

# The Educational Review.

Devoted to Advanced Methods of Education and General Culture.

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## EDITORIAL NOTES.

WE take this opportunity to wish our readers one and all A HAPPY CHRISTMAS and A PROSPEROUS NEW YEAR.

OWING to the demands made on our space in this number we are obliged to hold over editorial matter and several valuable contributed articles.

THE commendations that we frequently receive from leading educationists on the contents and appearance of the REVIEW, and our rapidly increasing subscription list, are very encouraging.

THE special committees appointed by the educational conventions of New Brunswick, Nova Scotia and Prince Edward Island recommend that an Interprovincial Educational Convention be held during the third week in July, 1888, at St. John, and that the Executive Committee of each Provincial Convention be asked to approve of this and appoint sub-committees to arrange the details.

THE National Association of teachers of the United States meets next July, in San Francisco. Arrangements are being made for cheap excursions to the great city of the West. Perhaps the managers of the Canadian Pacific Railway would be induced to give a rate across their line, that would tempt some of our Canadian teachers to take a trip through our great Northwest, and at the same time attend the Convention. Who will move in the matter?

WHEN we want scientific apparatus for our schools we generally order from Britain or the United States, because we know what we want is to be had there. Yet we have to pay duty on the most of such apparatus, because the Customs Department has been informed that such goods are made in Canada. If that is a fact why will not these manufacturers properly advertise their wares? Getting equal value for our money, we would prefer patronizing home industry. There should be a considerable demand for chemical and physical apparatus in our schools, judging from the modernized curricula which have been authorized. When teachers enquire of us where a small laboratory, for instance, can most cheaply get its stock, we are forced to point them abroad at present. Where can we find these Custom House manufacturers? Canada is great. Is it in Atlantic, Mediterranean, Pacific or Arctic Canada? There should be a fortune for at least one Canadian in this line of usefulness.

"Several years ago two boys were seen tormenting a cat. Having twisted a cord around its neck, they were in great delight, exclaiming, 'See how its eyes stick out!' Was it inherited disease? Not at all, but example and nothing else. Their father was a zoologist and had been seen by them frequently putting live snakes in alcohol, and pinning struggling bugs to boxes."—*The School Journal*, New York, Oct. 8th, 1887.

WE give the above our unqualified contradiction. The boys were brought up under the care of a goody-woody-simpleton of an old woman, who used to lecture them on cruelty to animals, but was often seen killing the beautiful green larvæ of the *Pieris* on her cabbage plants by the terrible death of compression between the earth and the sole of her slipper, at the

same time profanely ejaculating, "those horrible grubs." The professor chloroformed his insects, and even after their death did not mutilate them. The very same old woman instructed one of these urchins to break the back of a snake which was only sunning itself for a few moments on her tennis lawn, by percussion with a great rough rod; and never as much as applied a patch of sticking plaster or a drop of pain-killer to its quivering mangled body. The professor wouldn't allow even the skin of his graceful captive to be scratched, and instead of paining it, gave it a copious draught of the best spirits, so that its last moment was the most exhilarating in its life, and then placed it in a respectably labeled glass jar on a museum shelf.

If the boys were brought up under the eye of the zoologist, they would have long before been directed in a more sensible manner, than to allow them to satisfy the promptings of a morbid or misdirected curiosity as the occasion might suggest. There is much inanity, if not gentle insanity, exhibited by certain people in these matters. With so gushing a philotherosity as to shed tears over the miseries of a neglected broomstick, they have sometimes signalized their life work by tormenting the lives out of their own kind. Philotherosity is the word—a morbose affection for wild beasts above all other things in the world.

#### TEXT-BOOK OF VOLAPUK.

The following letter from the American member of the Academy of Volapuk, formed at the late Congress at Munich, Europe, has been received by Principal MacKay, who feels inclined to endorse it from experience.

CHARLES E. SPRAGUE, 1271 BROADWAY,  
New York, N. Y., Nov. 18th, 1887.

PRINCIPAL A. H. MACKAY,  
Pictou Academy:

Dear Sir:

I am very sorry that the class in Volapuk took up so very defective a book as Seret's for the study, because I am afraid it will have disgusted them with the whole thing. Mr. Seret, neither understanding German, English nor Volapuk, has made a translation of a Volapuk grammar from German into English, with a result only paralleled by the Portuguese author of "English as She is Spoke!" Not to appear to condemn him on my own judgment alone, I quote what Prof. Kerckhoff, the leading French Volapukist, said in "Le Volapuk," August, 1886.

"W. A. Seret.—Grammar of Volapuk; the language of the world for all speakers of the English language.

Nous déclarons en toute franchise à l'auteur de cette petite grammaire qu'il a rendu un bien mauvais service à la cause du Volapük en Angleterre. Peu familiarisé avec les finesses de la langue anglaise, (l'auteur est Hollandais), ne connaissant

que superficiellement la langue allemande, et n'ayant probablement que des notions élémentaires de grammaire générale, M. Seret a commis une série de bévues, les unes plus étranges que les autres. . . .

Faut il s'étonner que le nombre des Volapukistes de Glasgow (résidence de l'auteur) ait diminué, depuis la publication de cette cacographie."

The dictionary has since been added and is as bad as the grammar. e. g.

Schleyer: jinön, scheinen, (videri).

Seret: jinön, to shine.

Very truly yours,

CHARLES E. SPRAGUE.

As a number of letters were received asking where the above named book referred to in our November issue could be procured, we hasten to insert this caution.

#### ON THE TEACHING OF GEOGRAPHY.

When we remark the interest that is taken in geographical subjects by the intelligent portion of the reading public on both sides of the Atlantic, the growth and increased number of geographical societies, and the energy and enterprise which distinguish their operations, we might reasonably infer that geography would occupy a conspicuous place in the school curriculum, have a fair proportion of time allotted to it, and engage the best efforts and enlightened attention of the teachers. No doubt there are many schools in which this subject is admirably taught, but there are many also in which the results do not realize our expectations; where the success is far from commensurate with the time which is expended upon the study, and the efforts put forth both by teachers and pupils. Nor is the cause of this failure hard to discover. It is simply because in so many cases no attempt is made to attract the attention or win the sympathy of the children for the subject. Too often the geography lesson is a mere appeal to the memory, a reiteration of dry, dead and uninteresting names, productive neither of instruction nor happiness in the school-room, and forgotten soon after leaving it.

And yet books of travel are read with avidity, and the advance of the explorer as he penetrates, with uncertain footsteps the untrodden regions of some dark continent, is followed with eagerness and enthusiasm. A human interest permeates the book, centered, indeed, in the traveller, but radiating in all directions to the mountains, rivers, lakes, strange peoples, products, religion, climate, in consequence of their connection with him. Hence, we venture to affirm that a reader, rising from the perusal of Livingstone's travels on the Zambesi, will have a clearer

conception of the geography of that river than most of our boys who have finished their school course have of the St. Lawrence or the Mississippi. If we can, therefore, interweave into our instruction in geography personal incident, historical fact, information respecting people and wild animals and vegetable products, and at the same time impress upon the class a clear conception of the shape and proportions of the country and its physical features, we will not only relieve the geography lesson of its dreariness, but render it what it ought to be—an intellectual and pleasurable exercise, which pupils will anticipate with delight, and for which they will prepare with readiness and zeal.

Doubtless our geographical education ought to begin at home, but it must not end there. "Canada first" is our motto here as it is in other matters, but we should not fail to remember that Canada constitutes only a small fraction of the earth's surface and contains a much smaller fraction of its population. The mother country, with its dependencies, and the neighboring republic, to which we are bound by so many ties; the empires, kingdoms and republics, on the other continents and upon this, all demand a share of our attention. And we have invariably found that the boy who possesses the most intimate knowledge of the geography of the world in general, is better versed, in all essential particulars, in that of his own country, than the boy who has never passed beyond its boundaries. The fact is, teachers find it hard to create enthusiasm in regard to what every one already imagines that he is sufficiently well acquainted with, and therefore prefer foreign to home subjects as an instrument in training the geographical tastes of their pupils. But in younger classes the subjects ought to be chiefly, though not entirely, Canadian, and the instruction imparted orally without text-book or preparation on the part of the pupil. Thus the danger would be avoided of creating a distaste for geography from the difficulty of pronouncing and remembering names when read as compared with the ease and impressiveness which accompany the living voice of the teacher. And even at this early stage we would recommend the practice of map-drawing, for not only would the children be usefully occupied, but the eye would be trained in form and comparison, and a fairly accurate and indelible picture of the country impressed upon the mind. Should this training be commenced early and prosecuted with vigor and skill throughout the period of school attendance, by home drawings from the map and school exercises from memory, the results would be highly satisfactory.

