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A TEACHER WHO TAUGHT.

CYRIL NORFOLK, in *School Journal*.

I once studied history for a year under a teacher who knew how to teach. The topic was general history, and the teacher devoted fifty minutes a day, four days in the week, to making thirty-five pupils in a country high school realize that a life-time is too short for the learning of much history; and yet that great pleasure and profit may accrue from even a slight understanding of it. The prescribed text-book was "Swinton's Outlines of History," and we always learned three or four pages at a time as a ground-work for our lesson.

Assyrian and early Egyptian history we must have slighted. And yet, she made so much of an impression that, after fifteen years, when I spent some hours among the specimens of Assyrian art in the Louvre, very definite notions came to me concerning the reasons for its excellence and for its limitations, notions which I found, upon consulting the proper authorities, were quite correct. (I am reasonably certain that none of my studies in those fifteen years have touched upon Assyrian art.)

When we were ready to begin the history of Greece, Miss Thompson read aloud from Bulfinch's "Age of Fable," throughout the history period, the first day. She was a charming reader, and, moreover, an exceedingly rapid one, so she covered considerable ground in fifty minutes.

There were two or three copies of "The Age of Fable" in the school library and two more in the town library. We fought for those books, we planned to meet at each other's houses so that one might read aloud to several others, and before the end of a week we had read that portion of the book which refers to the Trojan war, and considerable more. Meantime we were learning and reciting a stated lesson each day.

There was never a recitation to which Miss Thompson did not add far more than what we had found in the text-book, and added it so vividly that we could not help remembering it. She always called us to account for this extra information, and usually we gave it back without much trouble. Almost every day she began a book or an article or a poem bearing on the subject, read it aloud until she reached a critical point, and then held it aloft with the smiling question, "Who would like to take this book home until to-morrow?" Thirty-five hands would go up and envied would be the fortunate one who received the book.

She spent days in trying to make us realize the grandeur of Greek art and letters. She used photographs and every book she could lay her hands on, but more than all she made us feel how great a thing the Greek influence has been through all the ages. If I may venture to say it without seeming ridiculous she made us feel that artists were painting, scholars were studying, and we, in our small way, were acquiring knowledge the better, because those artists and scholars had so labored in the long ago. In the last two weeks which we devoted to Greek history she read aloud a history of modern Greece, and then she gave us an examination. There were two parts to this examination. One was an essay on whatever in Greek history had seemed to each pupil particularly surprising, interesting, or worth remembering. The other was like all ordinary examinations, ten questions on the work just completed, but every question required for its answer an act of reasoning rather than an act of memory. Of course memory was necessary, memory of facts from which to reason, but no verbatim memorizing was of any avail in that examination, which included, it may be said, just as many questions on the information Miss Thompson herself had given us and on the books we had read and heard, as on the matter in the text-book.

We spent three months on Roman history. The first thing we did was to learn "The Prophecy of Capys." A certain number of stanzas were put on the blackboard every day, and those pupils who did not own Macaulay's "Lays" copied them into blank-books. Miss Thompson read aloud a book which covered the period of the seven kings of Rome. When we could recite, with more or less accuracy, every word of the "Prophecy," she told us that almost every important event in the history we were about to study was alluded to in that poem. Some of the allusions we were able to explain at once from what we had learned from her reading, and as we went on with our study we fixed each event in the "Prophecy."

Every day of that three months we learned two or three stanzas of the "Lays" until we knew the whole of "The Battle of Lake Regillus" and "Virginia." Ten years afterward I knew every word of all three, and to-day I can remember the greater part of the poems, and several of my classmates have told me that they find themselves invariably referring the allusions to Roman history and Roman customs which they find in their general reading, to the stirring poetry which they learned in their school days.

We read the whole of Shakespeare's "Coriolanus," some of it aloud, in the class, and the rest at home. We read Antony and Cleopatra, in part, and Miss Thompson gave us such a lecture on purity of mind, and the art of enjoying literary masterpieces without hunting for dirt or thinking about dirt, that I do not remember one bit of talk among the girls concerning the parts of that play to which many teachers would object. Of course, for the boys I cannot answer, except thus far, I know that of the thirteen boys who were members of that class, twelve, to-day, are men of singularly upright, pure lives, men who stand for all that is good in politics and social improvement in the communities in which they live.

We read the whole of "Julius Cæsar." I think we prepared for the reading, especially, and tried to do it with some elocutionary effect.

When we studied about the long struggle of the Plebeians for political recognition. I think that the simple fact of our knowing "Virginia," and having, as it were, almost within our own experience, a concrete example of the wrongs which the Plebeians endured, made the whole

subject assume reality. Young people of fifteen or sixteen learn much through their emotions. Political economy and philosophy must be administered to them in small doses to have much effect.

Every member of the class read "The Last Days of Pompei" at home, and J. G. Whyte-Melville's "The Gladiator," was read aloud by the teacher during the last week of the term. Perhaps I should explain that there were recitations on all this historical fiction, or rather on the historical facts on which it was founded.

We looked up references constantly. Sometimes the lesson to be prepared consisted entirely of topics to be looked up wherever we could find information, and on such days the whole class usually adjourned to the public library for the greater part of the afternoon.

The examination that term consisted of ten questions; but one answer was allowed to occupy more than three lines, and that was one which asked for certain stanzas from Macaulay. I remember well that when Miss Thompson gave out the paper she told us that every bit of work we had done that term was involved in those ten questions, and that only pupils, who had studied and thought conscientiously, could hope to answer them. We were expected to hand in our answers uncopied, so we had to sit down and think over every question, compose possible answers and then mentally prune them down before we dared put pen to paper.

The last term we studied medieval history, and I think that Miss Thompson, with the rapidly approaching vacation before her, must have hurried us; because I find my remembrance of the details of the work is not nearly so vivid as is that of the two earlier terms.

