Tavern, four miles from Toronto. They were quite unprepared for the undertaking, being badly armed, weary with travelling, and discouraged by the limited number of men who had assembled, the result of the change in the date fixed for the attack on the capital. There was a delay of several days. A night attack was attempted on the 6th; but it proved a failure and many of those engaged in it returned to their homes; and although reinforcements arrived, on the morning of the 7th Mackenzie could only muster five hundred men. Colonel McNab arrived from Hamilton with a number of loyalists. These, with volunteers from York, proceeded to Montgomery's Tavern and there defeated the rebels. Mackenzie escaped and fled to the United States, by way of Hamilton. Dr. Rolph and others implicated had, a few days before, also taken refuge across the frontier,

A little later, an attempted uprising under Dr. Duncombe in the west took place; but it was quickly put down by the militia under Colonel

McNab. Dr. Duncombe also took refuge on the American side. Two of the leaders in the rebellion, Lount and Matthews, were hanged in Toronto, during the administration of Sir George Arthur, who succeeded Sir Francis Bond Head as governor.

The Patriot War, 1837-38.—Mackenzie attempted to organize an army for the purpose of invading Canada. He succeeded in gathering together a number of American sympathizers and Canadian refugees at Buffalo. He took possession of Navy Island, proclaimed Upper Canada a republic, set up the "Flag of Liberty" and proceeded to form a provisional government.

Col. McNab was sent to defend the Canadian shore with a number of militia and Indians. The American steamboat, *Caroline*, was seized, her crew landed, the vessel set on fire and allowed to drift over the Falls. Shortly after the incident, the "Patriots" left Navy Island. Then followed a number of attacks at different places in Upper Canada—Windmill Point, Sandwich, Amherstburg, Pelée Island. At all these points the invaders were defeated and the war was brought to a close.

In 1838, while the rebellion was still in progress, the Earl of Durham was appointed Governor-General and Lord High Commissioner to inquire into the state of affairs. He remained only about one year in office; but during this period he collected information which he embodied in his famous report to the Imperial authorities. In this report he recommended a legislative union of all the British North American colonies, and, if this was not possible at the time, then the two Canadas should be united.

The Act of Union, 1840.—To bring about a union of the provinces, Charles Poulette Thompson (afterwards Lord Sydenham) was sent out as Governor-General. The Act of Union was approved by the Legislature of Upper Canada and by the special council of Lower Canada, and the Imperial Parliament ratified the measure. It came into force in 1841, and Upper and Lower Canada were united under the name of the Province of Canada. By the terms of the union, Canada was to have one parliament consisting of a Legislative Council with not less than twenty-four members appointed by the Crown for life, and a Legislative Assembly of eighty-four members elected by the people—forty-two from each province.

This union is important, as it marks the beginning of responsible government in Canada, and as it was the forerunner of the larger scheme of federation brought about by the British North America Act in 1867.

The first parliament of Canada met at Kingston in June, 1841.

The Ashburton Treaty, 1842.—The cause of the boundary dispute which led to the Ashburton Treaty was mainly the indefiniteness in the terms of the Treaty of Versailles, 1783, in regard to the boundary line between Canada and New Brunswick, and the United States. By the Treaty of Versailles, the boundary was defined loosely as the Great Lakes, the St. Lawrence, the forty-fifth parallel of north latitude, "the highlands dividing the waters falling into the Atlantic from those emptying themselves into the St. Lawrence," and the St. Croix river.

The matter was first referred to the King of the Netherlands, but his decision was not acceptable. Preparations were made for armed resistance on both sides of the line. Finally it was decided to refer the matter to arbitration. Lord Ashburton and Daniel Webster were appointed as commissioners for their respective countries.

Terms of the Treaty.—(1) Seven thousand square

miles of the disputed territory were given to Maine and five thousand to New Brunswick.

(2) The forty-fifth parallel of north latitude was to be the boundary line as far west as the St. Lawrence. Then the line was to extend up the St. Lawrence to Lake Ontario.

(3) The central line of the Great Lakes and their connecting rivers, from the source of the St. Lawrence to the Lake of the Woods.

(4) The forty-ninth parallel of north latitude was to complete the boundary from the Lake of the Woods to the Gulf of Georgia.

(5) Provision for the extradition of criminals. (The crimes included were Murder, piracy, arson, robbery, and forgery.)

In 1844, the capital of Canada was removed from Kingston to Montreal, where it remained till 1849. After the burning of the parliament buildings in Montreal, during the riot that followed the passing of the Rebellion Losses Bill, the capital was removed to Toronto for two years, and then Parliament was to meet every four years in Quebec and Toronto alternately. In 1858, Bytown (Ottawa) was selected to be the permanent seat of government in Canada, and the transfer was made from Quebec to Ottawa at the close of 1865.

In 1866 Parliament met for the first time at Ottawa. Since Confederation, the Federal Parliament of Canada has met at Ottawa and the provincial legislatures at the capitals of the respective provinces.

CONFEDERATION.

Causes :

(1) The political dead-lock in the Parliament of Canada.

(2) The prospect of increased strength to be gained by a union of the colonies, especially in view of the possibilities of a war between Great Britain and the United States.

Steps towards Confederation :

(1) The Charlottetown Conference, September, 1864.

(2) The Quebec Conference, November, 1864.

(3) The scheme of Confederation approved by the Legislatures of Canada (Upper and Lower, forming one colony at this time), Nova Scotia and New Brunswick, 1865. Prince Edward Island and Newfoundland had withdrawn from the negotiations.

(4) Meeting of the delegates from Canada, New Brunswick, and Nova Scotia, in London, to draft a bill for submission to the Imperial Parliament, in 1866.

(5) The British North America Act was passed by the Imperial Parliament on February 28th, 1867, and it came into force on July 1st, 1867.

The main principle of the British North America Act is that each province shall manage its own local affairs, and that the Dominion Government shall attend to matters which affect all the provinces. This act is the constitution of Canada.

The Main Provisions of the Act :

(1) The Provinces of Ontario, Quebec, Nova Scotia, and New Brunswick were constituted the Dominion of Canada, and provision was made for the admission of other provinces.

(2) The executive authority is vested in the Queen.

(3) The Queen's representative in Canada is the Governor-General, who is advised by the Privy Council of Canada, which constitutes the ministry, and the ministry or cabinet must be sustained by a majority in the Parliament.

(4) The Parliament consists of two chambers, the Senate and the House of Commons.

(5) The Senate was at first composed of 72

members—24 from Ontario, 24 from Quebec, and 24 from New Brunswick and Nova Scotia.

(6) The House of Commons at first consisted of 181 members—82 from Ontario, 65 from Quebec, 19 from Nova Scotia, and 15 from New Brunswick. The representation from the different provinces is regulated by the following plan: The representation from Quebec is to remain at the fixed number, 65, and the number of representatives from the other provinces is to be in proportion to their respective populations, as compared with that of Quebec.

(7) The House of Commons is elected for five years; but it may be dissolved sooner. It elects its own Speaker, who can vote only when the House is equally divided on a question. All bills affecting taxation must originate in the House of Commons, and must be recommended by a message from the Governor-General, who acts on the advice of his ministers.

LITERATURE.

BY MR. R. W. MURRAY.

"AS SHIPS BECALMED AT EVE."—CLOUGH (1819-1861).

Arthur Hugh Clough, the son of a wealthy cotton merchant, was born in Liverpool, England, in 1819. He went to South Carolina in 1823, with his father, and remained there till 1828, when he was sent to be one of Dr. Arnold's Rugby boys. He distinguished himself on the athletic field, and made himself popular by his winning manners. From Rugby he went to Oxford, and made a reputation for scholarship and ability, though he was not very successful on examinations.

Through the influence of Dr. Arnold he gained a fellowship at Oxford. This he resigned in 1848, and in the same year was appointed principal of University Hall, London. In 1852, on a visit to America, he met with Longfellow and Emerson. On returning to London he received an appointment in the Education Office. During a holiday trip to Italy, in 1861, he contracted malarial fever, and died at Florence.

Clough's early days were spent in a period of unrest and of criticism, which, no doubt, had much to do in leading him to become skeptical in his views. While firmly holding his opinions, he did so without bitterness, and with marked courtesy to those who saw fit to differ. This short poem shows well that feeling of unrest that characterizes the time and the sadness of the author, seeming himself carried so far away from the views held by his early companions.

Clough was fond of simile in his writings. In the first and second stanzas of this extract, he speaks of two sailing vessels, which, "at eve with canvas drooping," are near together, and which are, unconsciously, driven far apart during the night. He compares this experience to that of men who have been in harmony touching their opinions, and who, "at dead of night," have become estranged, through each following independently the leading of reason and of conscience. He urges each to follow his own course, taking reason for his guide, and prays that they may be brought together again in "one port at last."

EXPLANATORY.

I. "With canvas drooping," indicating the calm evening. "Canvas," coarse cloth made of hemp. "Towers of sail," a beautiful description of the appearance of a sailing vessel at a distance. "Scarce descried," scarcely distinguished.

II. "Up-sprung the breeze." Observe how fitting this expression is to account for the uncon-

scious separation of the vessels. "Darkling hours," the hours of the night. "Darkling" is, in derivation, an adverb, and as such is generally used. Some take it to be a participle from a supposed verb "to darkle," as in "The wakeful bird sings darkling." We take it in this stanza to mean "in the dark." "Plied." As a nautical term, it means to make headway against the wind. In the last two lines of this stanza, the author speaks of these ships as if they thought.

III. "E'en so." This is the correlative of "as" in the first stanza, introducing the second part of the lengthy simile. As in the case of the ships, so in the experience of human beings. "But why the tale reveal . . . estranged." Comrades, thinking almost the same thoughts, and holding the same opinions on life's duty and destiny, find themselves, after a short absence, to be "estranged," because of the difference in the views they hold. Brief absence, when it had joined them anew, made them feel astounded and estranged.