Map-drawing cannot be recommended too strongly

or advocated too strenuously. It is at the basis of all thorough teaching of geography. By its introduction when time is abundant and subjects are few, an ease in the use of pen and pencil is acquired which is of great service afterwards when more elaborate work is required. When from the senior pupils, when time is of great importance, a more detailed product is demanded, when the position, size and characteristics of one country are to be compared with those of another, and the physical features have to be delineated, products noted and towns marked down, the map can be sketched from memory with celerity and correctness, because frequent practice has produced a photograph on the mind which can be readily transferred to paper or slate; and the teacher, when he undertakes to give instruction in physical geography, and traces the course of ocean currents and winds, the distribution of man and other animals, and the configuration of the earth's surface, its mountains, plains, plateaus and volcanoes, will assuredly experience the comfort and satisfaction which are consequent upon a ready and accurate acquaintance with the details of geography already mastered; and we are confident that there are few successful teachers of history who have not availed themselves of its assistance in representing upon the blackboard the vicissitudes through which a country has passed, its losses and gains of territory, the campaigns of its generals and its decisive battles, and have failed to pronounce such a method inspiring and helpful.

In teaching geography great care must be taken to arrange the materials for each lesson. The sea coast, with its gulfs, bays and headlands, ought to be kept distant from the mountain and river systems, and these fixed in the memory before the chief towns are located. In noting the towns, by following the coastline, the teacher marks the seaport of the country, and while tracing the course of the rivers, the business marts of the interior. But as railways have in some degree taken the place of rivers as the great arteries of trade, and railway centres have expanded into towns, some of them of great size and importance, it is incumbent upon the teacher to include them in his scheme for the towns and to rank them as of equal importance with rivers. But here, as under all other heads in geography, the memory must not be burdened by an excess of names, many of them of little consequence. The teacher should aim at a more or less intimate acquaintance with the geography of a country, so that when towns, rivers or mountains are mentioned as the scene of incidents in the current history of the time, or are mentioned in the commercial or telegraphic column of the newspaper, they may be familiar, in name and locality. But when any country becomes of special interest—a scene of war, revolution or constitutional change, the opportunity may be laid

hold of to convey a more minute knowledge of the details of its geography. The incidents as they occur and are read in the newspaper will impress more thoroughly on the memory the names of the places. We are certain that Assouan, Dongola, Korti, Metemneh, Khartoom and the physical characteristics of the Valley of the Nile, are better known at the present time because of their association with the expedition for the relief of General Gordon than from any other circumstance; and who does not attribute much of his familiarity with the country embraced by the Hei Rud and the Moorghab or the Valley of the Irrawady, to the scenes which were recently enacted there and attracted the attention of the civilized world?

But we are aware of no means so certain to rivet the attention as the connection of places with the career of some well-known and distinguished traveller. We still remember the time when the meetings of the Royal Geographical Society were impatiently waited for, to hear of the fortunes of Livingstone, and to read his marvellous story, as he gradually lifted the veil which had so long wrapped in mystery the central regions of Africa. Then it was a positive pleasure to follow the track of his explorations, and still, we doubt not, the narrative retains its charm. A skilful teacher knows how to use such materials with advantage, and in his hands the geography lesson becomes one of the most interesting and effective of the course.

We then say that to teach geography successfully the pupil must not be doomed to the dreary task of committing to memory names which to him are only associated with pain and sorrow, but be taught the use of the map and to reproduce it himself, and to have associated with the materials of his text-book every relative fact, historical, biographical, commercial or physical, which may relieve the mere mention of names, and serve to impress them so firmly on the mind that it will be impossible to forget them. This need not entail extraordinary preparation on the part of the teacher. He ought, at any rate, to be able to sketch on the blackboard the map of the day, and to insert, as the lesson proceeds, the places named in the text-book. Possessed of the information, which as a well-informed man ought to be his, and with the assistance of a good cyclopaedia, he should not find it a difficult task to prepare himself to discharge with credit this part of his duty. But we would say, Let him not overtax the memory of his pupils. Let him aim at what is useful and possible at putting the pupil in the right way to acquire and retain facts for himself, and let him arouse his curiosity to read books of travel that he may become familiar with the people of other countries, their habits, government, religion, literature and products. And when the boy leaves school and enters upon the active duties of life, if the knowledge obtained at school has been supplemented by his own efforts, these acquisitions serve to broaden his range of observation and comparison, liberalize his views of men and things, lift him beyond the narrow boundaries which circumscribe his own community, make him feel that there is a world beyond, and that there are institutions and interests besides those that influence him and his compatriots.



REV. EDWARD THRING, M. A.

#### IN MEMORIAM.

The educational world has met with a great loss by the sudden death of Rev. Edward Thring, the distinguished head master of Uppingham school, England. He died on the 22nd of October, after an illness of but a few days.

From the English journals, all the most important of which contain lengthened notices of his remarkable character and career, we learn that he was seized with the illness which proved fatal while conducting the communion service in the school chapel on the morning of Sunday, Oct. 16th. The sermon which he was to have preached to his boys in the afternoon was found lying on his desk, ready for delivery—and has since been published—a last touching evidence of the intense earnestness with which he strove to influence the hearts and consciences, as well as the minds of his boys. Friends in this country had, within a very short time, received from him letters written with all his accustomed vigour and enthusiasm, in which he spoke of the profound interest with which he was watching educational movements in Canada and the United States. He was particularly gratified by the wide circulation which some of his ideas had received in the pages of the July number of the REVIEW. On his friends in America, as on those in England, the news of his death has fallen with painful suddenness, and a profound sense of loss. Wherever the English language is spoken, teachers who have read his books and addresses will feel that they have lost one who had a rare gift at once to lead and inspire. No English schoolmaster of the present day has made so powerful an impression on educational thought outside of England, as Mr. Thring. He did this in spite of the fact that his prose writings are not those of a finished literary artist, nor written in a specially popular style. But they have in them something of infinitely greater

worth—the magnetism of intense earnestness and the clear evidence of profound thought—bent on reaching truth. No genuine teacher ever came away from contact with his mind without feeling strengthened, and inspired with higher motives for his work. It is doubtful, on the other hand, if any one can fully enter into the spirit of much that Mr. Thring has written unless he is himself one who has actually wrestled earnestly and sincerely with the task of influencing young minds. To such as have done this he is a guide and prophet—to the machine teacher and examination crammer he probably will remain a mystic or enthusiast.

In his work as master of a large English public school, he furnished a singular example of a man, who, brought up in the very atmosphere of educational tradition and prejudice, had shaken these off, and made himself a pioneer in advanced teaching methods. Manual training in working wood and metal; the free use of music and art in education; variety of study and employment in school life—methods towards which we are only feeling our way in America—were all parts of his regular system. His idea that to secure honor for education among children, its everyday appliances and surroundings should be made in all possible ways excellent and beautiful, is one which ought to gather force until it has blotted out of existence the unsightly and cheerless school-rooms in which most of the education of England and America has been carried on for centuries.

We see it stated in more than one English paper, that in carrying out his educational reforms Mr. Thring not only spent his great energies, but also sacrificed the earnings of a laborious life. When the master of another great and fashionable English school resigned a few months ago to accept a position of easy affluence, it was stated that he carried away as the result of his headmastership, a fortune of fifty thousand pounds. Mr. Thring, on the other hand, after all that he did for education, has left to his family little more than the heritage of a great name. The English people have always been proud to heap rewards and honors upon their military heroes. Possibly they may yet learn the art of recognizing heroism and self-sacrifice in other and perhaps higher walks of life.

Doubtless the full story of Mr. Thring's life and work will yet be written. If so, it will be a record of single hearted devotion to educational truth which may well be an encouragement and stimulus to all true workers. The sketch of his career, which we published a few months ago, makes it unnecessary to speak further of it here, but we add a few extracts from the English press.

In its notice of him the *Pall Mall Gazette* says:

No one who ever came into contact with him, even for a short time, could forget the impression left by his vivid personality. The downright directness, the transparent honesty, of the man, made themselves instantaneously felt, and won for him much devoted friendship. He might have been a great soldier if he had not been a great schoolmaster, for he was a born leader of men.

The *Times*' obituary speaks of him as—

A man of striking gifts and singular strength and separateness of character, who made his name a synonym for the school in whose service he lived and died. . . . But his praise was not merely to have made a little state into a great one. Far more was his work remarkable as the successful effort to embody in visible shape, truths of education which he was the first to

give expression to. . . . Certainly he worked out in action his idea with a consistency of plan, a fidelity in details, a burning energy, an untired enthusiasm, a readiness to take risks and make sacrifices, and, beyond all, an indomitable quality of faith in the triumph of principle which set on his life's work a firm stamp of originality.

In the *English Journal of Education*, the head mistress of Cheltenham College says:

There has passed to his rest one whose influence in the world of teachers has been great, but will, I believe, become greater, now that he is no more seen. Never, perhaps, has there been a life more devoted to the work of education in its highest sense.

A writer in one journal refers to him as a "hero among schoolmasters," while a correspondent of the *Guardian* quotes the opinion of one who knew him well, that "He had more elements of greatness than any man I ever knew."

In the *Cambridge University Review* we read:

Dispirited workers, tremulous beginners, enthusiastic venturers, were from all sides turning for light and encouragement to this "old man eloquent," and came away inspired and heartened by the loveliness of that mellowed strength. Above all, perhaps, the women teachers of England will acknowledge a debt to him.