I remember that we read "The Children's Crusade," and that Miss Thompson said that she let us spend the time on it because she thought it would make us realize, more vividly than any other book, how widespread was the religious excitement in Europe during the period of the Crusades, and how great a power popular excitement can become. She had lived through the War of the Rebellion herself, I think she had been an hospital nurse, and I remember that in speaking about popular excitement, she told us how real a thing patriotism seems in a time of national distress, and she said, "I am glad I am old enough

to be called an old maid, because if I were younger, I could not remember the war, and the experience of those days is worth half a life-time of book education."

We read "The last of the Barons," "Anne of Gierstein," and "Ivanhoe," in connection with the Feudal System. Miss Thompson read portions of the historical plays of Shakespeare aloud, and interested us sufficiently in them to make several of us read King John, Richard II., Henry IV., Henry V., Henry VI., and Richard III., the following summer. We read them for the history, or the story whichever you choose to call it, not the literature; but the literature made its impression nevertheless, for to this day a period of leisure always sends me to the book-case for one of the historical plays.

I have told only a little of what Miss Thompson did for us that year. It would take far too many words of mine to tell how many seeds of historical interest she planted which have sprung up and flourished in the succeeding years.

She was a professing Protestant Christian of the best type, and without ever offending a single pupil in a class composed partly of Roman Catholics, she managed to link the Old Testament and the New with our secular history, and also to give us much that was valuable of ecclesiastical history. I remember that in speaking of how Rome increased its power by extending its franchise to conquered communities she quoted Paul's conversation with the centurions and the chief captain—"Tell me, art thou a Roman?" He said, "Yea." And the chief captain answered, "With a great sum obtained I this freedom." And Paul said, "But I was free born."

I remember, too, how she gave me just enough of an idea of the Spanish rule in the Low Countries to make me read the whole of the Rise of the Dutch Republic after I had left school.

I fear that I may have given the impression that Miss Thompson dealt only with the personal side of history and that she interested us simply in the romance of the subject. If such has been the effect of what I have written I have done her scant justice. She was a woman of the widest sympathy. She could appreciate the feelings of the girl who felt slighted because her name had been omitted from an invitation list, and she could sympathize with the

whole down-trodden French nation which achieved its freedom by such frightful slaughter. I use this particular illustration because before I studied general history, Marie Antoinette was my historical heroine and I was a most enthusiastic "Aristocrat," but afterward no romance of ruined *émigré*, however great its pathos, could ever make me feel that the Revolution was not justified. When I went to France it was the people even more than the art or the shops lent the deepest interest.

I have lost touch with high school work, but if the boys and girls who are devoting one year to general history to-day are being made to enjoy history as we were made to enjoy it, they are to be congratulated.

Editorial Notes and Comments

SPEAKING of Teachers' and Parents' meetings, one of the school superintendents on the other side of the line, Mr. Kraege, of Green Bay, says in his last annual report:— "The purpose of the meetings has been to bring together, for conference, those whose duty it is to bring up and educate the children that have been entrusted to them; to get the parents to realize that the teachers are their friends and helpers in this work; to get parents to realize that the school is in fact a branch of the homes represented in it; and, by having classes conducted in the presence of the parents, to show them how we teach school to-day. The teachers merely do what the parents cannot do now for want of time. In other words, the school is doing a part of the work of the fathers and mothers represented in it. If we are to obtain the best results in the education of children, the home and the school must form a closer union. The interests of both overlap and intermingle so that it is of primary importance to have the two work in sympathy and hearty cooperation. The home needs the teacher and he belongs to the home; his aim must be to advance the interests of the home. At present, in most places, the teacher does not know enough of the home and the home does not know enough of the teacher. The willingness with which parents have taken part in these meetings has been gratifying. The spirit which has been manifested is admirable. The questions discussed have been of interest to both teachers and parents."

—IN "Educational Foundations," Elizabeth F. Hughes gives this clever conception of what the ideal lesson should be. "It must," she says, "be complete in itself. It must have a beginning, and a proper and complete ending. The ideal lesson must be vitally connected with a series of lessons. It must be preceded and followed by private work. It must be connected with the life of the child. It must be connected with the life of the world and with the world of books. It must be connected with the previous life of the child, and it must have the salient points clearly emphasized."

—THE young child just beginning school has everything to learn. Minute directions, constant oversight, frequent changes of work, much individual help are necessary. Instruction must be entirely oral. Children know nothing of the use of books, are awkward and unready in manipulation of material, have formed no habits of study or of self-direction. All must be learned under the guidance of the wise teacher. *It is of the utmost importance* to the child's future as a learner that right beginnings be made. It is possible to determine the trend of the entire school life in this first year. Careless, indifferent habits developed during this year inevitably hinder the work of the years following, lengthen the term of school life, or result in such indifferences as effectually ends the school period at the earliest possible moment. If we could gather into statistics the records of the year's lost in the school-room, we should find a convincing argument for right beginnings. The children are ignorant of their gain or loss at this time. Many of them never know why they fail to reach the "prize that is set before them." But *we* know that "as the twig is bent the tree is inclined." Nor can we lightly consider the conditions which promise to mar the future of our little children.—*Exchange.*

—WE are glad to learn of the continued success of the *School Journal*, of New York. In a recent number, the publishers say:—"The strong support the *School Journal* is receiving from superintendents, principals, professional teachers, school boards, and the friends of education generally, has encouraged the publishers to reduce the subscription price from \$2.50 to \$2.00 a year. Never before has the outlook been so promising. The wonderful progress in the field of education has made the reading of

a representative educational weekly a necessity to all who wish to succeed. Both in this country and abroad, the *School Journal* is recognized as the leading professional organ of the progressive American educator. Still greater efforts will be made not only to retain this leadership, but to render still more telling service to the advancement of the cause of public education. All this, together with the reduction in the price of subscription, and the many important improvements planned for the current volume, some of which have already been announced, ought to result in a still larger increase in the circulation."