IV. "At dead of night." Does the author here mean to say that these two souls are separated by an influence beyond their control? "Wist"—knew. Is it in the quiet moments of the life that opinions are changed, or in the hour of activity and contact with other souls?

V. "To veer, how vain!" "To veer"—to change the course. Does the author mean to say that it is possible to change our opinions, but that such change is vain or useless, or that we cannot change them, and therefore useless to make the attempt? "Onward strain," to make a vigorous effort. "Brave backs . . . be true." If one compass guides, why are they on different courses? The compass here meant is reason and conscience. Does he not here give an evidence of skepticism? This stanza seems to teach that all is well if one follow the leading of reason. The teachings of revelation should guide the "compass."

VI. This stanza teaches that once parted they can never be brought together again during the voyage of life, but that his prayer is they may enter the same port "at last." Observe that his prayer is to the "breeze" and the "great seas" rather than to the God of nature.

VII. In this stanza the author gives as a reason why they will reach the "same port" the fact that they sought the same port and held the same purpose. "Fare"—to go, to journey.

"THE RETURN OF THE SWALLOWS."—GOSSE,(1849).

Edmund William Gosse, born in London, England, in 1849, is one of the minor poets of the present day. He is credited with a refined taste and a command of power to overcome difficulties in language and metre. His travels have taken him to many of the countries of Europe as a student of language, manners, and literature.

In this extract we have an alternation of English and African pictures. Observe the contrasts in these. There is everything to attract in the former: "meadows," "young grass," "level and lea," "mild air," "spring is coming," etc.; while in the latter we have "the sun's long drouth," "beam and burn," "white Algiers," "white dreamy square," "the sad slave woman," etc.

I. "Shivering with sap." These words describe the rush of the sap in the first growth of the grass. The sap is quivering as the blood does in the veins of an animal. "Spirally." The lark rises in a spiral course, ever widening the circles as it rises. "Horizons are luminous." The dawn and twilight are of longer duration in the spring than during the winter. In a more northern latitude this is the case to a more marked degree.

II. "Hills of olive." This describes well the first vertical zone of vegetation of Europe and North Africa. Observe this picture of the results of the hot sun. "Flitting," "twittered," "flashing," etc., describe well the swallows.

III. "Fluted the thrushes." The clear note of the thrush is well given in "fluted." Is spring the season of music? Observe closely the invitation of the thrushes.

IV. "Algiers." In north of Africa. It would be the last resting place of the swallows before they took their flight to the north. The houses of the city are whitened and dazzling.

V. "Dingles of April flowers." A dingle is a small valley, often embowered. "Cold, clear hours"—the hours of the dawn, indicating the warmth of the coming day. "Deep in the leafage." The cuckoo derives its name from its note. "Leafage," compare foliage. "To swoop and herald the April rain." This swooping of the swallow is taken to indicate rain.

VI. "Something awoke." What name might be given to this "something"? "Alien birds." The author considers the northern land to be the home of the swallow, and that they are strangers in Africa. Note how beautifully line 3 describes the actions of the swallows as they prepare for their flight.

"Sad slave woman." There is a strong contrast here in the hopelessness of the slave's condition and that of the freedom of the swallows.

BOOKKEEPING.

The following bookkeeping set of entries has been prepared for the fifth classes in the Public Schools of East Middlesex, by J. Dearness, Esq., Inspector of Public Schools:

Bookkeeping by single entry, a farmer's set, for the Public School Leaving Examination, East Middlesex.

January 31st, 1895. I have cash in the Standard Bank, \$278, drawing interest at $\frac{3}{4}$ per cent. per annum, payable July 1st and January 1st.

A life interest in a legacy of \$1,250, bearing interest at 4 per cent. per annum, payable half-yearly, on March 1st and September 1st.

Cash on hand, \$48.50.

A note of \$87.50 for wages was due me, made by William F. Walker, on December 5th, 1894, at 8 months, bearing interest at 7 per cent. per annum.

February 1st. Rented from J. R. Cook a farm of 100 acres at \$300, taxes, and road work, and agreed to allow him \$48 for hay and feed at present on the farm.

Agreed to pay F. L. Porter for board and washing, beginning to-morrow, \$2.75 per week.

February 5th. At J. L. Bright's credit sale I bought a span of horses (\$98); 3 cows (\$89); 8 sheep, \$39.25; harness and implements, \$47.75, and gave my note at 9 months for \$274.

February 12th. Bought chopped feed for cash, \$4.50.

February 20th. Bought grain for seed on account, from Charles Smith: 15 bushels peas, at 65 cents; 38 bushels oats, at 40 cents; 20 bushels spring wheat, at 70 cents.

March 4th. Received interest on legacy.

March 4th. Paid board up to date, 4 weeks.

March 11th. Bought of R. Exey, on my note at 7 months, a heavy wagon, \$45.

April 1st. Drew from the bank \$128, and attended a sheriff's cash sale; bought a horse for \$46; 4 cows, \$115; seed drill, \$13; sundries, \$8.35. Paid cash \$132.35, and gave a cheque on the bank for the balance.

April 5th. Bought from Wm. F. Walker, 25

bushels oats at 30 cents a bushel, and endorsed the amount on his note.

April 6th. Sold a horse to Fred Racey on his note at 3 months, for \$67.50.

April 9th. Bought from H. Gore & Co. 18 bushels seed barley at 70 cents, for cash.

April 10th. Bought of J. R. Cook, on account, 5 gallons coal oil at 16 cents; 1 lantern at 50 cents; 5 lbs. nails at 4 cents; hammer, 38 cents.

April 13th. Returned seed barley, not true to name, to H. Gore & Co., and received a due bill.

April 15th. Bought 16 bushels seed barley from Chas. Smith, on account, at 55 cents.

April 20th. Paid A. D. Clark cash for 6 days' work at \$1.12 per day.

April 23rd. Bought mangold and other seeds from H. Gore & Co., amounting to \$5.80, and received the balance of the due bill in cash.

May 4th. Paid cash for board up to date, and made agreement with F. L. Porter to milk the cows, I to pay him \$2 per week for that service.

May 9th. R. Exey, on account, shoeing horses, \$1; clevis, 25 cents; plow point, 25 cents.

May 15th. J. R. Cook, corn planter, \$2; hat, 25 cents; boots, \$3.

May 25th. Pocket money and small personal expenses have taken \$8.50.

June 5th. Discounted William F. Walker's note at 8 per cent.

June 5th. Cash to C. Taylor for a suit of clothes, \$19.

June 11th. Discounted my note to R. Exey at 8 per cent., and paid his account in full.

June 11th. Sold J. R. Cook 26 lbs. of wool, at 23 cents per lb.

June 15th. Endorsed cheese cheque for \$27.40, in favor of F. L. Porter.

June 20th. Bought a second-hand mower from R. Exey for \$18.00 and paid him \$10.00 on account.

July 6th. Drew half-yearly payment of interest from Standard Bank and the balance of my deposit, \$103.30.

July 6th. Paid J. R. Cook for hay, etc., as per agreement, \$48, and bought binder twine, 80 lb. at 8 cents.

July 6th. Paid Charles Smith, account, \$30.

July 6th. Paid R. Exey balance of his account.

July 10th. Bought of J. L. Bright a second-hand reaper for 57.50, paying \$17.50 cash, and giving him my note at two months for balance.

July 20th. Cashed cheese cheque, \$33.40.

August 3rd. Sold for cash 12 lambs at \$2.90.

August 10th. F. Racey paid his note, with fifty cents interest for the time overdue.

August 10th. Discounted my note made to J. L. Bright on July 10th, at 8 per cent. per annum.

August 10th. Paid L. Porter \$20 on account.

August 10th. Paid A. D. Clark wages, \$12.

August 10th. Paid the balance of Charles Smith's account.

August 17th. Paid R. Exey cash for repairs, 90 cents.

August 17th. Deposited cheese cheque for \$28 in the Standard Bank.

August 31st. Gave Gray & Co. 5 tons of hay at \$8, and \$15 cash, for a note held by them against J. R. Cook for \$56.48, due October 1st, 1895.

September 2nd. Paid cash for sundries bought of J. R. Cook, \$3.70.

September 7th. Pocket money and minor expenses, \$6.

September 7th. Received interest on legacy.

September 14th. Deposited cheese cheque for \$26.40 in the Standard Bank.

September 21st. Expenses connected with threshing crop, \$19, all of which was paid in cash except \$5.75 due F. L. Porter.

September 28th. Sold 38 bushels wheat at 65 cents.

October 3rd. Sold 40 bushels wheat at 63 cents. October 3rd. Paid J. R. Cook, on account, \$49.90, and he accepted Gray & Co.'s note.

October 7th. Deposited in the bank cash for three loads of wheat, \$74.55.

October 12th. Deposited in the Standard Bank cash for 603 bushels of oats at 30 cents and cheese cheque for \$21.15.

October 12th. F. L. Porter accepted two of the cows and \$10 cash, in full of his account up to date of October 19th.

October 15th. Held a credit sale (twelve months) at which I sold off stock and implements, the sale netting \$58.43 in cash, and notes to the amount of \$461.28.

October 19th. I retained William Gower's note for \$73, and George Quain's for \$61. J. R. Cook discounted his note for \$38 at 8 per cent. The remaining notes I discounted in the Standard Bank at 9 per cent, and deposited proceeds.

October 19th. Deposited cheese cheque for \$18.

October 19th. Paid taxes, \$19.85.

October 19th. Paid expenses of sale, \$11.20.

October 21st. Assets: 280 bushels of peas at 48 cents; 130 bushels of oats at 27 cents; 25 bushels of wheat at 65 cents; 240 bushels of barley at 35 cents; cheese cheque, \$7.