And again—

A heroic life ended most hero-like. It must be the task of other hours or of other pens to cast an estimate of that life, and attempt the portraiture of a character so strong and separate, so original and so originative, so versatile and so profound. These hasty lines are but a glance at the campaigns of a soldier of education, who has fallen, a veteran, but in arms.

The influence of a man who made so strong an impression upon his contemporaries cannot cease with his death. The world is poorer for his loss, but the work of teaching has been ennobled by his great example.

The cut shown above is from a photograph taken a few years ago.

#### N. S. SUMMER SCHOOL OF SCIENCE.

The following course is suggested for a first year certificate in physiology in the Nova Scotia Summer School of Science:

I. Anatomical data, . . . . .	50	points.
II. Chemistry and Physics of Digestive, Circulatory, Respiratory and Nervous Systems, . . . . .	150	"
III. Applications of Laws of Physiology to individual and social life, . . . . .	100	"
Total, . . . . .	300	"

#### FERNDALE SCHOOL.

##### No. VII. — CLASSES OF INSECTS.

T. We have had several lessons on insects and we now know something about them. We know there are several kinds of them. Can you tell me some of the kinds?

S. Yes; the kind with scales like colored dust on their wings.

T. Very good. Any other?

S. The kind with hard wing covers over their real flying wings.

T. Any others?

S. Flies and fleas.

T. Yes, that will do, we shall call the principal kinds orders. Why should we put insects in orders?

S. I suppose for the same reason scholars are put into classes. Those most alike are put in the same class.

T. Well, there is something in your reason, but you will soon know more. Now we shall look over some of those we have collected, and see if we can put them into a few orders or classes. What might we call this kind of work?

S. Classification.

T. Well then, we shall see how we can classify them into the *nine* orders in Sir William Dawson's book. I think you would like to take his classification for two reasons. I know you would. First, because he is a great scholar; and secondly, because he is a Canadian—our own countryman.

Order I. has no wings. Have you seen any of that kind?

S. Yes, bugs.

ANOTHER. Some bugs have wings.

T. Naturalists put bugs without wings in the same order as bugs with wings, because they are so much alike in every other respect except the wings. Do you know any others?

S. Lice and fleas, I suppose.

T. Well, not exactly the fleas, but they are so much like the lice that we shall have them in the next order. Now many of the names in zoology are taken from Greek; and we shall try to construct a name. I shall give you the material. The Greek for wings is *ptera*, and *a* means without.

CHORUS. Aptera.

T. Correct. Write down, "Order I. *Aptera*." The next are very much like the lice, but when hatched from their very minute eggs, they are extremely small maggots, and then, as the caterpillars do, they change into insects of the flea kind. They also appear to have just the beginnings of wings, but they are generally invisible. The Greek for invisible is *Aphanes*. Make a name for this order.

CHORUS. *Aphanesptera*.

T. It is hard to sound the *s* before *p* in that word, is it not?

S. Yes, *Aphanesptera*.

T. A better word; but they spell it with an *i*. Write down, "Order II. *Aphauiptera*."

Here is the male "Horse-Breeze Fly." How many wings has it?

S. Two.

T. The Greek for twice is *dis*. CHORUS. The order is *Disptera*—no, you can't pronounce the *s* easily there—*Diptera*.

T. Correct. "Order III. *Diptera*." Their life stages are the egg, the maggot, the pupa, then the perfect fly. What *Diptera* have you noticed?

CHORUS. Mosquitoes, house-flies, blue-bottle flies, horse-flies, daddy-longlegs.

T. The fourth order contains the butterflies and moths. How many wings has this "swallowtail."

S. Four.

T. And so has the bee and the wasp. Would you put them in the same order?

S. No; it wouldn't do then to make a name for these orders from the Greek for four. But the butterflies and moths have scale dust on their wings, and the bees and wasps have none.

T. The Greek for "with a scale" is *lepidos*. What is the name?

CHORUS. *Lepidoptera*.

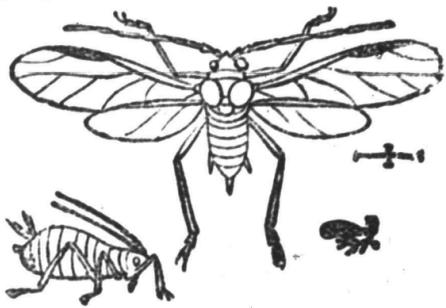


T. Correct. Write down "Order IV. *Lepidoptera*." The bees and wasps and this *ichneumon* fly, which is one of the deadly enemies of the great caterpillar of the Emperor or Cecropia Moth, have also four wings, but the transparent membrane is quite naked. Greek for "of a membrane" is *hymenos*. What is the name?

CHORUS. *Hymenoptera*. Order V.



T. Here is the *Aphis*, a plant-louse; but in spite of its name, which would put it in the *Aptera*, and the general appearance of its wings, which would place it in the *Hymenoptera*, it belongs to Order IV., the *bugs* proper.



The bugs generally have the outer pair of wings only partly membranaceous, and that towards the tips; but many like the *aphis* figured here, and the cicada, or singing locust, have the wings nearly like the *Hymenoptera*. The order is named from the first kind. The outer wings are generally half membranaceous and half leathery. Greek for half, *hemi*.

CHORUS. Order VI. *Hemiptera*.

T. Here is a dragon-fly. It has four wings; but its delicate veining is a most striking feature. These



fine veins are commonly called nerves, although they are not really nerves. Greek for nerve is *neuron*.

CHORUS. *Neuronptera*—no; *n* doesn't sound well. *Neuroptera*. Order VII. *Neuroptera*.



T. Very good. Here are specimens of the terrible

Western locust. You can scarcely distinguish them from our common grasshopper. The under wings are folded like a fan under the straight outer wings. Greek for straight, *orthos*. Orthography, orthoepy, orthodoxy, all common words with the same root.

CHORUS. Order VIII. *Orthoptera*.

T. Here I have come to the last. You know the beetle with its two hard sheath-wings, called *elytra*, covering up its thin flying wings. Greek for sheath, *coleos*.



CHORUS. Order IX. *Coleoptera*.

T. Repeat the names of the orders simultaneously.

CHORUS. *Aptera*, *Aphaniptera*, *Diptera*, *Lepidoptera*, *Hymenoptera*, *Hemiptera*, *Neuroptera*, *Orthoptera*, *Coleoptera*.

T. Make English names for these as near the meaning of the roots as you can.

CHORUS. No wings, invisible wings, two wings, scaled wings, membrane wings, half-and-half wings, nerve wings, straight wings, sheath wings.

T. Which names do you like best.

S. I don't think the English names are any plainer, once you know how the other names are formed; and besides, the English names don't sound so well, I think.

T. Perhaps so; you can have your choice. English words have been made from the names of these orders. You can call the mosquito a dipter, the grasshopper an orthopter, the beetle a coleopter, and so on if you like.

AMONG THE CONSTELLATIONS.

No. IV.—THE DEMON STAR AND THE STAR OF BETHLEHEM.

"How distant some of the nocturnal suns;  
So distant, says the sage, 'twere not absurd  
To doubt, if beams set out at Nature's birth  
Are yet arrived at this so foreign world;  
Though nothing half so rapid as their flight."

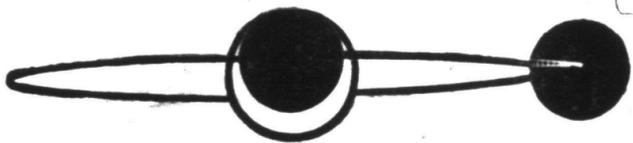
—Young.

"A single star  
Sparkles new—set in heaven."

—John H. Bryant.

About one hundred and fifty stars have been observed to change their intensity of light to such an extent as to be classed as variable stars. These have again been sub-divided into five classes, of which the most interesting includes those which undergo rather

rapid changes at regular periods of time. *Beta Persei*, commonly called Algol or the Demon Star, is one of this class. We hope some of our readers were so fortunate as to have observed the phenomenon of obscuration described last month. Various theories have been formulated to explain it. But none can account for its uniform brilliancy for sixty hours, followed by the peculiar rate of diminution of brilliancy for about four hours and a half, and the same rate of increase for the next four hours and a half, so satisfactorily as the "planetary eclipse" theory. Some of the most eminent astronomers of the present day have measured the rate of darkening and lightening of this star, which, according to Royal Hill, is as follows: Let the brilliancy just before obscuration be indicated by 1·000. Then each successive half hour it was found to be ·968, ·920, ·861, ·762, ·685, ·566, ·480, ·433, and at the minimum, ·416. In fifteen minutes it commenced to brighten in the reverse order. This exactly corresponds to the rate at which light from a luminous disc whose diameter is *one* would be obscured by the transit of a dark disc of diameter 0·764 across its surface a little to one side, so that the eclipse would be *nearly*, but not quite, annular. The following diagram, drawn to scale, illustrates the point:



The dark body is the planet revolving around the luminous sun, Algol. The planet is shown at its greatest elongation, and at the middle of the eclipse. The plane of its orbit passes nearly through our earth, so that could we see it, the dark planet would appear to describe the narrow ellipse drawn in our diagram while revolving around Algol. Of course, both Algol and its planet really revolve around their common centre of gravity. Now Algol is so distant that the most powerful telescope cannot show its disc, and therefore an ocular demonstration of the presence of this dark companion sun cannot be given. The relative sizes of the two are inferred from the rate of the obscuration. The relative dimensions of the planetary orbit is deduced in this way: The length of more or less obscuration is nearly nine hours, which is coincident with the interposition of the whole or part of the planetary disc between us and Algol. During this time the planet moves the distance of Algol's diameter plus its own,—equal to 1·764 times Algol's diameter. If it moves that far in nine hours how far will it move in sixty-nine hours, in which

time it completes its revolution?  $9:69::1\cdot764:13\cdot5+$  That is, the planet's orbit must be, roughly speaking, 13·5 the diameter of Algol. The diameter of the orbit, which is  $13\cdot5 \div 3\cdot1416$ , is about four times the diameter of Algol. So that our diagram above is in good proportion.