—WITH regard to the proper attitude to be assumed by the teacher in the matter of recitation, an exchange remarks that it should be one of enthusiastic interest in the subject matter of the lesson. This means that he has thoroughly prepared the lesson. It means further that he shall impress the pupils as being one who with them is interested in getting hold of every point in the lesson and in viewing it from every standpoint. Unconsciously they reflect his enthusiasm, their interest responds to his and—mark the secret of the power to acquire useful knowledge—the intensity of the interest measures the depth and the permanence and the *usefulness* of the impression.

Current Events.

The Annual Convention of the Protestant Teachers' Association of the Province of Quebec was held in Montreal on the 13th, 14th and 15th of October. The attendance of teachers at the various sessions was good, and the papers and discussions thereupon were interesting and profitable. As an extended abstract of the minutes will, as is customary, be distributed among our readers before very long, it will not be necessary to give a full report of the proceedings in the RECORD, especially as the last number appeared too early to contain such a report, and it is now a little late to go back so far, even to an event of as much importance as the Teachers' Convention. Dr. Robins is the President of the Association this year.

—A VERY pleasing event and one of unusual interest took place recently at the McGill Normal School, Montreal. It was the occasion of the celebration by his fellow-teachers of the Principal's Jubilee, Dr. Robins having just

completed fifty years of faithful service in the teaching profession. A beautifully engrossed address was presented to him by the members of the Normal and Model School staffs, reference being made in it to Dr. Robins' long association with the Normal School. With the address were presented a handsome piece of silver plate and a gold mounted walking cane. Dr. Robins replied to this mark of esteem with a few kindly remarks, in the course of which he gave some interesting reminiscences of his experiences as a teacher.

—A MEETING of teachers has been called for Saturday morning, the third of December, at ten o'clock, at the Town Hall, Farnham, for the purpose of forming a Teachers' Association of the district of Bedford. The meeting has been called by Mr. Mabon, Principal of the Waterloo Academy.

—IN an address which he delivered at Toronto lately, Dr. Parkin, Principal of Upper Canada College, said among other things:—"In order to establish great schools the services of the best men are needed, and they must be well paid. Teaching must offer them a career, but the school service of the country at the present time does not do this. The schools of Ontario, despite their merits, offer no opportunity for the creation of a great teaching profession."

—A MEETING of the Faculties of Art and Applied Science of McGill University was held recently to discuss the advisability of changing the Degree of B.A. Sc., or Bachelor of Applied Science, heretofore conferred by McGill, to B. Sc., or Bachelor of Science, which is the form of degree given by almost all universities which have a Department of Science. The proposed change, which, it seems, has been under the consideration of the teaching staff of the Faculty of Applied Science for considerable time, would, if carried out, be hailed with delight, both by the students, who anticipate obtaining the degree in the near future, and by those who have already graduated in Science. Among these latter there has already been some dissatisfaction expressed regarding the existing degree of B.A. Sc. The only other university probably, which confers a degree of B.A. Sc., is Cornell, and here, it is understood to mean Bachelor of Agricultural Science. It was decided that a general meeting should be called as soon as possible, to go more deeply into the matter before laying it before the Board of Governors.

—ON the occasion of the recent official visit of the Inspector of Superior Schools to Huntingdon Academy, all the class-rooms were tastefully decorated, in anticipation of the event. Since the Inspector's last visit, the Commissioners have made important sanitary improvements, and he took occasion to praise most highly the present equipments, stating that for many years Huntingdon Academy had ranked among the first in education, and now in these matters she also took the first position. The examinations were considered most satisfactory. In the evening, a public meeting in the interest of education was held in the Watson Hall, which was largely attended, showing the interest the villagers take in matters pertaining to education. Addresses were delivered by Dr. Harper, Mr. W. S. MacLaren, member of the Protestant Committee of Public Instruction, Rev. J. B. Muir, D.D., and others. The meeting was enlivened by some good music, and at the close all joined in singing the National Anthem.

—AT a special meeting of the Convocation of Bishop's College, Lennoxville, held recently, the Degree of D.C.L. was conferred upon Sir John George Bourinot. At the conclusion of the ceremony, Sir John, after speaking in appreciative terms of the founding and subsequent history of Bishop's College, gave an excellent address on the subject of Political Science, and the importance of a knowledge of its principles, to young men especially. He showed the necessity for a study of such a science in a new country like Canada. Our whole fabric of Government from the Imperial to the Dominion system, from provincial to municipal institutions, demands so large and complicated a machinery that it takes a man of mature years a long while to understand it thoroughly. This important class of studies should be taught in every university or college certainly, and in every collegiate institute and high school wherever practicable. At no time in our history was it more necessary for the men and women of Canada to have "a clear understanding of the principles of our government."

—A MOST practical question in connection with the conducting of city schools is whether there should be two sessions or only one during the day. Both systems have their advocates, making it difficult for the authorities to please all. The news comes from Baltimore to the *School*

Journal, that complaints are being made by parents in different sections of that city, because the public schools have but one session. The present plan was arranged last spring, the session lasting in the grammar schools from 9 a.m. to 2 p.m., and in the primary schools to 1 p.m. Two recesses are given; the first fifteen minutes in length, between 10 and 11 o'clock; the second, of thirty minutes, between 12 and 1. Parents claim that the system is ruinous to the digestion of the children, who have been accustomed to hot dinners at noon; also that it is inconvenient to mothers to keep the dinner waiting until pupils return from school.

—AN Irish Educational paper, the *National Teacher*, says in a recent number that the following advertisement appeared in the *Stamford Mercury* (Eng.): "Schoolmistress—Wanted immediately a married Church of England Certified Schoolmistress, without family, for small school-house, whose husband must be an experienced farm laborer. John Sowerby, Cuxwold, Caistor." The *Teacher* remarks: "As Irish certificates are now recognized in England, Ireland's schoolmistresses are not debarred from becoming candidates. Those who are fully qualified according to terms of advertisement should hurry up."