Liabilities: J. R. Cook's account; J. L. Bright's note.

(1) Make out a day-book, cash-book, ledger, balance-sheet, and bill-book.

(2) Write out R. Exey's, Charles Smith's, and J. R. Cook's accounts. Write out W. F. Walker's note for wagon to R. Exey.

(3) Write a letter to H. Gore & Co., about the seed barley, and one to J. L. Bright, answering his offer to sell a reaper if he will accept \$57.50 on time.

NOTE.—This bookkeeping may be done on foolscap, but it must be indexed, whether on foolscap or book, on the first page.

The discount on the notes may be calculated by the month without grace; if by days, add the three days' grace.

NOTES AND ANSWERS TO QUESTIONS.

Public School terms and holidays.—The Public School teaching year shall consist of two terms: In rural schools the first term shall begin on the third Monday of August, and end on the 22nd day of December; the second term shall begin on the 3rd day of January, and end on the 30th day of June. In urban municipalities the first term shall begin on the first day of September, and end on the 22nd day of December; the second term shall begin on the 3rd day of January, and end on the 30th day of June.

Every Saturday, every public holiday, the week following Easter Sunday, and every day proclaimed a holiday by the authorities of the municipality in which the teacher is engaged, shall be a holiday in Public Schools.—*From the School Act, passed in 1896.*

A candidate in writing on the Senior Leaving Euclid paper should give all important authorities. It has been the practice in dealing with the propositions of the Sixth Book, not to exact specific references to the propositions of the Fifth Book.

J.A.M.—You will find Meiklejohn's "New Geography" a great aid in teaching the leading commercial relations of the different countries. Consult also Meiklejohn's "British Empire."

M.M.—A party of twelve, consisting of men, women, girls, and boys, came to an inn. The innkeeper offered to keep them all for \$12. The men were to pay \$2 each; the women, \$1 each; the girls, 25c. each; and the boys, 50c. each. How many of each were there?

The average charge per guest was \$1, ∴ the extra charge for the men made up for the small amount paid for each girl and boy. It is evident, therefore, that the least number of men that will fulfil the conditions mentioned is 2, and the excess paid by these two will make up for the deficiency in the payment for two girls and one boy. ∴ there could have been two men, seven women, two girls, and one boy. The following will also fulfil the conditions: four men, two women, four girls, and two boys. This question is not suitable for examination purposes.

Mathematics.

Communications intended for this department should be written on one side only, and with great distinctness; they should give all questions in full, and refer definitely to the books or other sources of the problems, and they should be addressed to the Editor, C. CLARKSON, B.A., Seaforth, Ont.

CORRESPONDENCE.

A SUBSCRIBER, Russell, Ont., sends a problem, and asks for a solution. He assumes, *not without ground*, that his request will meet with sympathetic response.

G. W. HURST, Westmeath, Ont.: "What Trigonometry do you think best? I have Todhunter, and Galbraith, and Houghton. If you know of any better, please let me know through THE JOURNAL."

REPLY.—The latest edition of Todhunter, re-edited since his lamented death, is a good book, but Locke's is the best all-round introductory treatise. It displays, in concrete form, all the best principles of mathematical teaching, and exhibits the work of an expert in reducing difficulties. This correspondent remarks: "There is a bond of sympathy among all true teachers, and this should prompt us to help each other." Let us all inscribe that motto on our banners, and believe in it.

MCN, address not given, says: "In problems in arithmetic, by Clarkson, in the examination paper of July, 1892, there is a problem on interest. The days are from February 6th to July 1st, 1892 = 146 days, 1892 a leap year. In calculating the amount for the year, would a person count 366 days—i.e., take $\frac{1}{366}$ or $\frac{1}{365}$ for 146 days?"

REPLY.—The reference is ambiguous. The question is on page 47, No. 4. Probably 366 days is more precisely accurate. The answer, however, would be practically the same, the difference being less than $\frac{1}{134000000}$ of 168 cents.

JAS. W. EDWARDS, Glace Bay, C.B., sent six problems. No. 6 was discussed December, 1895, and January, 1896. Send for private reply. The other questions will appear in due course during the autumn months.

G. WEAGANT, Housic, Ont., sent three problems.

MARY CLEATON, no address, sent three geometrical problems.

F.E.C., Sunbridge, sent two questions. He remarks: "I find THE JOURNAL a good help in my school work and in my studies." That brings pleasure to the promoters and to the workers of this paper, whose aim is to afford practical help.

MISS J. EBERTS, Barkway, Ont., sends five problems, and asks that the solutions may appear on May 15th, i.e., sixteen days after the date of her letter! They will appear in the July issue, which will demonstrate the fact that we are two or three months behind the demand for such solutions. Had it not been for the generous assistance of many able correspondents we should have been half a year behind with this part of our work. We hope that none of our friends will fail us now, when the pressure is greater than ever. The harvest is great; let the laborers rise to the occasion, even in the dog-days that are surely approaching. "We are only going through the world once"; let us make it better before we die. A cup of cold water, offered from the heart, will not lose its reward. "It is more blessed to give than to receive"; and we have faith to believe that cordial assistance and large-hearted sympathy will be spontaneous when the July list of questions goes to press.

"Nothing great is lightly won; nothing won is lost;

Every great deed nobly done will repay the cost."

Let us live for our pupils, and for each other.

THE HIGH SCHOOL JUNIOR LEAVING AND UNIVERSITY PASS MATRICULATION.

ALGEBRA, 1895.

A.

1. Divide $x^5 - 2x^4 - 4x^3 + 13x^2 - 11x - 7$ by $x^3 -$

$3x + 7$, and determine what values of x will cause the quotient to vanish.

2. Given

$$\frac{a+3x}{4a} - \frac{7a-5x}{6b} + 3 - \frac{9x}{4} = \frac{x}{ab} + \frac{5x}{6b}, \text{ to find } x.$$

3. Show, without performing the work of division, that $(3x^2 - 4x + 2)^2 - (2x^2 + 9x + 3)^2$ is exactly divisible by $x^2 + x + 1$.

4. If $x + y + z - xyz = 2$, prove that $(1-x)^2 = (1-xy)(1-xz)$.

B.

5. If $\frac{ad-bc}{a-b-c+d} = \frac{ac-bd}{a-b+c-d}$, show that each fraction equals $\frac{a+b+c+d}{4}$, and that $a+b=c+d$.

6. Solve $x^2 + y^2 - x - y = 78$.
 $xy + x + y = 39$.

7. If $x = -1 + 2\sqrt{-1}$, find the numerical value of $x^4 - 12x$, giving the work in full.

8. The diagonal of a rectangle is 65 inches; if the rectangle were 3 inches shorter and 9 inches wider, the diagonal would be 65 inches. Find the area of the rectangle.

9. (a) Find the square root of $25 - 4\sqrt{21}$;

(b) Simplify $\frac{\sqrt{6} + \sqrt{3} - \sqrt{2} - 2}{\sqrt{3} - \sqrt{2}}$ by rationalizing the denominator.

10. Factor

$$(a) 8a^3 - b^3 + c^3 + 6abc.$$

$$(b) 1 - \frac{(a^2 + b^2 - c^2)^2}{2ab}$$

11. If m and n are the roots of $ax^2 + b^2x + c^3 = 0$, and p and q are the roots of $cz^2 + b^2z + a^3 = 0$; show that

$$\frac{m+n}{p+q} = \left(\frac{mn}{pq}\right)^{\frac{1}{4}}$$

12. A number consisting of two digits is so altered by interchanging its digits that its first value is to its second as n to m ; show that the digits themselves are as $10n - m$ to $10m - n$.

C.

13. If $ax + by = x + y + xy = x^2 + y^2 - 1 = 0$; show that

$$\frac{1}{a} + \frac{1}{b} = \frac{1}{(a-b)^2}$$

14. To complete a certain work, A. requires m times as many days as B. and C. together; B. requires n times as many as A. and C. together; and C. requires p times as many as A. and B. together; show that $\frac{1}{m+1} + \frac{1}{n+1} + \frac{1}{p+1} = 1$.

15. If $x^2 - 3x = a$ and $x^2 - 4x = 5$ have a common root, show that $a^2 - 14a + 40 = 0$.

16. If $a + c$ have to $b + c$ the ratio of a^2 to b^2 , prove that $a - b = 0$, or $bc + ac + ab = 0$.

SOLUTIONS.

BY THE EDITOR.

$$1. (a) \begin{array}{r|rr} 1 & -2 & -4 & +13 & -11 & -7 \\ +0 & 0 & +0 & 0 & 0 & 0 \\ +3 & & +3 & -6 & -3 & \\ -7 & & & -7 & +14 & +7 \\ \hline & 1 & -2 & -1 & & \end{array} = x^2 - 2x - 1$$

(b) If $x^2 - 2x - 1 = 0$, $x^2 - 2x + 1 = 2$, $x - 1 = \sqrt{2}$, $x = 1 \pm \sqrt{2}$.

$$2. \text{Equation} = \frac{1}{4} + \frac{3x}{4a} - \frac{7a}{6b} + \frac{5x}{6b} + 3 - \frac{9x}{4} = \frac{x}{ab} + \frac{5x}{6b};$$

$\therefore x \left(\frac{3}{4a} - \frac{9}{4} - \frac{1}{ab} \right) = \frac{7a}{6b} - \frac{13}{4}$. Multiply through by $12ab$;

$$\therefore x(9b - 27ab - 12) = 14a^2 - 39ab;$$

$$i.e., x = (14a^2 - 39ab) \div (9b - 27ab - 12)$$

$$= \frac{a(14a - 39b)}{3(3b - 9ab - 4)}$$

3. $A^2 - B^2$ is divisible by $A + B$. The given expression is therefore divisible by $(3x^2 - 4x + 2) + (2x^2 + 9x + 3)$

$$= 5(x^2 + x + 1)$$

4. If $(1-x)^2 = (1-xy)(1-xz)$

$$1 - 2x + x^2 = 1 - zx - xy + x^2yz$$

$$\text{or } -2 + x = -z - y + xyz; i.e., x + y + z - xyz = 2.$$

Hence, the synthetic solution in reverse order.