Next, let us estimate the distance and magnitude of these bodies. If you were to look at the steeple of a church from the street and see the ball on its spire projected against a star in the sky, you would notice on taking a few steps along the street that the ball on the spire changed its apparent position against the sky. If the church were a quarter of a mile distant, instead of being near at hand, a change of a few steps would make a very small change in position of the steeple ball against the sky. This apparent change of the position of the ball against the sky might be called its *parallax*—for your change of position. The more distant the church spire, the less its parallax for a change of a given number of paces. Given the amount of change of position and the observed parallax, it is only a simple problem in trigonometry to find the distance of the spire of the church from you.

Well, this world swings us through space. Six months after to-day we shall be about 185,000,000 miles exactly on the opposite side of our sun. Those fixed stars which are nearer than the more remote, like the ball on the church spire, must appear to change their places. This apparent change of position may be called their annual parallax. Practically it is found more convenient to call the half of this displacement the parallax. The parallax of several stars have been accurately measured. The one having the greatest parallax is *Alpha* of Centaurus. When the earth is at one point of its orbit, *Alpha Centauri* is displaced from its mean position nearly *one* second of arc. Six months after it is displaced nearly *one* second of arc in the opposite direction. Total displacement, nearly *two* seconds of arc. Let us calculate its distance by a simple approximate method. If from *Alpha Centauri* as a centre two radii be drawn to opposite points of the earth's orbit, these two lines will contain an angle of about *two* seconds of arc. For so small an angle, the diameter of the earth's orbit will nearly coincide with the arc between the two radii. If the radius is taken as unity, the arc of 180 degrees is the well-known  $3\cdot14159+$ . Divide by  $180^\circ$  and we get ·0174533 as the arc of  $1^\circ$ . Divide by 60 and we get ·0002909 as the length of arc of 1 minute. Divide by 60 again, and we get ·00000485 the length of arc of 1 second. For a radius equal to unity, 2" of arc would therefore be ·0000097 in length; that is, if the distance of *Alpha Centauri* from the earth be represented by one, then the diameter of the earth's orbit

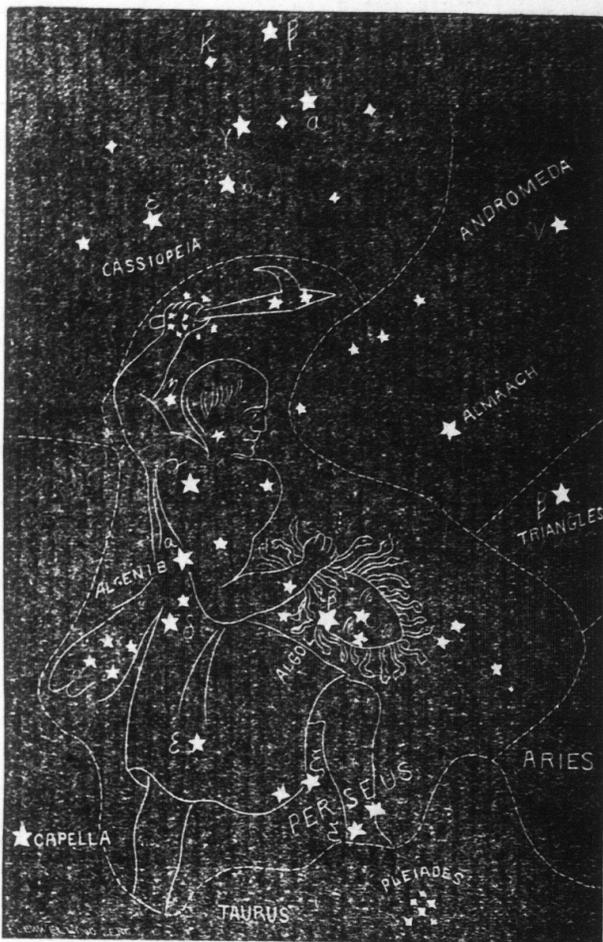
will be represented by  $\cdot 0000097$ . But the diameter of the earth's orbit is known to be approximately 185,000,000 miles. Therefore the following proportion will give us the approximate distance of our nearest fixed star  $\cdot 0000097 : 1 :: 185,000,000 : \text{distance of star}$ . From which it appears that in round numbers the distance of a star whose annual parallax is  $1''$  is 19,000,000,000,000 miles—over nineteen millions of millions of miles. But the most careful and persevering efforts have failed to obtain any parallax for Algol. It may be taken for certain that were its parallax one-tenth of a second, it would have been detected. For these small angles the distance may be said to vary as the parallactic angle. As Algol's parallax must at least be ten times less than that of Alpha Centauri, its distance must at least be ten times greater. That is, we know for a certainty that Algol is at least 190,000,000,000,000 miles distant from us. Light travelling at the rate of 160,000 miles per second, takes about the third of a century to reach us from it. The eclipses we have been observing, or may this month be observing, occurred about the time of the Crimean War, over thirty years ago, and have been speeding without rest towards us ever since.

Again, our sun's disc subtends an angle of 1,924 seconds. Remove it away 320,000 as far as it is, and it becomes a star as small as Algol—a mere point of light subtending an angle of  $\cdot 006$  seconds. Its parallax there would be *six-tenths* of a second. Remove it six times farther away until its parallax becomes only *one-tenth* of a second. Our sun would then be a star of the sixth magnitude, while Algol is of the second magnitude. Assuming the surface of each to be of equal intrinsic brightness, it is evident that Algol must be several times greater than our sun—at least six times greater in diameter. This would make Algol over 5,000,000 miles in diameter, and its invisible companion about 4,000,000 miles in diameter, and the diameter of its orbit indicated in our diagram, about 25,000,000 miles.

These were once, probably, two luminous suns revolving around their common centre of gravity, forming what would appear to us a double star. The smaller has already grown so cold by the radiation of its heat, that its luminosity has gone. And since Goodricke in 1784 determined its period of revolution around its primary to be 2 days, 20 hours, 48 minutes and 58.6 seconds, its orbital revolution has been accelerated by six seconds. It thus gives promise of falling in the remote æons of futurity, into its central sun. The glazing eye of Medusa may then once more blaze forth and suddenly startle the worlds by the apparition of a brilliant of the first magnitude.

Now turn to the constellation Cassiopeia. Near

that small star, *Kappa*, which is next the large one, *Beta*, at the top of our cut, on the 11th Nov. 1572, appeared a brilliant star which rapidly increased in magnitude until it was brighter than Jupiter, and



could be observed at noonday. In less than seventeen months it became invisible, and has not since been seen. About 315 years before or thereabouts, in the same quarter of the heavens, a similar apparition seems to have occurred. And there is some kind of evidence of such a phenomenon, over 300 years previous to the last mentioned one. The idea struck somebody, that here was a variable star which became luminous every 315 years. Five times 315 is 1575 years. The star must then have appeared three or four years before 1 A. D., or about the time of the birth of Christ. If so, it is due now.  $1572 + 315 = 1887$ . Our readers know where to look for it. We cannot vouch for the accuracy of the observations on which the speculation is based. But this point is forced on our attention—that in the silence of the immeasurable depths of the heavens, mighty forces are in unceasing motion and in every stage of development; and that when we least expect it, a "Star of Bethlehem" may burst forth in dazzling glory from the impact of invisible, Titan orbs, which had been for countless æons preparing for the display.

For the REVIEW.]

**THE GEOGRAPHY OF THESE PROVINCES SIXTY YEARS AGO.**

Among my old papers I turned up, the other day, a thin pamphlet entitled "A Manual prepared for the small map of Nova Scotia. For the use of schools. Halifax, Printed at the 'Nova Scotian' office, 1829." It contains a colored map—said to be "a new map"—of Nova Scotia, Cape Breton, Prince-Edward Island, and part of New Brunswick, dated 1825. The information contained in the book is put wholly in the form of answers to questions, a common plan in those days. Some of the facts to be learned from these answers and from the map may be interesting to the grandchildren of the pupils who used the manual.