—Truancy seems to give a good deal of trouble and annoyance to the educational authorities of New York. There are twenty truant officers in Manhattan-Bronx, and they are kept busy gathering in the boys who prefer the street to the school-room. The officer who has control of one district has arrested over a hundred boys in the last two weeks. His scheme of procedure is as follows: He captures a boy, writes on a postal his name, age, address, and school precinct, and also enters the same in his book. Then he tells the boy to take the postal card to the principal of the school in his district. If the boy goes to the school, the postal is mailed to the truant officer of the principal. If the postal is not received within three days, the officer visits the parents, and the law takes its course.

Practical Hints and Examination Papers.

I.

THE TEN IN ELEMENTARY ARITHMETIC.

Nature has given to man the decimal system of number on his fingers. Since counting began on the ten fingers,

ten is the basis of our system of numeration. Numbers are told off in groups of ten.

10 units	make a ten.
10 tens	" " hundred.
10 hundreds	" " thousand, etc.

The little child, when by use of natural objects he is taught the numbers from 1 to 10, is not studying Arithmetic. Arithmetic proper begins only with the grouping of numbers into tens. This grouping ought to be a prominent feature in all elementary teaching. Not only is it the key to numeration and notation, but it is also the method by which we acquire most readily speed and accuracy in computing at sight, in adding, subtracting, multiplying, dividing. Let us look at this a little in detail.

(1) THE TEN IN NUMERATION.

The numbers from 10 to 20 are formed by adding the first nine numbers to ten. Their names from 13 to 19 indicate this, *e. g.* fourteen means four and ten; fifteen, five and ten, etc.

As we count on from 20 to 100 every ten is to be regarded as a group or bundle (ten dots joined together, ten sticks bound together) and the number of such groups or bundles should be called so many tens, the surplus left over being called ones or units. A pupil should be able to give clearly and exactly an analysis by tens of numbers written or spoken. On his ability to do this will depend his power to compute, *e. g.* in 53 he must see at once 5 tens and an added 3. Concerning such a number he should be able to tell that it consists of 5 tens and 3 units, and that it requires 7 units more to make it 6 tens.

(2) THE TEN IN NOTATION.

With the ten we reach the first number that must be considered another kind of one. We write the figure 1 as before, but to show that this 1 contains ten times as much as the simple 1, we move it one place to the left and say this 1 is a ten. The vacant place of the simple one will be indicated by a cipher, so: 10. Accordingly in writing the numbers from 10 to 20 the ten is expressed by the figure 1 in the second place, and the figure expressing the one is put in the first place. Thus from the beginning we teach device of place.

As we proceed with the notation of numbers from 100 to 1,000 and up, the place-value of each figure must be taught, *i. e.* that the value of a figure in the first place is so many units, in the second place so many tens, in the third place so many hundreds, etc. Pupils should be able to write numbers from dictation, their component parts being given in order and out of order, *e. g.* 1 unit, 5 tens, 6 hundreds, (651); and to name at sight the value of each digit according to the place it occupies, *e. g.* that 2 in the fourth place stands for two thousands.

(3) THE TEN IN COMPUTING.

Adding, subtracting, multiplying by means of tens is the best method of acquiring speed and accuracy in computing at sight.

$50 + 40 = 90$ (5 tens and 4 tens are 9 tens). This should be as easy to a child properly taught as $5 + 4 = 9$.

$54 + 42 = 96$ (adding first the tens and then the units he sees 9 tens and 6 units or 96). Wording 9 tens, 6 units, 96.

$36 + 48 = 84$ (7 tens and 14 units are 8 tens and 4 units, or 84).

I have repeatedly asked children not trained to add by tens, to explain how they performed this addition, and they have generally answered that they make a mental picture of 36 and 48 placed one below the other, and add in two lines, first the units then the tens. Such pupils are slow and not reliable in calculating.

$30 \times 4 = 120$ (4 times 3 tens are 12 tens or 120).

$37 \times 4 = 148$ (12 tens and 28 units are 14 tens and 8 units or 148).

4. As we proceed to other parts we shall find abundant opportunity of using our knowledge of the ten.

Let us take two instances:—

(a) *Canadian Money.*

The Canadian system of coinage is the decimal system, because each digit increases or decreases on a scale of ten, according to the place it occupies. \$22.22 (Twenty-two dollars and twenty-two cents); dollars are separated from cents in writing by a dot called the decimal point. Figures to the left of the decimal point denote whole dollars; the first single dollars (units); the second, tens of dollars (ten dollar bills.) Figures to the right of the decimal point de-

note parts of a dollar; the first tenths of a dollars (ten cent pieces); the second, hundredths of a dollar (or one cent pieces.) Each figure is ten times greater than the next figure on its right, and ten times less than the next figure on its left.

(b) *Decimal Fractions.*

By an extension of the decimal system of notation, we obtain a species of fractions called decimal fractions.

5555 555

If we mark the place of units by a point put after it and write other figures after the point, we can denote by the first of these figures one tenth of the value it would have in the units' place; by the second, one-hundredth part, and so on. Therefore, the notation of decimal fractions is merely an extension of the notation of integers. You will observe:—

(a) Integers are separated from fractions by the decimal point, figures to the left being integers; those to the right, decimal fractions.

(b) Orders of decimal fractions decrease by the scale of ten, just as orders of integers increase by scale of ten.

(c) Counting from units, orders equally distant on the right and left have corresponding names. Thus tenths correspond to tens, hundredths to hundreds, etc.

This treatment of the nature of decimal fractions makes certain principles self-evident, *e.g.*, that a change in the position of the decimal point affects the value of the decimal, for:—

(a) Moving the decimal point one place to the right multiplies the number by 10, because each figure is raised to the next higher order.