$$5. \text{Let } a - b = x, c - d = y; \frac{ad - bc}{x - y} = \frac{ac - bd}{x + y} = K,$$

suppose

$$\therefore ad - bc = K(x - y)$$

$$ac - bd = K(x + y); \therefore (a + b)(c - d) = 2Ky; \therefore \frac{1}{2}(a + b) = K.$$

$$\text{Also, } (a - b)(c + d) = 2Kx; \therefore \frac{1}{2}(c + d) = K$$

$$\therefore a + b = c + d; \text{ also } \frac{1}{2}(a + b + c + d) = 2K; \therefore K = \frac{1}{4}(a + b + c + d).$$

6. Adding, $x^2 + xy + y^2 = 117$; and from (2) $xy = 39 - (x + y)$

$$\therefore x^2 + 2xy + y^2 = 156 - (x + y),$$

$$i.e., m^2 + m - 156 = 0, \text{ when } m = x + y;$$

$$\text{or, } (m + 13)(m - 12) = 0; x + y = -13 \text{ or } 12; xy = 52 \text{ or } 27.$$

$$4xy = 208, \text{ or } 108; (x + y)^2 = 169 \text{ or } 144;$$

$$\therefore (x - y)^2 = -39, 61, -64, \text{ or } 36;$$

$$\therefore x - y = \sqrt{-39}, \sqrt{61}, 8\sqrt{-1}, \text{ or } \pm 6.$$

$$x + y = -13 \text{ or } 12; x = 6 \text{ or } 3, \text{ etc.}; y = 3 \text{ or } 6, \text{ etc.}$$

$$7. x = -1 + 2\sqrt{-1};$$

$$\therefore x^2 = 1 - 4 - 4\sqrt{-1} = -3 - 4\sqrt{-1};$$

$$\therefore x^4 = -7 + 24\sqrt{-1};$$

$$\text{and } 12x = -12 + 24\sqrt{-1};$$

$$\therefore x^4 - 12x = 5.$$

8. Let x and y be the sides of the rectangle,

$$\therefore (x - 3)^2 + (y + 9)^2 = 65^2 = x^2 + y^2;$$

$$\therefore x - 3y = 15; x = 3(y + 5);$$

$$\therefore 4225 = x^2 + y^2 = 9y^2 + 90y + 225 + y^2;$$

$$\text{or, } y^2 + 9y - 400 = 0 = (y - 16)(y + 25).$$

$$y = 16, x = 63. \text{ N.B.: } y = -25, x = -60, \text{ are other values which give the same diagonal. If we lay out the diagonal of the first found rectangle } 16 \times 63, \text{ and produce it backwards equal to itself, we shall have this second diagonal. The minus signs define, not the magnitude, but the direction of the second diagonal. Thus the negative roots give an intelligible solution, and } -25 \text{ means a line of 25 units in length taken in the diagonal produced.}$$

9. (a) Let $25 - 4\sqrt{21} = \sqrt{x} - \sqrt{y}$;

$$\therefore x + y = 25, \text{ and } -2\sqrt{xy} = -4\sqrt{21}. \text{ See text-book.}$$

$$\therefore 4xy = 336$$

$$\therefore (x - y)^2 = 25^2 - 336 = 289 = 17^2, \therefore x - y = \pm 17;$$

$$\therefore \sqrt{x} - \sqrt{y} = 2 - \sqrt{21}.$$

N.B.—In practice this could be solved by noting that $25 = 4 + 21$.

$$(b) \frac{(\sqrt{3} - \sqrt{2}) + \sqrt{6} - 2}{\sqrt{3} - \sqrt{2}} = 1 + \sqrt{2} \frac{(\sqrt{3} - \sqrt{2})}{\sqrt{3} - \sqrt{2}} = 1 + \sqrt{2}.$$

$$10. (a) 8a^3 - b^3 + c^3 + 6abc$$

$$= (2a)^3 + (-b)^3 + c^3 - 3(2a)(-b)c = x^3 + y^3 + z^3 - 3xyz, \text{ say.}$$

Of this the factors are

$$(x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx).$$

Hence the factors of the given expression are

$$(2a - b + c)(4a^2 + b^2 + c^2 + 2ab + bc = 2ac).$$

$$(b) A^2 - B^2 = (A + B)(A - B). \text{ Hence the factors are}$$

$$(a + b + c)(a - b + c)(a + b - c)(-a + b + c) \div 4a^2b^2.$$

11. We have given, $m + n = -\frac{b^2}{a}$; $mn = \frac{c^3}{a}$;

$$\text{and } p + q = -\frac{b^2}{c}; pq = \frac{a}{c}.$$

$$\text{Now, } \frac{m+n}{p+q} = \frac{b^2}{a} \times \frac{c}{b^2} = \frac{c}{a}$$

$$\text{and } \frac{mn}{pq} = \frac{c^3}{a} \times \frac{c}{a^3} = \frac{c^4}{a^4}, \therefore \text{etc.}$$

12. Let $10x + y$ and $10y + x$ be the two numbers,

$$\therefore (10x + y) / (10y + x) = n / m;$$

$$\therefore 10mx + my = 10ny + nx;$$

$$\text{or, } x(-10m - n) = y(-10n - m), \therefore \text{etc.}$$

13. $ax + by = 0; x + y + xy = 0;$

$$\therefore x = -\frac{y}{1+y} = -\frac{by}{a}; \therefore y = \frac{a-b}{b}; x = -\frac{(a-b)}{a}.$$

$$\text{But } x^2 + y^2 = 1; i.e., \left(\frac{a-b}{a}\right)^2 + \left(\frac{a-b}{b}\right)^2 = 1;$$

$$\therefore \frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{(a-b)^2}.$$

N.B.—As an exercise the reader may further prove

$$(1) \frac{x^2}{y^2} = \frac{b^2}{a^2};$$

$$(2) \frac{(a-b)^2}{ab} = 1 \pm \sqrt{2}.$$

14. Let x, y, z = number of days required respectively by A., B., and C. to do the work.

$\therefore \frac{1}{x}, \frac{1}{y}, \frac{1}{z}$ are the parts done in 1 day by each.

$$\therefore (1) \frac{m}{x} = \frac{1}{y} + \frac{1}{z}; m = \frac{x}{y} + \frac{x}{z} = \frac{zx+xy}{yz}$$

$$(2) \frac{n}{y} = \frac{1}{x} + \frac{1}{z}; n = \frac{y}{x} + \frac{y}{z} = \frac{yz+xy}{zx}$$

$$(3) \frac{p}{z} = \frac{1}{x} + \frac{1}{y}; p = \frac{z}{x} + \frac{z}{y} = \frac{yz+zx}{xy}$$

$$\therefore m + \frac{1}{n} = \frac{xy+yz+zx}{yz} = \frac{K}{yz}; \therefore \frac{1}{m+1} = \frac{yz}{K}$$

Similarly, $\frac{1}{n+1} = \frac{zx}{K}$
and $\frac{1}{p+1} = \frac{xy}{K}$

$$\therefore \frac{1}{m+1} + \frac{1}{n+1} + \frac{1}{p+1} = \frac{xy+yz+zx}{K} = 1.$$

15. Let $x = m$ be the common root of $x^2 - 3x - a = 0$, and $x^2 - 4x - 5 = 0$
 $\therefore m^2 - 3m - a = 0 \therefore m = a - 5$. Substitute this and $m^2 - 4m - 5 = 0$ value, and
 $\therefore (a-5)^2 - 4(a-5) - 5 = 0$
i.e., $a^2 + 25 - 10a - 4a + 20 - 5 = 0$;
or, $a^2 - 14a + 40 = 0$.

$$16. \frac{a+c}{b+c} = \frac{a^2}{b^2}; \therefore \frac{a-b}{b+c} = \frac{a^2-b^2}{b^2}$$

\therefore either $a - b = 0$, or $\frac{1}{b+c} = \frac{a+b}{b^2}$
i.e., $ab + bc + ca = 0$.

HIGH SCHOOL SENIOR LEAVING AND UNIVERSITY HONOR MATRICULATION.

ALGEBRA, 1895—SOLUTIONS.

1. (a) Find the sum of the first n terms of an A.P. of which the p th term = q , and the r th term = S .

Solution by A. N. MYERS, Dunville.
 $q = a + (p-1)d$; $p = a + (q-1)d$
 $\therefore p - q = -(p-1)d$; $\therefore d = -1$; $\therefore a = p + q - 1$.
Hence, $S = n(p+q) - \frac{n}{2}(n+1)$.

$$(b) S = \frac{n}{2} \{ 2a + (n-1)d \} = 2703, \text{ when } a = 3, d = 2$$

$$\therefore n^2 + 2n - 2703 = 0; n = 51 \text{ or } -53.$$

Explanation.—If we take 51 terms of the series 3, 5, 7, 9, etc., 103, and count backwards 53 terms, the series will be -1, +1, 3, 5, 7, etc., of which the sum is plainly the same as before. Hence, we find a consistent interpretation by counting the 53 terms in the opposite direction and from the other end of the series.

2. (a) Show that four quantities a, b, c, d are proportional

if $pc >= or < qd$ according as $pa >= or < qb$, p and q being any positive integers. Book-work. See Hall and Knight's "Higher Algebra," p. 16. High School Algebra, Part II., p. 40.

(b) If $(a^2 + b^2 + c^2)(x + y + z) = (ax + by + cz)^2$, prove that $x/a = y/b = z/c$, the letters denoting real quantities.