It appears that Nova Scotia then consisted of "ten counties and four districts." These were Cumberland, King's, Annapolis, Shelburne, Queen's, Lunenburg, Hants, Halifax, Sydney, and Cape Breton, with the districts of Yarmouth and Argyle belonging to Shelburne, and the districts of Colchester and Pictou, annexed to Halifax. The County of King's included what is now the township of Parrsboro in Cumberland. Annapolis included what is now Digby. Shelburne included what is now Yarmouth County. Sydney County included what is now Antigonish and part of Guysboro, as far as St. Mary's River,—the remainder of Guysboro belonging then to Halifax County. Cape Breton Island formed but one county.

Westmoreland, New Brunswick, is marked on the map as covering the present counties of Westmorland, Albert and about one-third of Kent. The boundaries of several other counties in both provinces must have been altered considerably since this old map was made.

One notices several names which have since disappeared from the map, and have probably passed from the knowledge of the present generation of people. The shiretown of Sydney County was "Dorchester," now known as Antigonish. In Cumberland we find "Remsheg" and "Remsheg Bay," where now the name is Wallace Harbour. In Colchester, where Great Village and Economy are marked on recent maps, we find on the old map "Londonderry" and "Lower Derry." We are also told that "Indian River rises in the north of the County of Shelburne, and falls into the Atlantic Ocean at Cape Roseway." What river is this? In Prince County, P. E. I., in Lot 41, on the shore of Richmond Bay, there is marked a town of "Dartmouth," not to be found in our day.

The old forts are distinctly shown: Forts Cumberland and Lawrence, near the border; Fort Monckton on Bay Verte; and Fort Ellis, near Stewiacke.

This name, "Stewiacke," as we now have it, was in those days, "Souiac;" and several other names have changed their spelling, as "Kent" Township in Hants, "Port Matoon" for Port Mouton, "Quaquo" and "Petcudiac" in New Brunswick; "Chatecan," where we now have Cheticamp, C. B. A curious change, of which the writer had heard many years ago, is from "Indian Bay," in the township of Sydney, C. B., to *Lingan Harbor*. The French for "Indian"—*L'Indien*—became corrupted into *Lingan*. So, also, *Gabarus* (pronounced *gab-a-roos*) is said to have come from *cap rouge* or else *chapeau rouge*. Possibly a similar corruption of sound may explain the fact that where our present maps show *L'Archeveque Point*, the map of 1825 has "Cape Hinchinbroke."

H. C. C.

Fredericton.

For the REVIEW.]

**HOW TO AVOID "CRAM."**

We were glad to learn that the REVIEW was gaining a foot-hold among the teachers of these Lower Provinces. May it continue to increase. Every teacher should take it and try to make it a thoroughly useful paper. We hope that every phase of the educational work and system will be ventilated in it; that teachers will not be afraid to express their convictions, based upon experience, no matter what the topic may be.

The Ferndale series are helping many a teacher in object lessons, besides affording valuable information.

Your remarks on over-pressure gave us much pleasure. It touched upon a very important feature, viz., the over-crowding of subjects into our course of study. As you say, "It is absolutely impossible to find time for all," and in the hurry and mental confusion arising from this multiplicity of subjects, the pupil has no time to *think*, which is a very serious defect. From experience we find that pupils now cannot think themselves out of a difficulty by any means as readily as when they had fewer subjects with more time for each. The *Boston Herald* of the 19th ult., contains a lengthy article, in which a similar course of study is advocated: "Too much time is being devoted to theories and hobbies;" and this is the very reason that our school course is overcrowded. The chief complaint is against the introduction of elementary science, which consumes much time which ought to be spent with other subjects. We raise no objections to elementary science, for whether we are right or wrong, we think that children ought to be taught something about those things with which they daily come in contact; but where is the time to do this

work thoroughly? Are there not other subjects that could be cut down without injury to the pupils? Take for instance, English history; is it necessary that all the events and the dates thereof be memorized—covering a period of nearly 2000 years? Yet, if a pupil wishes to pass the ordinary examination into an academy, he must thus prepare himself. He studies, not for the sake of knowledge, but merely to *pass*. A most immoral motive. Talk about cram! The whole sin of cram lies at the door of those who set the examination papers, and those publishers who advertise “just the thing for candidates for such and such an examination.” Again, do not our text-books contain much that is not absolutely essential for the pupils to learn? In a prescribed text-book it is written of James I., “His tongue was too large for his mouth and his eyes were wild and rolling.” This and many other passages may be valuable information, but we fail to see it. We notice also that but little is said about the government and society during the various periods, and much is said about a lot of characters about whom the majority of the people care but very little. A few days ago, an educated gentleman, who has for several years past read the papers of youthful candidates for the academy, told us that he has come to the conclusion that lads from ten to fourteen years of age should not be required to study history as outlined in our course of study and compelled to do by the examination papers, for their minds are not sufficiently developed to discriminate and assign events to their proper places. However, be this as it may, it is one of the points upon which we desire the REVIEW to express an opinion for the benefit of the examiners as well as for the teachers.

Secondly, do you not think that too much time is spent in analyzing and parsing? Rev. Dr. Burns, of Hamilton, stated that “studying rules of grammar cannot make a man a correct speaker;” and Dr. McLellan emphatically condemned diagrams for grammatical analysis. And yet how much of school life is spent in this very thing; a system that should have long ago become obsolete, and it would have been, were it not for the examination craze, and still more crazy papers that are being set.

There is no doubt but that most of the papers are beyond the judgment of the candidate; perhaps the fault is not in the papers, but because candidates go up too young! Which is it? Will some of your readers give some hints as to the best methods of training pupils in English?

A very good article, entitled, “English in the High School” is in the *Educational Journal* of the 15th inst. We quote a paragraph on English grammar:

“In teaching grammar I would put no text-book at all in the pupils’ hands. Every text-book I have ever seen is, from my point of view, highly defective, and any one of them in the pupils’ hands would create confusion. Grammar is a science, the subject-matter of which is the sentence and its parts. The function of a science is to investigate its subject-matter, and to seek for general principles, by means of which to explain facts. It is the business of the teacher to guide the pupils in the work of investigation, not to do it for them, much less to compel them to memorize the results arrived at by previous investigators, and stated by them in the form of definitions and rules, many of the former being incorrect, if not nonsensical, and most of the latter being entirely unnecessary.” (Mr. W. Houston, M. A.)

Thirdly, is there not too much time devoted to geography? Of what advantage is it to  $\frac{20}{100}$  of our pupils to know about Timbuctoo or Williamette and scores of other places so frequently found on their examination papers? Complaints have been made in the Montreal papers that children are “made to learn the capes and isles of Europe,” instead of the French language which is so absolutely necessary to the people of Montreal. The question arises, is it really necessary that every known cape, island, town, river, lake, mountain, county of England, Scotland, Ireland, of each province in the Dominion, etc., together with the population, the length of the rivers and the height of the mountains be memorized? If so, then do not expect teachers to serve up the whole course of study as it should be done. The course would be right enough if every pupil would complete it even through college, but a very, very small percentage of our boys ever get through college, and if all are trained by this course, how many leave school not by any means fitted to become either first-class mechanics, merchants or citizens. Would it not be a good plan for the “Interprovincial Convention” to consider and revise the course of study now in use, and draw up one for the Maritime Provinces? What objection could there be against these provinces having the same course of study and to use the same text-books? Then let us have a course of study containing more of those subjects which, when learned, will make our boys when they leave school, as the greater number do, at fourteen years of age, become better prepared to earn a living than they now are. These and not the college bred boys should have the preference. They should be trained particularly in those subjects most needed by them, and they should not be required to waste time with memorizing things which they do not understand, and when learned are as soon forgotten. X.

For the REVIEW.]

**S. P. C. A.—THE BANDS OF MERCY.**

It is said that "man is the only animal that sheds tears," yet we frequently meet in literature with incidents in which the lower animals are represented as manifesting their grief in this way. The steeds of Achilles are said by Homer to have wept at the death of Patroclus:

"Immovable  
Beneath the splendid car they stood, their heads  
Down, drooping to the ground, while scalding tears  
Dropped earthward from their eyelids, as they mourn'd  
Their charioteer."

Matthew Arnold also relates in his "Sohrab and Rustum," that the horse of the mighty hero shed tears as he beheld his master dead upon the sea shore. And there are other references of a similar character. This may be a poet's fancy, but it is certain that the relationship between man and the lower animals has always been very close; and those who have come under domestication have developed, through man's instruction, a wonderful intelligence, and become his worthy companions. We know that through all time animals have been objects of reverence and sometimes of worship; and among the Egyptians, for instance, the slayer of certain animals was punished by death. This being the case, it seems somewhat of a reflection upon our more enlightened civilization that it has been found necessary to form societies all over the world to prevent cruelty to animals, who in such great measure are dependent upon man's kindness. It seems almost impossible that a man should ill-use his horse, for instance, when self-interest, if nothing else, should lead him to treat him kindly and keep him in good condition.