(b) Moving the decimal point one place to the left divides the number by ten, because each figure is reduced to the next lower order.

II.

THE IMPORTANCE OF GRADATION IN TEACHING ELEMENTARY ARITHMETIC.

It may be said of arithmetic, in a sense in which it can be said of no other subject of the Elementary School, that its proper study depends upon a building up step by step. Each advance step rests upon and grows out of the steps

that have gone before. All advanced arithmetic is based upon the four fundamental rules, and the fundamental rules are themselves based upon addition.

Addition is the process by which we find the sum of two or more numbers. A special case of addition in which the numbers added are all equal is called multiplication. Subtraction is the reverse of addition. It is the process by which we find the remaining part when the sum and one part are given. A special case of subtraction in which the same number is successively subtracted with the object of ascertaining how many times it is contained in another is called division. In teaching the fundamental rules, teachers should recognise and observe two things:—1st. The relation that these rules bear to each other, and 2nd. Certain successive stages of difficulty which naturally occur. In addition, for instance, examples containing ones and twos only, in which there is no carrying, should be given first. Threes, fours, fives, etc., with carrying, should be gradually and successively introduced. Those teachers will be most successful who go slowly, especially at first, who patiently grade their examples down to the level of the child's ability, who repeat many times and review daily.

Subtraction, as I have said, is the logical complement of addition, and in my opinion ought to be treated as such. As this method of teaching subtraction is not the one usually followed in this Province, I shall explain it a little more fully, using examples. Subtraction depends upon the recollection of what has been learned in addition. As soon as a child sees that $4+3$ are 7, he is ready to see that $7-3$ are 4, and $7-4$ are 3. The difference between 7 and 4 is inferred from the knowledge that 4 requires 3 to make 7, not by counting 4 off 7.

The question in subtraction may be worded in various ways, as:—

What must be added to 4 to make 7?

What is left when 4 is taken from 7?

By how much is 7 greater than 4?

By how much is 4 less than 7?

What is the difference between 7 and 4?

But the child's way of looking at the question, his method of working it, remains the same, *i. e.* to raise the less number up to the greater. Let us see by aid of a few examples how this method works out in practice:—

$$\begin{array}{r} 432 \\ 546 \\ \hline 978 \\ \hline \end{array}$$

Suppose this example in addition has just been worked, erase one of the addends, say 546, and then ask the class to discover what it was. Lead them by judicious questioning to reproduce the missing addend; *e. g.* the sum is 8, and one of the addends is 2, therefore the other must be 6. The sum is 7, and one of the addends is 3, therefore the other must be four, and so on. When the missing addend is thus reproduced, prove its correctness by addition. The other addend may next be erased and reproduced in the same way.

The next step will be to rearrange the numbers after the manner usual in subtraction, and again find the missing addend, so:—

$$\begin{array}{r} 978 \\ 546 \\ \hline \end{array} \qquad \begin{array}{r} 978 \\ 432 \\ \hline \end{array}$$

This method has four advantages to recommend it:—

(1) Pupils trained in it work more rapidly and accurately,
 (2) It shows clearly the relation between addition and subtraction.

(3) We easily derive from it a rule of working, *viz.*, raise the lower line so as to equal the top line.

(4) We easily derive the proof of subtraction, *viz.*, the remainder and lower line (the two addends) will give the top line (the sum).

Let us take a more difficult example:—

$$\begin{array}{r} 428054 \\ 70689 \\ \hline 357365 \\ \hline \end{array}$$

We cannot raise 9 to 4, what then shall be our method? Raise 9 to 10 (the unit of the next higher order), and add 4 to the result. This, for reasons that I have not now time to explain, is preferable to raising 9 to 14. The borrowing of subtraction by this method becomes the carrying of addition, and so instead of taking one from the next figure in

the top line, we add one to the next figure of the lower line, and so continue.

Let us see how the method works in fractions. In subtraction of fractions it is taken for granted that the class has received some instruction in the nature of fractions, so that they can express the unit as a fraction having any given denominator :—

$$1 = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} = \frac{6}{6}, \text{ etc.}$$

The first step in subtraction will then take this form :—

$$1 - \frac{5}{7} = \frac{2}{7}.$$

The next step will be, $8 - 2\frac{5}{7}$.

$$\begin{array}{r} 8 \\ 2\frac{5}{7} \\ \hline 5\frac{2}{7} \end{array}$$

Placing the fractions one under the other we ask what must be added to $2\frac{5}{7}$ to make 8. $\frac{5}{7}$ requires $\frac{2}{7}$ to make 1 and 3 requires 5 to make 8.

From this by a single step we may pass to the most difficult case.

$$8\frac{2}{3} = 8\frac{1\frac{4}{4}}{3}$$

$$2\frac{5}{7} = 2\frac{1\frac{5}{4}}{7}$$

$$\hline 5\frac{2\frac{9}{4}}{7}$$

Raise $\frac{1\frac{5}{4}}{7}$ to 1, giving $\frac{6}{7}$, and to the result add $\frac{1\frac{4}{4}}{3}$, making $\frac{2\frac{9}{4}}{7}$.

Carry 1 to 2, making 3.

Take finally an example in denominate numbers :—

$$\begin{array}{r} 20 \quad 12 \quad 4 \\ \text{£} \quad \text{s.} \quad \text{d.} \\ 10 \quad 15 \quad 5\frac{1}{4} \\ 6 \quad 18 \quad 9\frac{3}{4} \\ \hline 3 \quad 16 \quad 7\frac{1}{2} \end{array}$$

Farthings : 3 require 1 to make 4 ; 1 and 1 are 2.

Pence : 10 require 2 to make 12 ; 2 and 5 are 7, etc.