Solution. By A.N.M. Multiply out, and we have $(ay - bx)^2 + 2$ anls. = 0. But the sum of three squares is positive unless each = 0.

$\therefore ay - bx = 0$, or $x/a = y/b = z/c$.
3. (a) Solve $3x^2 - 14x - 32849 = 0$.
Solution by A.N.M.

$$x = \frac{1}{6} [14 \pm \sqrt{(14^2 + 12 \times 32849)}] = \text{etc.}$$

(b) Solve $x^2 + 2yz = 13$; $y^2 + 2zx = 10$; $z^2 + 2xy = 13$.
Solution by A.N.M. Add the three equations and take the square root of the sum.

$$\therefore x + y + z = \pm 6$$

1st - 3rd gives $(x-y)(x-2y+z) = 0$
 \therefore either $x - 2y + z = 0$, or $x - y = 0$
 $\therefore x = \pm 1, y = \pm 2, z = \pm 3$; or $3x^2 - 12x + 13 = 0$, etc.

4. (a) If $a_1, a_2, a_3, \dots, a_n$ are n consecutive terms in A.P., show that

$$\frac{1}{a_1 a_2} + \frac{1}{a_2 a_3} + \frac{1}{a_3 a_4} + \dots + \frac{1}{(a_{n-1} a_n)} = \frac{(n-1)}{a_1 a_n}$$

Solution by A.N.M. Using the common notation, the first term of the series is

$$\frac{1}{a(a+d)}, \text{ which} = \frac{1}{d} \left(\frac{1}{a} - \frac{1}{a+d} \right).$$

The 2nd term is $\frac{1}{(a+d)(a+2d)}, \text{ which} = \frac{1}{d} \left(\frac{1}{a+d} - \frac{1}{a+2d} \right), \text{ etc.}$

$$\frac{1}{(a+n-2.d)(a+n-1.d)} = \frac{1}{d} \left(\frac{1}{a+n-2.d} - \frac{1}{a+n-1.d} \right)$$

$$\therefore S = \frac{1}{d} \left(\frac{1}{a} - \frac{1}{a+n-1.d} \right) = \frac{n-1}{a(a+n-1.d)} = \frac{n-1}{a_1 a_n}$$

(b) Show that the harmonical mean between two unequal positive quantities is less than their geometrical mean.

Book-work. A, G, and H are in descending order of magnitude.

See Hall and Knight's "Higher Algebra," p. 49; High School Algebra, Part II., p. 95.

5. (a) Show that a quadratic function of x can be resolved into linear factors in only one way.

Book-work. See Hall and Knight's "Higher Algebra," p. 94, Art. 126.

(b) Factor $(b+2c-3a)^3 + (c+2a-3b)^3 + (1+2b-3c)^3$.

Solution by the Editor. Let $x = b+2c-3a, y = c+2a-3b, z = \text{etc.}$

$$\therefore x + y + z = 0; (x+y+z)^3 = 0 = x^3 + y^3 + z^3 + 3(x+y+z)(xy+yz+zx) - 3xyz$$

$$\therefore x^3 + y^3 + z^3 = 3xyz = 3(b+2c-3a)(c+2a-3b)(1+2b-3c). \text{ Ans.}$$

(c) Eliminate x from $ax^3 + bx^2 + c = 0$ and $a_1 x^3 + b_1 x^2 + c_1 = 0$

Book-work. See High School Algebra, page 207.

6. (a) Find the number of combinations of n different things taken r at a time.

(b) Find the "total number of combinations" of n things, (i) when all the things are unlike, (ii) when p are alike and the rest unlike. Book-work. See text-book.

(c) In how many ways can 10 boys and 10 girls form a ring by joining hands, when each person may face outwards or inwards, and no two boys are adjacent?

Solution by A.N.M. To prevent repetition of the same order, let the position of one of the girls be fixed. The remaining 9 girls may be arranged in 9 ways. The 10 boys may occupy the intervening spaces in 10 ways. And, since each position of the boys may be taken in conjunction with each position of the girls, we have 9×10 permutations. Take one of these permutations; now, since each of the twenty persons may occupy his position in two ways, and, since each of these ways may be taken in conjunction with each way of each other person, we have 2^{20} permutations within this permutation. This gives us altogether $2^{20} \times 10 \times 9$ permutations.

7. (a) If $f(x) \times f(y) = f(x+y)$ for all values of x and y , prove that $f(p/q) = \sqrt[q]{f(p)}$; and that $f(-n) = \frac{1}{f(n)}$.

Solution by A.N.M.

(1) Let $f(x) = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \dots$

(2) Then $f(y) = a_0 + a_1 y + a_2 y^2 + a_3 y^3 + \dots$

(3) And $f(x+y) = a_0 + a_1(x+y) + a_2(x+y)^2 + a_3(x+y)^3 + \dots$

(4) $f(x) \times f(y) = a_0^2 + a_0 a_1(x+y) + \dots$ from (1) and (2).

(5) $= a_0 + a_1(x+y) + \dots$ from (3).

From this it is evident that $a_0 = 1$, and \therefore that $f(0) = 1$.

For remainder see proof for fractional and negative indices, binomial theorem.

(b) Find the coefficient of x^n in $\left(\frac{1+2x}{1-2x} \right)^2$

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

$$= (1+4x+4x^2)[1+2(2x)+3(2x)^2+\dots+(n-3)(2x)^{n-2}+(n-2)(2x)^{n-1}+(n-1)(2x)^n]$$

\therefore coefficient of x^n is $(n-1)2^n + 4(n-2)2^{n-2} + (n-1)2^n + 2(n-2)2^n + (n-3)2^n = 4(n-2)2^n = (n-2)2^{n+2}$.

(c) Show that the sum of the squares of the coefficients of the expansion of $(1+x)^n$ is $\angle 2n \div \angle n \angle n$.

Book-work. See High School Algebra, p. 280; Hall and Knight's, p. 146.

8. What sum must be paid for an annuity of \$ a to continue b years, the first payment of the annuity to be made at the end of c years, the rate of interest being r per unit per annum?

Book-work. See Hall and Knight, p. 205; High School Algebra, p. 366.

Examination Papers.

EAST MIDDLESEX PROMOTION AND REVIEW EXAMINATION.

April, 1896.

1ST, 2ND, AND 3RD CLASSES.

Wednesday, April 8th.

- A.M. Grammar, Class III.
- A.M. Literature, Class II.
- P.M. Spelling and Composition, Class II.
- P.M. Composition and Spelling, Class III.

Thursday, April 9th.

- A.M. Arithmetic, Classes II. and III.
- P.M. Drawing, Hygiene, and Temperance Classes.

Friday, April 10th.

- A.M. Geography, Classes II. and III.
- P.M. Literature, Class III.

Reading and Writing, Classes II. and III., and the whole of the examination of Class I. at the time the teacher finds most convenient, according to circumstances.

The teacher is expected to bring on Thursday the models required for Drawing.

In the seating of the candidates, in the preparation of the room for the examination, by watchfulness and strict adherence to the regulations and time table, in the reading and valuing of the answers of the pupils, and in every practicable way, the teacher or presiding examiner is expected to do all in his power to make the examination a fair and trustworthy test. Before the examination, all books, maps, or other aids, should be removed beyond the possibility of helping the pupils.

Teachers are strongly recommended to meet in twos or threes, as convenient, to read the answers; and they may exchange schools for the examination. It has been found beneficial to send a complete tabulated statement of the examination to every parent. Please use the enclosed blank forms for that purpose. They can be filled by the pupils at the dictation of the teacher, and afterwards signed by the latter.

At the High School Entrance examination a marked difference is found in the neatness and style of the papers of the pupils from one school, as compared with those from another school. The difference is the result of instruction and practice. At these promotion examinations directions may be given and their observance insisted upon, such as leaving a margin $1\frac{1}{2}$ inches in width at the left hand side of the page, distinct numbering of questions or parts in the margin, paraphrasing, and, where practicable, tabulating answers, leaving a blank line after the answer of every question.

These papers are used, although not perfectly adapted, for promotion from the junior to the senior division of a class. A class not writing for promotion should write on the papers for entrance to its class. This affords a valuable review, and by comparison with the marks obtained at the previous examination indicates the progress made.

In most of the schools the trustees supply the paper for the examinations. Inform the trustees that any one, or all of them, will be welcome at the examination. Some teachers enlist the assistance of their trustees, clergyman, or other competent person, in conducting the examination.

For Friday Afternoon.

NATURE'S LULLABY.

BY HATTIE COOPER.

The great trees in the park were covered with leaves, yellow and brown and red. All summer long they had lived so happily together up there in their pretty bower of greenness, where the birds built their nests and sang their sweetest songs. Now the birds had flown; and the autumn winds and early frosts had come; and the leaves were arrayed in the most gorgeous evening dress, which only served to make them more beautiful. But they are getting sleepy and lonesome since the birds had gone; and some few were so tired that they had already gone to bed, so the big tree said to its children, "You are very sleepy and tired, little ones, it is quite time you went to bed;" but some of the foolish little leaves had been admiring themselves very much in their evening frocks, and they plead so hard just to be allowed to sit up a little longer. They did not want to go to bed while the pleasant weather lasted, etc. So at last old father tree said, "Well, children, just for one more merry day's frolic, and then you must surely go to bed." So they frolicked and laughed and danced in the autumn breeze, and had their way, and, whispering together, "wondered if old Father Tree would not just forget them this once, and let them stay until spring." But he only smiled when he heard their whispering. The next day he said, "Come, children, you must all go to bed; not another hour," and before the leaves could urge or plead any more he shook his great arms and head, and away the leaves flew, fluttering, rustling everywhere. On the ground they lay, golden brown, yellow, and red, and presently mother winter came with pure white bedclothes and wrapped them snug and warm; then the great bare tree looked down and smiled. "Good-night, my little ones," he said, and each sleepy brown leaf from below replied, "Good-night; we are all very glad to be in bed." So they slept and slept all the winter, until bright spring broke in blueness overhead, and the warm rains came; then they knew it was time to get up. Then first one tiny leaf, and then another appeared, and soon old Father Tree will have all his children together again, and leaves, birds, and flowers will rejoice because it is glad bright summer time.