But the fact that there are constant and innumerable cases of the most inhuman treatment of animals reveals a state of things not at all flattering to our ideas and hopes of mankind as it ought to be after so many years of civilization. Yet there can be no doubt that the S. P. C. A., beside preventing cruelty to animals, will have a good effect in a reactionary way upon those who practice such cruelty. Especially will this be the case in the Bands of Mercy, since they have to do almost entirely with the children, who have not in any way become hardened in cruelty and can be taught to be humane in their treatment of all the animals.

To many this seems the most hopeful and promising branch of the Society; for it is more and more becoming the conviction of mankind that to work a reform of any kind, or to further the progress of the nations in all that may be called true civilization, it is necessary to begin with the little children. This,

the "Ladies' Humane Education Auxiliary of the S. P. C. A." have undertaken as their part of the work, and the results already attained by the Bands of Mercy in St. John are in every way commendatory and promising. No one who has attended the several gatherings in the St. John Mechanics' Institute of the united Bands can fail to have been impressed with the importance and quality of the work done. It is an inspiration in itself to see these hundreds of little ones gathered together for the express purpose of hearing and singing about kindness to animals, which must of necessity lead up to kindness to each other and lessen very materially the sum total of those debasing influences to which so many little children are constantly exposed. Depend upon it, this is the surest way to prevent cruelty to animals. To be sure the parent Society can keep ever her vigilant eye upon those who abuse their beasts of burden, but if the Bands of Mercy became sufficiently extended there would cease to be this necessity, for the lessons of kindness learned by the children would rarely be forgotten.

For all these considerations I would heartily recommend the formation of Bands of Mercy in the common schools, Sabbath-schools, etc., not forgetting the annual gathering in the Institute, with its pretty songs, bright banners and happy children's faces.

F.

St. John, N. B.

For the REVIEW.]

**THE KINDERGARTEN.**

FRÖBEL'S CLAIMS TO CONSIDERATION ON THE PART OF EDUCATIONISTS.

Some considerations drawn from a survey of Fröbel's career inspire the careful thinker with great confidence in his principles and praxis.

His lonely childhood, with its marvellous powers of introspection and self-analysis, gave him an insight into the thoughts and feelings and desires of childhood from the earliest stage of consciousness, which stands, we think, unique in human experience. He may fairly claim the title, "Discoverer of the laws of childhood." Again, the deep religious tone of his whole nature, the key-note of which was, "Seek ye first the Kingdom of God and His righteousness," joined with the fact that this Kingdom was not, in his thought, a dominion restricted to the spiritual sphere, but was to exert its supremacy over mind and matter in all their relations, add weight to his teachings. Fröbel's idea stood thus: Man in conscious harmony with himself, with nature, with humanity as a whole, and, finally, in unity through the ripened powers of his complex nature, with the Divine

Creator. Then again, as an original thinker and a practical educationist, he retraced the steps taken in childhood and youth till he stood by the cradle—a man with the experience that comes only from actual contact with life at many different points. There he found that the great impediment to human progress lay in the lack of culture for those germs of child-nature which lie latent but are commonly left to chance. If these germs and instincts are to be developed and become subject to the beneficent laws of evolution, they must receive a training which is founded on an intelligent application of the laws of human nature; these laws can only be deduced from the study of human nature itself. This nature is so complex that it must be observed in its earliest and simplest stages if observation is to be of practical value.

Another incentive to study Fröbel lies in the fact that while he was "no mere peddler of other men's wares," he was thoroughly acquainted with the history of educational thought and practice in ancient and modern times, so that he wasted no time and energy in futile experiments. His fiery enthusiasm for reform rested on a sound *conservative* basis, which led him to recognize the fact that the progress of the human race must be a *coherent whole*. He saw that the buds and blossoms of promise that delight us to-day are borne on a tree whose roots strike deep down into a remote past, and that the growth which will be a joy to future generations derives its nourishment from the same source. Thus, while sympathizing with the *aims* of revolutionists in 1848, he reprobated those methods by which men hoped to better the present by rudely severing its connection with the past. All the crude thought and feeling represented by socialism, nihilism, and anarchy, was distasteful to him, because all these schemes impose restraints from *without*, while his principles demand development from *within*. His watchwords are, *freedom*, by spontaneous obedience to law; *individuality*, limited only by the benevolence that results from the cultivation of the social and moral instincts; *self-activity*, expressing itself in works of use and beauty, and a harmonious development and co-ordination of all the faculties.

A few visits to a *good* kindergarten will soon settle the question as to whether his principles work well in practice. All is life and stir, but no confusion. There is no restraint, for although the *reign of law* is, *consciously*, in the teacher's thought, and skillfully applied, the children, too immature for abstraction, enjoy its benefits *unconsciously*. Innocent gayety enlivens the scene. See these little ones

accompanying *piano* a song with rhythmic clapping of the hands, now with soft delivery, then loudly, then softly again; but every now and then breaks out, at the director's call, a perfect *fortissimo* which is a safety valve for animal spirits and yet renders the softer parts of the play more beautiful by contrast. The power of the social instincts as a factor in education is conspicuous here, where free expression and interchange of childish ideas are encouraged. The timid and dull are drawn out and stimulated, while the rude and domineering feel the force of public opinion and soften under its mild influence. The *technical-aesthetic* principle is applied in building, weaving, interlacing, sewing, pricking, and especially in tablet-laying and laying forms with sticks preparatory to drawing. Thus manual dexterity is gained; the intellectual powers are strengthened by their constant expression in concrete forms, to create which demand the observation of number, size, form, color, and directions of lines and angles to produce an harmonious whole. The sentiment of beauty is fostered along with the creative instinct, so that the *love of work* is a marked characteristic of children trained in the kindergarten. C.

Halifax.

#### ON TEACHING THE PRINCIPLES OF CIVIL GOVERNMENT IN OUR SCHOOLS.

[A synopsis of the address of Geo. R. Parkin, M.A., Head Master of the Collegiate School, Fredericton, N.B., before the York County Teachers' Institute.]

Any one who, at this day, comes before a body of his fellow-teachers with suggestions for adding something to the already wide range of school work, should have strong reasons to support his proposition.

The subjects which are forced upon our curriculum, either by the fixed requirements of intellectual training or the widening demand for practical application of school study, are already so numerous that the earnest teacher's chief anxiety is to resist the tendency to superficial work which is well-nigh inevitable where the area to be covered is so large. Few teachers will doubt that we are already attempting too much rather than too little for the highest educational advantage.

On the other hand it is extremely desirable that along with the routine of strict intellectual drill and practical work, our school life should have threads of vital connection with the general life of the community—threads numerous enough and strong enough to make the training of school have the most direct

bearing upon that which is the supreme object of all training—the wise and useful conduct of life.

There are some subjects, again, as every teacher knows, which, though not furnishing a basis for severe mental training, are yet of immense value from the interest they evoke and the stimulus they give to the ambitions and energies of the pupil. They need not make large demands upon the teacher's time, and may even be taught in an incidental way, yet the influence on the general intellectual life may be permanent and great.

I have a conviction that the subject of which I am to speak to you now is one which could be made to combine, in an exceptional way, the advantage of giving school work a direct bearing on the general life and interests of the community, with the further advantage of furnishing a powerful stimulus to the minds of the young.

The thought which I have in my mind is wider than is indicated by the subject as named in our agenda paper.

My object is to show that by such teaching as I propose we have in our hands a means better than any other for developing a more intelligent citizenship and a more intelligent patriotism in the generations which pass through our hands. This means a power to exercise a profound influence on the inner springs of national life. Such a purpose lifts a discussion of this kind out of the routine of school methods into something approaching the importance of statesmanship. We teachers need to feel constantly that the essential statesmanship of the country ought to receive a decisive impulse from the school-room.

Civilized society has surrounded itself with an atmosphere of law and order; an atmosphere not unfavorable to the assertion of personal freedom of thought and action, yet in which we must all submit to constant direction, restriction, and, if need be, coercion. One of the most important objects of life, one of the highest aims of all home or school training, is to fit us to take our right place in this environment with a just understanding of its conditions. Direct teaching in regard to the nature of these conditions seems to me the natural and logical sequence of any system of free state education.

The state provides for free education because it wishes that all men should be good citizens, and believes that, on the whole, the intelligence which education gives tends to good citizenship. But is this general intelligence sufficient for the end aimed at?

Two facts must be borne in mind. As civilization advances, and society becomes more complex, the duties of citizenship tend to become more complex also.

Again, the growth of democracy, steady and irresistible, makes public duties fall over a much wider range of society. Every citizen of a free state may, at any time, be called upon to perform duties involving great responsibilities towards the whole community. Large masses of society must be prepared to perform civil functions more or less complex. It seems to me that general intelligence alone is not sufficient to meet these essentials in a modern state, but that special training in the duties of citizenship is required. The citizen of a free country should have an intelligent acquaintance with the institutions under which he lives, and the operations of which he, in part, influences. He should know clearly his own rights and privileges as an individual, as well as the point where individual freedom of action must yield to the general good. He should understand in a general way how laws are made, and the extent of his own responsibility in regard to their character. He should know how lawful authorities are constituted, why they should be obeyed, and the limits of their right to govern. He should know the purposes for which public revenues are required, and how they are collected and expended. Without completing this category of knowledge necessary for intelligent citizenship, let us say that above all he should feel a profound sense of responsibility in the performance of those public functions which fall upon every citizen, —seeing that the value and permanence of our democratic institutions depend largely upon the degree in which the individual citizen is prepared to make private ends secondary to the public good.