Whether we deal with simple numbers, with fractions, or with denominate numbers, our method is the same, viz., if the quantity in the lower line is greater than that in the top line, that quantity is raised to equal a unit of the next higher order, and the number required thus to raise it is added to the number in the top line.

SOME PRACTICAL "DONT'S"

The following enumeration of things which should be avoided by teachers was prepared by Superintendent A. B. Cole, of Plainville, Mass., and appeared in the *School Journal*,

an excellent educational magazine published in New York, by Messrs. E. T. Kellogg & Company. Mr. Cole says:—

Don't apply for a position without enclosing a stamp for reply.

Don't send a dozen long testimonials from your neighbors and friends. One pointed recommendation from your superintendent, or from some one who is acquainted with your training and experience is worth all the papers you can obtain from people who only know you in a social way. Besides, a busy superintendent has not the time to struggle through a long list of testimonials which every vacancy is sure to bring him.

Don't fail to make personal application whenever possible. Few teachers are hired, except in emergencies, without an interview.

Don't talk too much when you apply. Admit your weak points. No superintendent expects a perfect teacher. He is usually looking for one who is ambitious and anxious to grow under his instructions.

Don't open your school the first morning with a set of rules and regulations. Have a rule when necessity demands it and not before.

Don't complain in the presence of your scholars about poor accommodations or lack of supplies.

Don't whine because tardy marks are on the increase. Look into the matter in a business-like way and see if you cannot discover a remedy. It may be that the village clock by which the clocks at home are regulated does not quite agree with railroad time by which your watch or the school bell is regulated.

Don't have your desk and book closet littered as if a whirlwind had appeared in your room. Be as neat and tidy as you desire your school to be. Set the example and the children will follow it.

Don't sit at your desk all the time. Move about the aisles. If you have ungraded work, keep your eyes on the little ones and see that they are kept profitably busy. In the higher grades also you should be watchful. When you think Johnny is so attentive to his geography lesson he may be swallowing a generous sample of yellow literature.

Don't scold the whole school when one child does wrong. If you cannot detect the offender, say nothing, but watch your opportunity.

Don't allow whispering, but don't *forbid* it. Talk to the children on the subject and depend upon their honor. To *forbid* is to arouse antagonism.

Don't use corporal punishment except as a last resort, and then, not until you have carefully thought the matter over. If there is another teacher in the building, consult her. Always punish in the presence of a responsible witness. Do not inflict corporal punishment before your pupils; but they should know that it is being administered, however, as a warning to themselves.

Don't nag. When things go wrong it may be your fault. If you are attending balls, parties, and other midnight socials, the trouble is not with the school, but with yourself. If you happen to have dyspepsia, don't make life a burden to the children under your charge. Remember that you are in school for their benefit and that you are their servant.

Don't send notes or complaints to the parents without a good reason. You are hired to govern the children during the school hours and the parents have enough "troubles of their own," without being annoyed by every petty disturbance arising in school.

WHEN VISITORS ARE IN.

Don't change your daily programme when visitors happen in unexpectedly. If you do, the fact will quickly become known and you will be judged,—never misjudged.

Don't make excuses to visitors either for yourself or your school. Outsiders rarely see the point of "an off-day today."

Don't call on all your bright pupils to recite and ignore the dull ones when visitors are in. The people of a locality usually know the bright children and the dull ones as well as the teacher, and quickly understand her tactics. Be just to yourself and your school, and parents will overlook natural defects in the children.

MOVEMENT AND NOISE.

Don't allow small children, when reciting, to dance about with enthusiasm or to wave their hands in your face. To control self should be one of the first lessons for childhood.

Don't caution your children every time they leave their seats not to make a noise, as if you feared a stampede.

Train the child at the beginning to be quiet and orderly, and it will soon become a part of his nature.

RIVALRY.

Don't always call on one of your brightest boys or girls to finish a recitation after a dull pupil has made a partial or total failure. If you make a practice of this method you will be filling one with conceit and the other with shame and discouragement. From each should be expected only according to his talents. After a dull pupil recites call on one of average ability, and then go up the scale and possibly finish the topic with a talk from a very bright pupil. Do not unite extremes in ability.

Don't encourage rivalry to the point of jealousy.

CORRECTING MISTAKES.

Don't stop a pupil who is reading to correct an insignificant mistake or omission, such as mispronouncing a word, not halting long enough at a mark of punctuation, or for keeping the voice up or letting it fall. Correct such faults incidentally at the close of the reading. The pupil should be judged by the sense he has brought out and not by trivial blunders. Look always for an expression of sense rather than of sound.

Don't allow the other members of a class to raise their hands at mistakes made by one reading.

Such acts not only disconcert the reader, but take the attention of the class from the sense of the selection to the mistake which has been made. By such methods no one is a gainer, but all are losers. Hands should be raised at the close of the reading, and mistakes noted.

Don't forget, with small children especially, to bring out the fact that the illustrations and the reading lesson are closely connected, and that the latter is in part or in whole, a description of the former. The pictures should be carefully studied until a clear mental image has been developed.

Don't allow lead pencils to be put in the mouth. It is a vile practice as well as a dangerous one.

Don't allow interruptions during a recitation. The time allotted a given class belongs to it exclusively. No good teacher can do two things at a time. Allow a few minutes at the close of every recitation for questions and explanations. Set the example for your school by giving close attention to the work in hand.

Don't allow a pupil to talk back or discuss with you the propriety of doing or not doing a thing which you have ordered done.

Don't imitate methods. Learn all you can, from everybody you can, and then seek to apply it in your own individual manner. There is no rule and compass plan which can be exactly followed in teaching. There are no two schools which need exactly the same treatment.

Don't worry. If you find yourself doing so take up some new line of work for interest and relief. The troubles of many a teacher are the fictions of her own wearied brain.

Don't attempt to teach without taking at least *two* standard educational journals. There is nothing so inspiring to a hard-worked teacher as to read what others are doing, especially when it can be read in the person's own words.