School-Room Methods

READING FOR CLASS II.

BY W. J. PARSONS, BRADFORD.

In teaching reading every teacher should have a definite method in view, one that will apply to every lesson, with, of course, different modifications as the case requires. As I deal exclusively with the Second Class, I shall try to make my method of taking up reading with such a class as plain as possible. It is just this: I keep in mind the following points, as a *guide* to every reading lesson:

- Introduction,
- New words,
- New marks,
- Tone and time,
- Emphasis and meanings.

It is impossible to introduce every reading lesson in the same way *effectively*. This is obvious to everyone who examines our reading books. Some lessons in the Reader have a picture at the beginning, others have nothing but the title to introduce them. Now, that we must have different methods in introducing these lessons is plain. Again, some titles are familiar, and others are obscure; these also need varied modes of introduction.

There are four general methods that cover pretty well the ground required to introduce any Second reading lesson. These methods are:

- (1) Examination of the picture at the beginning of the lesson.
- (2) Dealing with a familiar title, and bringing a picture to the mind of each by word-painting.
- (3) Blackboard illustrations, or drawing a crude outline of a difficult subject before the class has come up, or, if the teacher be a good drawer,

sketching the subject rapidly when the class is on the floor.

(4) Where the lesson has a geographical bearing, taking up the subject in the Geography class before the reading lesson is touched upon.

Any lesson in the Second Reader may be introduced by some one of these methods:

1. By examining the picture at the beginning of a lesson.

Take, for example, the lesson on page 19, "The Black Bear."

- (1) Ask pupils to turn to page 19.

- (2) Tell them to examine the picture.

- (3) Enquire what they notice first.

Probably they will say, "A black bear."

Draw their attention to the fact that it is not the *bear itself*, but the *picture* of a black bear. Then ask members of the class to describe the animal.

No more questioning is required for the introduction to this lesson.

Teachers run into the error of making a reading lesson a question-lesson, which is not what is required at all. The questioning should only be an aid to reading, and should always be subservient to it. In this reading lesson about "The Black Bear," only the reading on the first page should be taught for one lesson.

Now, the above questions introduce all that is needful in *this* lesson.

After the introduction we commence the lesson proper. The introduction interests the class in the reading lesson, and gives an idea of what is coming. In introducing a lesson, we should aim at two things:

- (1) Interesting the class.

- (2) Leading to the main facts about the lesson in hand.

So much for the introduction *by picture*, at the beginning of a lesson.

2. Now comes the second method of introduction, "Dealing with a familiar title, and bringing a picture to the mind of each by a word-painting." This second method applies to such lessons as, "Good-night and Good-morning," "Little Lamb," "Two Sides to a Story," etc.

One of these lessons will do as an illustration. Turn to page 105. Ask for the title. Ans., "The title is 'Good-night and Good-morning.'"

Questions on this may be:

- (1) When do we say "Good-night" and "Good-morning"?

- (2) Concerning these terms as mere salutations.

- (3) Touching the deeper meaning of the terms.

We then commence the lesson proper, picturing where the little girl is, what she is doing, and so on as the lesson proceeds, thus connecting the title easily with the main reading, as, in fact, it is inseparable from the lesson throughout. This mind-picturing is carried on in every reading lesson to bring out the sense of the passages.

3. By a sketch on the blackboard.

This applies to such lessons as

"A True Hero," and

"The Trunk of an Elephant."

In the lesson on "A True Hero," make a rapid sketch of the surface of the ground, and the shaft opening to the mine, with additional pictures, as each lesson comes up in its order, enabling pupils to understand the true state of affairs.

In the lesson, "The Trunk of an Elephant," attention is paid, in the drawing, to the position of the openings at the end of the trunk, showing how the animal can hold any small object.

4. Where the lesson has a geographical bearing, the definition should be taught in the geography class, before such reading lesson comes, and then this definition can be required from the class as an introduction to the reading lesson.

We find examples in the lessons entitled—

"A little Spring,"

"The Miller of the Dee," and

"Shapes of Snowflakes."

In these lessons, respectively, we have—

A Spring,

A River, and

Snow

spoken of. When the class are made familiar with these terms beforehand, they can at once enter into the spirit of the lesson, reading intelligently, without loss of time set apart for reading. A mere dry saying of facts is not reading, and will interest neither grown person nor child.

There is one other method I employ in teaching reading, if circumstances or seasons permit; that is, having the object before the class. This is interesting in such lessons as "Shapes of Snow-

flakes," or, "Little Dandelion." The children bring in the dandelion when it has reached its different stages; the teacher holds the flower; the children read and examine.

With any one of these methods of introduction, I fail to see how the reading can be otherwise than interesting, provided the teacher keeps up the thought as each sentence is discussed.

Now we commence the lesson proper. One sentence at a time is taken up.

In this one sentence we note, as we said before, the

- New words,
- New marks,
- Tone and time,
- Emphasis and meanings.

The new words are found first, because if a child is not familiar with the words he cannot possibly read correctly. It is a good plan to ask the pupils individually to give a new word from the lesson. They are very anxious to find words, and in a well-regulated school seldom fail to give the right words. These new words in the *one* sentence are written on the board and pronounced by individual pupils. In some cases the whole class are asked to pronounce a word; this is when there is likely to be a class error in pronunciation.

Of course there will be several who cannot give the new words readily. It is well to note these, and ask them for words. Care should also be taken to see that those who cannot pronounce well have a good drill on any words written on the blackboard.

I seldom have any difficulty with new words in a reading class, as dictation is taught before reading and the new words come up in the dictation lesson. Then, when the reading class comes, the pupils give the new words rapidly. The new marks in the *same sentence* are then touched upon. It is wonderful how these marks aid in giving the child an idea of the proper expression. The marks are like the finger points that aid the traveller in finding his way, until he becomes familiar with the road. Is it not so? The pupil should be led to depend upon the sense of the passage as soon as possible, and not rely on the marks or little "finger-posts" alone. We have not much trouble with the marks, as the pupils soon become familiar with the use of each.

After the introduction and the new words and new marks we ask the class to read the sentence silently. Then one is chosen to read aloud. After the pupil has read aloud, we have a friendly criticism of the reading. The interest in this criticism carries the mind of the pupil away from the reader to the reading. The pupils generally notice mispronunciations and omitted words first, so there is no necessity for *asking* for corrections in these. The children are ready with raised hands to tell of such mistakes. Tone and time come in just here, and as these are so varied constant attention is required, and the teacher needs ever to be on the alert; for not only *sentences* are marked by tone and time, but *words* also, giving a nicety and finish to a reading otherwise monotonous and obscure. The expression of feeling in natural life aids us materially, and, in fact, often guides us, in the uses of tone and time in our reading lessons. Draw the attention of the child to the quick, lively tone of voice he would use when glad; the low semi-tone, with slow time, in sorrow; the soft tone of love; the abrupt force of surprise; the whispered tone of secrecy; and the deep tone of reverence, with its rather slow time. We cannot give all the kinds of tone and time here; we barely touch upon them. You see by this that we take up tone and time *after* the child has read, and new words and new marks come *before* he has read. There is a reason for doing so. The exercises with new words and new marks are merely mechanical, while tone and time call for an intelligent rendering of the passage—a harmony between the voice and the sentiment. We want the child, therefore, to give his own opinion as to how the sentence should be read. If the sentence be not read correctly, we draw attention to this. The teacher does not do all. The children are anxious to express their opinions, and often these opinions are strictly correct.

It is not well to choose a very poor reader at the first, neither should we run to the opposite extreme and select a very good reader to read the first sentence. It is better to call for a fair reader. If this one does well, choose a poor reader; if badly, choose a good reader.

It is a poor method, indeed, to drum, drum away

at one poor reader, when it would be more advantageous to him to have others read before himself. He becomes more familiar with the sentence, and has courage to try it himself. Do not misunderstand me. I say, we should not commence with a very poor reader; but the very poor reader should, by no means, be neglected. The teacher reads occasionally, before the next sentence is taken up; this is to give the children an idea of the easy flow of words, to correct jerking, to aid in getting the proper tone, etc.

Now comes the part of reading that demands constant thought—the *emphasis*.

This really embodies the true sense and feeling given to the passage, and when the meaning of the word is not known this meaning should be made known, where it is conducive to the proper elucidation of the writer's thoughts. Thus there is a connecting link between emphasis and meaning.

We cannot teach emphasis in a day. Neither can children grasp the idea of emphasis in the same way as older pupils. We are obliged to simplify terms in dealing with the young.

As emphatic words come up in the lesson, we draw attention to them, dealing with those in *one* sentence at a time. We lead the pupils to see that they emphasize words that embody *new ideas* or *new facts* presented for the first time. These words, when repeated, are unemphatic. Take, for example, "The elephant is not a *graceful* or *handsome* creature."

"Elephant" is the first emphatic word.

"Creature" is unemphatic through repetition, as the idea of it being the elephant is repeated in this word. "Creature" is also unemphatic through foreknowledge. We transfer the emphasis from the word "creature" to the words "graceful" and "handsome." "The elephant is not a *graceful* or *handsome* creature."

Some words, again, are unemphatic through anticipation. Example: "He went in to *tea* one *winter* evening." "Evening" is unemphatic through anticipation. We ask the children if they see any word *before* "evening" that leads them to know it *was evening*.

They at once say, "Tea" tells us it was evening. Then we point out to them that the idea of the time was brought out in the word "*tea*."