Admitting that all the surroundings of life tend to prepare a man in some degree for the performance of public duties, still it will be agreed that to give the mental and moral equipment useful for the full range of citizenship thus roughly outlined, special and direct training is required. The dominance on questions of public policy given to private citizens through the ballot box involves the absolute need of trained intelligence on public questions. The safety of the state requires it. The true policy of the state will be to give it, and this it can best do through the medium of the schools.

I pass next to the utility of this kind of teaching in developing patriotism.

Patriotism in all ages has by universal consent been looked upon as a virtue—a thing good in itself. Ultimately it is the backbone of national strength. Even an indiscriminating and unreasoning patriotism is an enormous strength to nations. Witness the tremendous force it has at times given to a Russia or Turkey—despot-ridden though they are. How much more efficient should be a justified and reasonable

patriotism! We believe that in our institutions, our methods of government, our securities for individual freedom, we have the firmest basis of any people in the world on which to build an intelligent and discriminating patriotism. We cannot afford to despise this source of national strength or neglect its cultivation. In spite of many cosmopolitan tendencies, nations still have to fight for their own lands. Free popular governments, above all others, require the support of a patriotism at once intense and intelligent. Not second, even, to the glorious records of our nation as a military and naval power, in developing such a patriotism, will be the study of our political system—the processes by which it grew—the principles on which it is based—the privileges which it gives—the duty which it imposes. Clear and defined ideas in the popular mind on these points are our greatest hope for further development in worthy lines of national life.

When that greatest of public teachers, the press, sometimes shows itself liable to forget the spirit of patriotism in the passion of party, it is right that we should seek a correction in the direct teaching of our schools.

The natural place for giving teaching on civil government seems to be side by side with history, since in history we find the gradual evolution of our institutions. To do it effectively, however, I think that we require a special text-book. The Board of Education for the Province of Ontario has added to its authorized English and Canadian History a chapter entitled "How we are Governed," which briefly outlines our system of government, and suggests to teachers that what is there given should be largely supplemented by oral instruction. It is well to find even this recognition for the subject, but the question is too large and important to be adequately dealt with in the limits of a chapter.

Last year a book called the "Citizen's Reader" was published in England by Mr. Arnold Forster to meet this particular want in English schools. The fact that it has run through seven or eight editions within a year proves that it met a great popular demand. I would strongly recommend this work to the attention of teachers interested in the subject, as a hand-book to assist them in giving oral instruction in the absence of an authorized text-book. It is written largely from an English standpoint, and is therefore not in all respects what we need for instruction here, since the institutions which we inherit from the mother land are greatly modified in their operations among us; more so, I think, than an English writer would suppose. But Mr. Arnold Forster sketches the main conditions of British

citizenship in a singularly clear and vigorous way, and in a style admirably calculated to interest children. The book is being re-written for use in Australian schools, and the author has consulted me as to the advisability of preparing it in the same way for use in Canada. I have pointed out to him that the plan pursued in almost all the Canadian provinces is to use only authorized text-books, and that the success of such a work depends largely upon whether it were adopted or recommended by our Boards of Education.

But when once the importance of the subject is recognized, the question of a text-book, either in connection with our history or as an independent work, will soon be solved. Meanwhile teachers will find that even incidental instruction in the direction indicated will well repay them by the stimulus it gives to the minds of their pupils. From well-directed discussions about public duties and private rights; the structure of the state and the part they are to take in it; about law and justice; and, in short, "all the framework of the land," they will return with renewed spirit to those other studies and methods of training by which we strive to make them useful and worthy citizens of a great state.

#### SCHOOL AND COLLEGE.

The Victoria School of Art and Design at Halifax, has been opened with full classes.

The Presbyterian Ladies' College of Halifax, will move into its new quarters after the new year.

The "Dramatic Club" of King's College, N. S., advertises an entertainment towards the end of the month.

The Y. M. C. A. of Halifax, gave a grand entertainment to the students of Dalhousie College in November.

The Model School, Truro, has been changed into the Colchester County Academy. Wm. R. Campbell, B. A., a Pictovian, and Munro Bursar of Dalhousie, is its first Principal.

A young colored woman, Miss Howells, outstripped all her competitors in the recent County Academy examinations at Halifax. Her average was 93, a figure not reached by any other candidate for admission.

The football team of Dalhousie College has been making a tour of a portion of the provinces. Last month they played the Acadia College team, the Ahegweits of Prince Edward Island, the Pictou and New Glasgow teams of Nova Scotia.

The *Acadia Athenæum* makes honorable mention of the following schools supplying freshmen for the College. S. C. Shaffner at Paradise, J. R. Ruggles of Lockeport, J. F. Godfrey at Hebron, and last but not least, L. D. Robinson of Berwick.

The *Dalhousie Gazette* mentions the following Dalhousians as teachers in Nova Scotian academies and high schools:

Principal MacKittrick, Sydney Academy; Principal Creighton, North Sydney Academy; Principal Fraser, Baddeck Academy; Principal Coops, Port Hood Academy; Principal MacKay, Messrs. Fraser, Gammell and Mellish, Pictou Academy; Principal E. MacKay and Mr. McKenzie, New Glasgow High School; Principal Campbell, Truro Academy; Principal Jones, Digby Academy; Principal Stewart, Shelburne Academy; Principal Mackintosh, Lunenburg Academy; Principal McLeod, Kentville Academy; Mr. Morton, Yarmouth Academy; Miss Forbes, B. A., Principal Great Village Schools; Miss Newcombe, B. A., Presbyterian Ladies' College, Halifax; Principal Laird, High School, River John, Pictou.

At the opening of the N. S. Normal School, Principal Calkin, in introducing the speaker of the day, stated that the number of grade B teachers enrolled this year was four, that forty-five held grade C license, and that about two-thirds have had more or less experience as teachers. A most gratifying showing was this, an indication that the school is assuming more and more a distinctly professional character. In his address, Dr. Allison stated that in the recent examination for teachers, of 175 candidates for first class licenses, only 55 succeeded; of 750 applicants for second class licenses, 250 succeeded. This would indicate that the way into the profession of teaching in Nova Scotia was very difficult; and yet as a matter of fact it is easier than in any other province of the Dominion. The representation by counties is as follows: Colchester 50; Cumberland 16; Pictou, Halifax and Hants, 12 each; Annapolis 8; Lunenburg, Kings, Antigonish and Digby, 7 each; Queens 4; Guysboro 4; Shelburne 2; Cape Breton 1.—*Ex.*

The Truro Kindergarten was opened on Monday, November 28th. Twenty-nine bright children presented themselves, in smiling wonder, to enter upon a new existence. No one could watch Miss Woodcock, their director, manage so very many little children, keeping them happy and good from the start, without feeling that the "committee" have secured a lady who thoroughly understands her art, and is herself, with her refinement and evident reserve force, an excellent exponent of Fröbel's beautiful system. The apartment is large, home-like and inviting, with its gay furniture and plants. Its location in the Normal school building will render it a power for good in showing teachers that discipline may be secured by love and tenderness without any sacrifice of efficiency. The pretty little tables and chairs are furnished by Selby & Co., Toronto, Ontario, and the rest of the material, "Gifts and Occupations," have been supplied by the same firm, the senior member of which, Mr. Wm. Selby, a great enthusiast in regard to the kindergarten system, has generously made the committee a discount of \$50 on the invoice as a present from himself to encourage the establishment of kindergartens in Nova Scotia. Miss Woodcock will be assisted by two ladies, experienced and well-educated.—*Condensed from Colchester Sun.*

Truro Kindergarten entered upon its second week with thirty scholars, who were all delighted with their director, Miss Woodcock. The general impression is that the kindergarten will amply fulfil the promises made by its promoters.

#### PERSONAL NOTES.

President Brock, of King's College, is making a short lecturing tour in the United States this month.

Some of our exchanges refer to John J. Power, Principal of the Arichat Academy, as the youngest County Academy headmaster in Nova Scotia. He is a Pictovian.

Dr. J. F. Avery, one of the governors of Dalhousie University, died recently, bequeathing \$500 for prizes for that University.

D. M. McIntosh, A. B., late of the Superior School, Bathurst Village, is at present attending the College of Physicians and Surgeons, Baltimore. Mr. McIntosh was presented with a flattering testimonial on leaving Bathurst a few weeks ago. Mr. McIntosh expects to receive his degree of M. D. next spring, having before attended the institution at Baltimore.

## SCIENTIFIC NOTES.

Analysis of beers in the laboratory of the Pictou Academy last month, gave 0.3 per cent. of alcohol in one specimen of brisk home-made beer; but from eight to ten per cent. in some beers retailed as temperance drinks. These latter were properly seized by the officers.