Don't let a day pass without reading from some good pedagogical book. The teacher who fails to read is depreciating in value and will be professionally dead in a short time at best.

Don't attempt to teach a class until you have thoroughly prepared yourself in advance. Every point which you intend to bring out should be clearly in your mind at the opening of the recitation, and the whole period should be devoted to the particular points you had in view. Not to prepare in advance is to *attempt* to teach haphazard. Be broader and clearer than any paragraph in your text-book, and you are bound to succeed.

DATES IN HISTORY AND LOCATIONS IN GEOGRAPHY.— Only a few dates in history need to be learned exactly, but the relative place in history of many more events should be fixed with reference to these few dates. If the story is remembered, one date may be enough to fix the time of all the events as nearly as is needed. What can be remembered only by some artificial mnemonic device is not worth remembering.

A list of presidents or reigning monarchs is often spoken of as being unimportant. This is not so, wherever the people have regarded them as important. Much of the history of England centers about the ruler or the change in dynasty. One who is studying English history should drill himself thoroughly on the list of sovereigns, as he comes to them in his reading.

In geography, the method is somewhat similar in regard to the locations of the places. The latitude and longitude of a comparatively few places should be learned well, and other places located approximately with reference to these. The following exercise is valuable and is enjoyed by the pupils: Start on the equator directly south of us and follow it around and back to the starting-point, in each direction. Do the same on the other chief circles of latitude, and on the parallel on which we are located. Follow the same exercise with the meridian of Greenwich; continuing on around over the 180th degree; then for each quarter or 90 degrees; then for each eighth or 45 degrees. Also follow the meridian of your own location around the earth. Find our antipodes. In connection with these exercises longitude and time should be studied.—*The Intelligence*.

TEACHING AND HEALTH.—A writer in the *Teachers' Institute* says: There is an idea that teaching is an unhealthy occupation. But statistics prove it to be next to preaching, which is the healthiest of all occupations. If we think a little we shall recall many instances of elderly teachers; that so many leave teaching after a short period makes it difficult to prove that it is either healthy or unhealthy.

In the first place, the hours are not long; from 9 to 3, or in the country to 4, makes the teaching day $5\frac{1}{2}$ or 6 hours in length. The teacher is, supposedly, intelligent and thus able not only to avoid many of the causes of ill-health, but to practise those hygienic rules that tend to good health. As in the case of the preacher, so in the case of the teacher, the inculcation of morality reacts on the physical nature; to live long in the land comes from keeping the Ten Commandments.

The ventilation of the school-room should be made a matter of persistent thought just as much as attending to the reading and spelling. The tops of the windows on the lee side should be lowered and those raised on the windward side. Just how much these should be raised or lowered will be learned by experience; in cold weather, draughts of air on the pupils will give them colds, and this must be avoided. At an institute in New York State, the principal of a crowded city school, in an unfavorable quarter, said:—"I followed this plan of ventilation and I had no colds and I never had better health."

Some teachers make a practice of opening the doors and

windows at recess and intermission, and giving the room a thorough airing; it is a plan that should be followed everywhere. An illustration was given in *The Institute* some years ago that attracted the attention of the institute lecturers; cold air was admitted under the stove; an opening in the floor drew off the spent air and conveyed it to a flue beside the chimney; the introduction of cold air under the stove is possible in all school-houses.

The teacher's food is a matter of great importance; a simple diet is absolutely necessary. Most teachers take their lunches to the school; sometimes this is mainly a piece of cake. An instance was given at an institute in Newburg that is worth remembering. A teacher was very much run down and felt she must leave teaching to recuperate. The physician proposed she should follow the plan of having a hot cup or two of weak tea at noon. She took a small oil stove to the school-house and followed his advice, drinking cocoa and tea, and became entirely well. Undoubtedly cold food is not readily digested by persons in a weak state of health.

There are many young women who after a day of considerable anxiety, think it best to take a walk when the school is ended. At the same institute a physician remarked upon this, and said exercise should not be taken unless there was a feeling of physical strength. The proper thing to do was lying as flat as possible for an hour, in order to rest the spine. The position of the teacher during school hours draws powerfully and steadily on the spine, and this needs to be rested. It is believed that a teacher may enjoy good health if she studies the situation.

Official Department.

NOTICES FROM THE OFFICIAL GAZETTE.

His Honor the Lieutenant-Governor has been pleased, on the 1st of September (1898), to detach from the municipality of "Saint-Hyacinthe," county of Saint-Hyacinthe, the following cadastral lots, to wit: 946 to 983; lots 1032 to 1080, and the streets which divide these lots; lots 1080A, 1084B, 1086; lots 1138 to 1178; lots 1180 to 1203A; lots 1205 to 1208; lot 1208A; lots 1209 to 1213; lot 1213A; lots 1214 to 1220; lots 1272 to 1284; lots 1286 to 1296, and part of lot 1406, and annex them for school purposes to the municipality of "Saint-Thomas d'Aquin," in the same county.

To erect into a school municipality by the name of "Rivière au Tonnerre," in the county of Saguenay, the following territory, to wit: The point of the head of the River Tonnerre; bounded on the north by the Grande Plaine, on the east by the Grande Pointe, on the south by the Gulf of Saint Lawrence, and on the west by the creek of James Ayers.

To erect into a school municipality by the name of "Sheldrake," county of Saguenay, the following territory, to wit: The point of the head of the River à Couture; bounded on the north by the Grande Plaine, on the east by the point, on the south by the Gulf of Saint Lawrence, and on the west by the Anse à la Tonne.

To erect into a school municipality by the name of "Rivière aux Graines," county of Saguenay, the following territory, to wit: The point of the Anse à Bébée; bounded on the north by the Grande Plaine, on the east by the river itself, on the south by the Gulf of Saint Lawrence, and on the west by the point.

The foregoing changes will take effect on the 1st of July, 1899.