The idea of "*evening*" is anticipated in the word "*tea*." We then transfer the emphasis from "*evening*" to "*winter*." "He went in to *tea* one *winter* evening."

Again, some words are unemphatic through sequence. Example:

"The *white bear* has a *coat of thick fur* to keep him warm." "To keep him warm" is unemphatic through sequence. It follows that if he has "a coat of thick fur" he must be warm. We ask the pupils how they would feel if muffled up in fur. They would tell us that "they would feel warm." So, you see, the natural consequence of having such a coat would be that he was warm, and the coat kept him warm. "The *white bear* has a *coat of thick fur* to keep him warm."

Massing is another feature of emphasis. It consists of several emphatic words massed and given as a unit—with one force. Here is an example: "The *handles of knives, pistols, razors*, and many other articles." "*Knives, pistols, razors*" should be massed, and said with one impetus.

When a repeated word has a new signification it should be emphasized. Example: "Did you have a dolly like *this*, and *THIS*, and *THIS*?" "This is emphatic each time, because it means a different doll in each case. Increased force is given to each word.

Again, words are emphatic through foreknowledge.

Another example from the lesson about "The Black Bear" will explain this. "The *soles* of his feet are covered with *long hair*." The word "feet" is unemphatic through foreknowledge. We know beforehand that the soles must be on his feet; therefore, we do not emphasize the word "feet." "The fingers of a man's hand" shows the same rule. "Hand" is unemphatic through foreknowledge. We know the "fingers" are on the hand.

We note also words that express approbation and disapprobation. We tell the children that any emphatic words that express what we like, or what is agreeable to us, take a rising inflection, while any words that express what we dislike, or what is not good, take a falling inflection. We have nice examples of this in the lesson about "Grand-mamma."

"Were you *good*, or *naughty*, the whole *long day*?"

"Good" takes a rising inflection with bright delivery.

"Naughty" takes a falling inflection with displeased tone."

Take another example:

"Did you have a *pussy* like my little *Kate*?"

"Pussy" and "Kate" take a rising inflection with bright delivery.

One more example will suffice for this rule: "One you go to *bed* when the clock struck *eight*?"

"Bed" and "eight" take a falling inflection with strong disapproval. There are other forms of emphasis, such as emphasis of comparison and antithesis, and still other forms that come so rarely within the scope of our reading lessons that they are seldom mentioned. We deal only with emphatic words which appear in our lessons.

When the children understand *how* to emphasize, they do not require to be told every day. The right way of doing a thing is the better and easier way in the end. A few short sentences taken up this way at first, the lesson increased as pupils advance, and, finally, a certain amount of reading suitable for any second class becomes the general daily lesson. The method described is a pleasure to teacher and pupils, in that it not only teaches reading, as reading; but it is a mind-cultivator in various ways. It leads out the mind; teaches the child to depend upon his own efforts; and gives him thoughts and pictures that will, perchance, beautify his whole life. We close each lesson with the question: "What has this lesson taught us?" if we want to make our work a lasting success. If the child has learnt nothing but a list of words, I feel sorry for teacher and pupils.

THE TONE OF THE SCHOOL.

BY AN EX-SUPERINTENDENT.

I have been struck more by the tone or absence of tone in the schoolroom than even the scholarship. And I have ever found scholarship to be in some inscrutable way dependent on tone. It is not easy to define *tone* in the schoolroom, but what is meant is the existence of energy; energy in operation gives force.

In one school G— was the presiding teacher; he had four assistants. He always talked loud and boisterously; he knew his knowledge so well and he liked to talk so well that he did a great part of the reciting himself. One day the class had "find the least common multiple of 6, 8 and 10." A boy stood at the blackboard.

"Well, Charley, you divide by 2, do you? You get what? Ah, I see, 3, 4, and 5. Well, now multiply these together, don't you? Oh! you have. It is—60. Right. And that again by 2—120. Now you can divide all these into it, can't you? 6 goes into 120—20 times; 8 goes 15 times; 10 goes 12 times, see? Very well done, Charles; be seated."

All of this was said in a vigorous, loud, strong voice. Charles had but little to do with that common multiple. I knew the master well and said nothing then.

Another boy was called upon, and he and the master went through the business of finding the least common multiple of 5, 10, and 15. Then another was called up and he and the master tackled 6, 8, and 12.

The next week I came in again and asked Charles to give me a small number; he gave me 6. I asked James for one, he gave me 10. Carrie gave 14. Now I said, "I want a number that I can divide by each of these—can you find it?"

The master wanted to suggest, but I shook my head. "Why, boys, what are you thinking about?"

Now the master, by his boisterousness, his noisy manner, and his prompting, his everlasting telling, telling, had destroyed all the tone of that school; even his assistants were demoralized. But he was popular; the boys liked him. Scholarship was impossible, however, in his schoolroom. The master afterwards went into politics.

Miss G— had a school in the same town with three assistants. I stood in the hall a moment before I entered and I could hardly hear a sound, and yet I knew there must be fifty pupils there. Though it was muddy weather the floor was neat; it had evidently been brushed since the pupils went in. But few eyes were turned toward me as I entered; a boy came forward and gave me a seat.

A class was reading; the teacher stood at the rear of the room. At a signal the pupil reading gave a résumé of the lesson to me—it took twenty-five or thirty words. Then she proceeded to read. What struck me was that she had a *point to make* in her reading. She looked at the teacher every three or four words, in an earnest manner.

"Is that just the meaning? suppose you try the last sentence, George. Before you rise, remember you have to convince me of something." George rose and looked sharply at the teacher and caught her eye before he proceeded. "Well, George has made the point, I think." I felt that the class must have made a careful study of that part of the book.

"What did we read yesterday?" All were ready to reply.

"What did we read last week?" Several were called on and gave intelligible accounts.

"Who can tell of subjects read last term? Tell me what pieces you liked best." Each had something to say.

"Tell me something you have read that you have had brought up in your life out of school."

One pupil referred to a line of poetry about the stars—but the "time is up."

Now the space between Miss G— and the master was great; yet each had the same position of duty. A pupil in the room of the former had some chance of expansion—in the latter absolutely none.—*Educational Record.*

TALKING SCHOOL.

"What is the matter? Can't you make them mind?"

A teacher was recounting her weariness, her general tiredness of school and all pertaining thereto, to a neighbor, and that was the answer she received.

The teacher flushed under such an ejaculation, and this is what I said to her afterwards:

"I have been through it all—the fatigue, the vexation of spirit, and the longing for sympathy—and from the abundance of my experience I want to say, 'Don't!'"

"In the first place, do you really feel any better for telling how tired you are, what a hard case Johnny Smith is, and how inadequate, in your opinion, is the compensation of teachers?"

"In the next place, do you realize that as a general thing you are boring your friends terribly? How much more interesting, think you, you would be both to them and yourself were you to introduce some bright topic of the day, say, or follow the lead when someone else does—instead of veering off upon dreary pedagogical details!"

"And, finally, do you know that it militates greatly against your establishing a reputation as a successful teacher—this enumerating the difficulties you encounter in disciplining your room, your 'dead tiredness,' and your general discontent with school matters?"

My young friend looked down in a hopeless sort of way, but she was as certain she had my sympathy as that she had my advice.—*E. R., in Primary Education.*

COMMERCIAL SPECIALISTS' EXAMINATION.

TIME TABLE, JULY, 1896.

NOTE.—All applications for this examination are to be sent to the Deputy Minister on or before the 26th of May. Candidates will also notify the Inspector at which centre of examination they propose writing.

Thursday, July 9th.

A.M. 8 45-9 00Reading Regulations.
9 00-11 30Banking and Exchange.
P.M. 1 30-4 20Bookkeeping.

Friday, July 10th.

A.M. 9 00-12 00Commercial Arithmetic.
P.M. 1 30-4 00Laws of Business and Business Forms.

Saturday, July 11th.

A.M. 9 00-10 30Stenography — Theory Paper.
10 40-11 40Stenography— Dictation and Transcription.
P.M. 1 30-3 00Penmanship.

Primary Department.

SINGING.

RHODA LEE.

We are glad to learn that music is being more widely and successfully taught in our schools to-day than ever before. There are still unbelievers and scoffers who would, if they had their wish, remove the subject entirely from the time-table, but, fortunately, these grumblings receive but little attention, and the good work goes on undisturbed. It is difficult to understand how anyone can fail to see the desirability of musical training in our Public Schools.

We used to hear some singing that could not, strictly speaking, be called music, but the tonic-sol-fa system has done much to eradicate this, one of its strong characteristics being the development of purity and sweetness of tone. Harsh, strident singing is unknown to the followers of this system; there is no forcing of voices, no shouting or discord. "But," says one, "if you do not allow children to sing out spontaneously and somewhat loudly, what life or expression is there in their song?" Twice as much expression, and infinitely more enjoyment, both to those who sing and those who listen. Expression is impossible when the song is a continued shout, but if the singing be performed easily, without any forcing of the voice, shading is possible. Attention to time, and a thorough understanding of the words, combine to make singing as near perfection as we can attain with children.

Success in music depends on certain conditions. It is necessary that the teacher have, in addition to a fair musical knowledge, ability to impart it. It is not necessary that she be a thorough musician, but she should be able to sing by way of pattern and for ear exercises, readily detect errors in the singing of the children, and have a true conception of the aims and possibilities of musical training.

Correct physical conditions are requisite to good work in singing. The lesson proper should not be given when the children are tired, nor, indeed, should singing of any kind be indulged in when they are very much fatigued. The room should be well aired, the position comfortable (hands resting easily in the lap, body erect), and the temperature right before beginning. Preliminary to the singing lesson give a few breathing and voice exercises. Imitation exercises should also form a part of every lesson. Call it the mocking-bird game or anything else you please. It will work wonders in tone, besides being good ear training.