To appoint the Very Reverend R. W. Norman, D.D., D.C.L., of the city of Quebec, a member of the Protestant Board of School Commissioners for the city of Quebec, his term of office having expired.

To make the following appointments, to wit:

School Commissioners.

Argenteuil—Arundel.—Mr. Samuel Cooke, continued in office; his term of office having expired.

N.-D. de Montfort.—Mr. Joseph Plouffe, to replace Mr. Léon Brais; Mr. Aimé Desnoyers, to replace Mr. N. Huberdeau, and Mr. Anthyme Aubry, to replace the Reverend Mr. Vallais.

Champlain—Sainte-Anne de la Pérade.—Mr. John Dick, to replace the Reverend Mr. Bochet.

Gaspé—Gaspé Bay South.—Mr. Robert Stanley, to replace Mr. Philip Stanley.

Huntingdon—Godmanchester.—Mr. Robert D. Douglass, continued in office; his term of office having expired.

Megantic—East Leeds.—Mr. Thomas McDonald, to replace Mr. Francis Rousseau, absent.

Yamaska—N.-D. de Pierreville.—Mr. Bruno Milette, to replace Mr. Louis Boucher, and Mr. Oscar Roberge, to replace the Reverend Mr. Exilia Boisvert.

School Trustees.

Hochelaga—Longue Pointe.—Mr. W. B. Dickson, continued in office; his term having expired.

Soulanges—Saint-Zotique.—Mr. Donald McPherson, junior, to replace Mr. Johnson Bailey.

16th September.—To make the following appointments, to wit:

School Commissioners.

County of Matane—Saint Moïse.—Mr. George Chamberland, to replace Mr. Guillaume Ross, deceased.

County of Napierville—Saint Michel.—Messrs. Hormidas Mongeau and Armand Pie, to replace Messrs. Jean-Baptiste Dulude and Paul Gamache, whose terms of office have expired.

County of Jacques Cartier—Côte Saint-Laurent No. 2.—Mr. Jules Joly, to replace Mr. Joseph Ladernier, whose term of office has expired.

County of Wolfe—Saint-Fortunat de Wolfestown.—Mr. Louis Bédard, junior, to replace the Reverend M. E. O. Plante, resigned.

17th September.—To appoint Mr. Philippe Demers, advocate, of the city of Montreal, member of the Board of the Roman Catholic School Commissioners of the city of Montreal, to replace Mr. Justice Charles de Lorimier, his term of office having expired.

To appoint the Reverend Mr. F. X. Faguy, and Mr. Eugène Blais, accountant, of the city of Quebec, members of the Board of the Roman Catholic School Commissioners of the city of Quebec, to replace the said Reverend Mr. F. X. Faguy, and Mr. Louis Dufresne, whose terms of office have expired.

26th September.—To make the following appointments, to wit:

School Commissioners.

County of Bonaventure—Paspebiac.—Mr. Pierre Aspirot, continued in office, his term of office having expired.

School Trustees.

Municipality of Cox.—Mr. Napoléon Joseph, to replace Mr. Laurent Holmes, whose term of office has expired.

28th September.—To appoint Messrs. Hubert Vachon and Joseph Loubié, school commissioners for the munici-

pality of Saint-Abdon, county of Dorchester, the former to replace Mr. Napoléon Fauché, and the latter to replace Mr. Nazaire Pouliot.

30th September.—To make the following appointments, to wit :

School Trustees.

County of Vaudreuil—Newton.—Mr. John H. McCuaig, to replace Mr. Malcolm McCuaig, whose term of office has expired.

Saint Lazare.—Mr. George A. Hodgson, to replace Mr. Isaac Simpson, whose term of office has expired.

7th October.—To erect into a school municipality the united townships of "Wabasseé, Dudley and Bouthiller," in the county of Ottawa, under the name of "Notre-Dame du Pont Main."

20th October.—To erect into a distinct school municipality under the name of "Township Campbell," the four first ranges of the said township Campbell, in the county of Ottawa.

The foregoing erections to take effect July 1st, 1899.

To make the following appointments, to wit :

County of Saguenay—Pointe-aux-Esquimaux.—Messrs. Zozime Cormier and Vital Tomphe, to replace Messrs. Firmin Cormier and J.-Bte. Petitpas.

To appoint Messrs. Michael Phelan, junior, and Robert Elliott, school commissioners for the municipality of Saint Colomban, county of Two Mountains, the former to replace Mr. Martin Dwyne, and the latter to replace Mr. Alphonse Lecuyer, retiring from office.

5th November.—To make the following appointments, to wit :

School Commissioners.

County of Missisquoi—Saint George de Clarenceville.—Mr. Albert McFee, to replace Mr. A. H. Derick, whose term of office has expired.

County of Nicolet—Saint Samuel.—The Reverend Pierre Cardin, to replace Mr. Benjamin Gagnon, whose term of office has expired.

County of Soulanges—Village of Côteau Station.—Mr. Néciphore Latreille, to replace Mr. Augustin Aunais, resigned.

9th November.—To appoint the Reverend Jos. Alf. Pérusse and Mr. Cléophas Vallée, school commissioners for the municipality of Fox Cape, county of Gaspé, to replace the Reverend Antoine Soucy and Mr. François Vallée, who have left the municipality.

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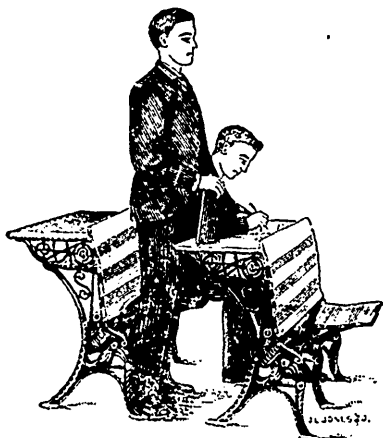
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