Let no one imagine that the music lesson can be taught without preparation. It requires careful planning just as much as any other. As it is not advisable to teach every part of the work in one lesson, it is well to make a definite plan for the week; voice exercise, time, and sight-singing, one day; voice exercise, modulation, and ear exercise on another day, etc. In preparing work, make careful selection of songs, choosing the best you can find.

Make the most of the music lesson. So much *can* be done with a little preparation and thought.

Since writing the above, THE JOURNAL of May 15th has reached me, containing an editorial stating the possibility of a summer school of music in Toronto during a part of the vacation. I would like to urge all who can avail themselves of this opportunity to take advantage of it, as they will be abundantly repaid for time and expense by most thorough and careful instruction in the work outlined in the new syllabus.

WHAT WE LEARN IN SCHOOL.

TUNE: "John Brown."

Groups of happy children gather daily here in school,
Learn to read and cipher, and learn the Golden Rule,
Handle pen and pencil as a master does his tool
Is what we learn in school.

CHORUS.

Working, working, ever merry;
Singing, singing, ever cheery;
Work and sing and never weary
Is what we learn in school.

Shoulders straight and heads erect and elbows pointing out;
First to right and then to left we turn our heads about—

This is east and this is west and this is north and south

Is what we learn in school.

—Primary Education.

LITTLE BOY BLUE.

The little toy dog is covered with dust,
But sturdy and staunch he stands;
And the little toy soldier is red with rust,
And his musket moulds in his hands.
Time was when the little toy dog was new,
And the soldier was passing fair,
And that was the time when our Little Boy Blue
Kissed them and put them there.

"Now, don't you go till I come," he said,
"And don't you make any noise!"
So toddling off to his trundle-bed
He dreamt of the pretty toys
And as he was dreaming an angel song
Awakened our Little Boy Blue—
Oh, the years are many, the years are long,
But the little toy friends are true.

Aye, faithful to Little Boy Blue they stand,
Each in the same old place,
Awaiting the touch of a little hand,
The smile of a little face.
And they wonder, as waiting these long years through,
In the dust of that little chair,
What has become of our Little Boy Blue
Since he kissed them and put them there.

—Eugene Field.

THE BABY MOUSE'S LESSON.

It was very still in the schoolroom.

"I don't believe there's a child left," said mamma mouse, peeping out of the wardrobe. "Come, dears!"

The little family needed no second bidding. Oh, what bright eyes, what nimble feet, as they scampered to the back row of desks where the children ate their luncheons, and where there were always a few crumbs left.

"I like the little yellow-haired girl's lunch best," said the baby of the family, swallowing the dainty tid-bits in such a hurry that he nearly choked. "Here —

that's mine!" he cried, sharply, as his little sister nibbled at a crumb of cheese by his side.

"Dickey," said his mamma, reprovingly, "I am surprised! And after what you heard and saw this noon, too! Have you forgotten? Do you want to grow up like Jim Evans?"

Dickey hung his head. Jim Evans! That rough, greedy, growling Jim Evans, who was so rude to everyone, and took such big bites! No, indeed, he did not want to be like him—but he did not eat like him, anyway! Just then Dickey caught a glimpse of himself in a little round looking-glass which had rolled upon the floor from somebody's desk. He started. *Did* he look like that? Why, his cheeks bulged out as much as Jim's! He would never take such a mouthful again. And his little sister—he had spoken as unkindly and impolitely to her as Jim ever had to any of the girls! Oh, he was ashamed of himself!

"Mamma," he murmured, creeping up to his mother and sisters, "I want you all to have the little yellow-haired girl's lunch. I'm not going to take another crumb! And I'm never going to speak like that again! I don't want to be like Jim Evans—and I have been to-day—and I looked like him, too!" He glanced towards the looking-glass, and hid his face.

"If we could only all see ourselves as others see us," said his mother, "it would be a very different sort of world!"—E.R., in *Primary Education*.

A KINDERGARTEN PLAY.

One, two, three little children,
Four, five, six little children,
Seven, eight, nine little children
Ten little children here.

Ten little children in a line,
One trots away, that leaves nine.
Nine little children playing late,
One runs home, that leaves eight.
Eight little children standing even,
One skips out, that leaves seven.
Seven little children straight as sticks,
One rolls over, that leaves six.
Six little children much alive,
One hops away, that leaves five.
Five little children on the floor,
One jumps up, that leaves four.
Four little children wait for me,
One gets tired, that leaves three.
Three little children look at you,
One turns away, that leaves two.
Two little children out in the sun,
One goes in, that leaves one.
One little child, left all alone,
Dances away, where have they gone?

—Addelle J. Gray.

It is announced that the great Bruce photographic telescope, the largest in the world, will soon be shipped from the Harvard observatory in Cambridge to the branch of the observatory in Arequipa, Peru. The telescope will first be shipped to New York, and there will be put on board of a South American steamer, which will take it direct to Mollendo, Peru. There it will be taken charge of by the Harvard men at the South America observatory, and will be conveyed by rail to Arequipa, a distance of about 75 miles. The instrument is of great power, and it is expected that many important astronomical discoveries will be made with it. The chief work which will be done with it will be to make an accurate and systematic photograph of the whole heavens.

Book Notices.

METHODS OF MIND-TRAINING. CONCENTRATED ATTENTION, AND MEMORY. By Catharine Aiken. New York: Harper & Brothers, Publishers.

This is an interesting book of a hundred pages by a practical teacher. Starting out with the results of her experience that the pupils of many schools showed a great disparity between labor and gain—development of faculty and acquisition of power—the author set about the discovery of true means to true ends. Concentration of attention was found to be the gateway by which she could bring her pupils into full possession of their powers. Practical exercises are given by which striking results were reached. These exercises are full of suggestion for the training of pupils in quick perception and attention, for rapidity and accuracy in sight reading, for accuracy in discriminating, for unconscious counting, for accuracy in recalling objects in their places, and in their relation to other objects. The book is free from the artificialities and mental unsoundnesses of the usual treatises on mnemonics. A sound psychology underlies the suggestions given, and every teacher may be advantaged by a perusal of this very simple and direct book. The power of voluntary attention is regarded as the condition of the development of the chief functions of mind.

Literary Notes.

The first series of child observations, imitation and allied activities, made by the students of the State Normal School at Worcester, Mass., has been edited by Ellen M. Haskell, with an introduction by Principal E. H. Russell, and is announced under the title "Child Observations." This is believed to be by far the largest collection of facts of child life ever given to the public. It exhibits, by more than twelve hundred instances carefully observed and succinctly recorded, the operation of the faculty or instinct of imitation in children, covering the period between the first and fifteenth years of life. The records are arranged progressively in groups according to the ages of the children observed, and show in an interesting way, by concrete examples, the growth and development of this fundamental activity of childhood from year to year. Psychologists, teachers, parents, and all students and lovers of children will find here a rich store of material for their study and entertainment. D. C. Heath & Co., Boston, are the publishers.

The complete novel in the June issue of *Lippincott's* is "From Clue to Climax," by Will N. Harben. "A Fellow-Feeling," by Edith Brower, is a readable story about the coal region. H. C. Stickney, in "Timely," tells of some "ways that are dark" among the Chinese of San Francisco. "The End of a Career," as briefly described by Harry Irving Horton, was that of a male flirt. I. J. Wistar supplies an instructive article on "Criminal Jurisprudence." Owen Hall discusses the prospects and conditions of "Naval Warfare in 1896," giving the facts and figures as to the world's various navies, and concluding that Great Britain is likely to be able to hold her own. Concerning the "Feigning of Death by Animals," Dr. James Weir, as a result of special microscopic studies, presents facts that are largely new. Dr. Charles C. Abbott offers some observations on "The Changeful Skies." Edith Dickinson writes on the "Youthful Reading of Literary Men." William Trowbridge Larned makes some remarks "After Seeing a Poor Play." "Women

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in Business" is discussed by Mary E. J. Kelley. A second article on General and Mrs. Washington, by Anne Hollingsworth Warton, deals with their official life. Like its predecessor, it is abundantly illustrated. The poetry of the number is by Carlotta Perry, Grace F. Penny-packer, and Charles G. D. Roberts.

The June *Arena* opens its 16th volume, appearing in a new dress, and being printed by Skinner, Bartlett & Co. It is an unusually strong number, opening with an able paper by Rev. Samuel Barrows, D.D., the distinguished editor of the *Christian Register*, of Boston, on "The First Pagan Critic of Christian Faith and His Anticipation of Modern Thought." Justice Walter Clark, LL.D., of the Supreme Bench of North Carolina, contributes an instructive paper on Mexico, the interest of which is enhanced by several excellent illustrations, including a recent portrait of the President of the Mexican Republic. The President of the Mercantile National Bank of New York contributes "A Proposed Platform for American Independents for 1896," which illustrates how strongly the silver movement is taking hold of Eastern financiers no less than the mass of voters in the South and West. Another paper of special merit, on "Bimetallism," appears in this number, by A. J. Utley. Prof. Parsons, of Boston University Law School, continues his thoughtful papers on the "Government Control of Telegraphs." Mr. B. O. Flower, the editor of *The Arena*, writes of Whittier, considering him in the aspect of a "Poet of Freedom," and giving many of Whittier's most stirring lines. A fine portrait of the Quaker Poet forms a frontispiece to this number. Mr. Elwood Pomeroy contributes an illustrated paper on the "Direct Legislation Movement and Its Leaders." Students of the higher metaphysical thought of our time will be interested in Horatio W. Dresser's paper entitled "The Mental Cure in its Relation to Modern Thought." Will Allen Dromgoole continues her powerful serial of "Tennessee Life," and Mrs. Calvin Kryder Reifsnider's "Psychical Romance," which opened a few months since, is prefaced by a digest of the preceding chapters. It is also profusely illustrated with exceptionally fine drawings. These are by no means the full quota of the fine attractions of this number.

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