Beet sugar manufacture is reaching great perfection and immense proportions in Germany. Very nearly twelve per cent. of the weight of the beets is obtained as sugar, and the cost of the sugar is only *two cents* per pound. These are the facts reported from no less than sixty-four first-class factories. Can not Prince Edward Island, New Brunswick and Nova Scotia produce as good a sugar beet as Germany? The beet might not be raised so cheaply on account of the higher wages of labor; but it is evident that under the management of skilled directors, the beet sugar might become an important Canadian industry. This is a good subject for an object lesson to young Canada.

From an article in the *Halifax Critic* we learn that the capital invested in Nova Scotian gold mining produces a greater return than that invested in the much-boomed gold fields of South Africa.

## QUESTION DEPARTMENT.

Questions on scientific subjects may be addressed to EDUCATIONAL REVIEW, Pictou, N. S., to whom also all natural history specimens may be submitted for identification; those on ancient classics and mathematics to EDUCATIONAL REVIEW, Charlottetown, P. E. Island, and all questions on general subjects—English, school management, methods, etc.—to EDUCATIONAL REVIEW, St. John, N. B. On technical questions the editors will seek the views of teachers of experience, in order that this page may be of the greatest possible advantage to our teachers.

## Questions and Answers.

E. S. M. K.—What are the text-books used in the Nova Scotia Summer School of Science?

The course of study with text-books for next year has not yet been officially announced. It is not expected that there will be any material change made in text-books recommended. We shall announce any information received as soon as possible.

SEVERAL.—Where can "Seret's Volapuk" be had, and do you consider it the best?

See criticism in this number of the REVIEW.

F. M.—Is there any foundation for supposing the Star of Bethlehem to be seen this year?

See article, "Among the Constellations," in this number of the REVIEW.

E. G. B.—Would you please answer questions 6, 8, 9 and 13 in the "Useful Knowledge" paper given at last County

Academy entrance examination in Nova Scotia? Would like to see all of them answered.

We expect to open a column with notes for oral lessons on Useful Knowledge, and may in this way answer your questions. We shall not lose sight of the matter.

SUBSCRIBER.—What time does the present term in New Brunswick schools close—on the 16th or 23rd inst.?

On the latter date, the work of the new term beginning on the 9th of January, 1888.

F. H. E.—Several of the students of the School of Science became very much interested in the familiar little experiment of covering a tumbler of water with a piece of paper and inverting. It was found, of course, that the presence of the paper was sufficient to prevent the water from falling out. Further, it seemed to make no difference with the result whether the tumbler was completely or only partly filled; but where a glass plate was substituted for the paper the water fell out immediately, except where the tumbler was completely filled. Was the difference observed due to carelessness in making the experiment? or was it what should have been expected? and if so, how can it be accounted for? A good deal of animated discussion was held over the matter at the time, and a month or two later one of the students told me the question was "haunting" her yet. Perhaps some of the readers of the REVIEW who are not physicists would like to crack the nut, and with your permission, Mr. Editor, I toss it to them.

## BOOKS AND EXCHANGES.

EXPOSITION OF THE KINDERGARTEN SYSTEM is an admirable little brochure published by Selby and Co., Toronto, price 25 cents. It is well printed and contains illustrations describing the methods of the system with songs used. It contains a portrait of Froebel. The excellence of its reading matter and the taste displayed in getting it up, make it a valuable addition to kindergarten literature, in which, we are glad to say, a very general interest is being aroused in Canada.

HOW TO TEACH VOCAL MUSIC. This is an excellent guide for those who would, with little knowledge of music, teach pupils to read and sing ordinary music. The author has used careful discrimination in selecting what is best from various systems, and has presented these points clearly and intelligently. Price, paper, 50 cents; cloth, 75 cents. Published by Fowler and Wells, 775 Broadway, New York.

WEBSTER'S UNABRIDGED, as recently revised and improved, delights as well as instructs. It is as useful at the fireside in every intelligent family as it is in the school. One can scarcely realize what an educative force a work of this kind may become during the long winter evenings, either in the family circle or the reading circle. Many leading educationists of Canada have given it their approval:

"An important feature of the present edition is the large amount of scientific and general information which it contains, rendering it in some sense an encyclopedia of know-

ledge rather than a mere dictionary of words."—*Sir Wm. Dawson.*

"Webster's Unabridged Dictionary is, in my opinion, unequalled by any work in the field of lexicography. I would like to see Boards of School Trustees place a copy of it in at least every Grammar and Superior School in the Province.—*Wm. Crockett, M. A., Chief Superintendent of Education for N. B.*

"Webster, in its present form, holds an easy pre-eminence. I may add that it has been the standard of appeal in the Provincial Normal School, Truro, N. S., since the establishment of the institution about thirty years ago."—*J. B. Calkin, M. A., Principal N. S. Normal School.*

**RECITATIONS FOR CHRISTMAS.** Published by Charles A. Bates, Indianapolis. Price 25 cents. This contains many appropriate Christmas pieces, both in poetry and prose.

**A NEW PART-SONG AND CHORUS BOOK.** For high schools, academies, choral societies and families, by Charles E. Whiting, formerly teacher of music in the Boston public schools. D. C. Heath & Company, Boston, 1887. It consists of six departments, namely: condensed elementary course; vocal exercises; two, three, and four-part solfeggios; three and four-part songs; anthems and choruses; and hymn tunes. Our readers can form an idea of its size when we say it is about eight by ten inches, with 256 pages. From the reputation of its author and the publishers, our readers must conclude that the work must be one of the best of its kind. An examination of the work will not fail to convince the sceptical.

**FRESH WATER SPONGES.** A monograph by Edward Potts, member of the Academy of Natural Sciences, Philadelphia. This is a synopsis of all the forms of American fresh water sponges known, with descriptions of those named by other authors throughout the world. It is the latest and most complete presentation of this department of zoology in existence, and reflects much credit on the author who has distinguished himself by a contribution to science of lasting value. It contains a series of plates illustrating general and specific structure. These representations have been superbly and accurately executed.

**THE CITIZEN'S READER.** By H. O. Arnold Forster, with an introduction by Hon. W. E. Forster. This book, referred to in Mr. Parkin's paper on "Teaching the Principles of Civil Government," is published by Cassell & Co., of London and New York, and can be ordered through any bookseller. The English price is only one and sixpence. Of it the *English Journal of Education* says: "We have no hesitation in pronouncing Messrs. Cassell's 'Citizen's Reader' the most important contribution to the literature of elementary education that has appeared in the last decade." This is high praise, but the very large sale which the book has had seems to prove that the popular verdict ratifies the critical opinion. Any boy in the British empire would be the better citizen for reading this volume, and we

trust it will find its way into many Canadian homes. In style it is as far as possible removed from the dryness of the ordinary text-book, and the volume will be found interesting reading for grown up people as well as for the young.

**NATURALISTS' LEISURE HOUR AND MONTHLY BULLETIN.** Published by A. E. Foote, 1223 Belmont Avenue, Philadelphia, Pa., U. S. A. 75 cents a year. Contains lists classified of the largest American collection of books and works in every department of science. Mr. Foote has also one of the largest mineralogical collections of any individual.

*The Conchologists' Exchange.* Are you interested in the collection of shells? then get this exchange Monthly; only 50 cents a year. Published by Wm. D. Averell, Chestnut Hill, Philadelphia, Pa., U. S. A. . . . *The Illustrated London News.* It is, perhaps not generally known that this enterprising and magnificent weekly, printed in America from London advance plates, is now, under this arrangement, obtained at considerably reduced rates. The Christmas number has been received. Its illustrations are elegant and beautiful and in the highest style of art. . . . *The Acadia Athenaeum,* the organ of the students of Acadia College, is one of the finest looking of our college exchanges. . . . *The Fordham Monthly* issues a magnificent annual number. . . . *The Dalhousie Gazette* means business. It is published fortnightly, and never looked better. It points out that nearly twenty of its graduates and alumni are in the academies and high schools of Nova Scotia. . . . *The Swiss Cross* for December is an admirable number. It gives evidence of a desire to meet the wants of its numerous readers. As a magazine for furnishing delightful instruction in natural history it has no equal. We are glad to hear of its success. The lesson on ferns, by Prof. W. W. Bailey, in the current number, is well fitted to create an interest in an interesting subject. . . . *The Century* for December contains a fine portrait of Lincoln. The illustrated "Notes on Parisian Newspapers" is a graphic sketch of Bohemian life in the great metropolis. *The Century* gives promise of unusual excellence for the coming year. See advertisement in another column. . . . *Science* for December devotes its leading article to a discussion of manual training in New York schools, showing the advance of public opinion on this question during the past year. This scientific periodical is doing much in behalf of practical education. . . . *The Popular Science Monthly* for December has an interesting and varied table of contents in which is an article by Grant Allen on American Potentillas, a genus of plants well known and widely diffused throughout the Atlantic Provinces. Mr. Allen frequently refers in the article to observations made during his recent visit to Canada. . . . The Christmas number of *St. Nicholas* is well fitted to inspire a keen and lively relish for approaching festivities. It is an admirable number. No more appropriate Christmas present for a boy or girl could be devised than a year's subscription to *St. Nicholas.* Refer to the advertisement in another column for the attractions it promises next year, and it will keep its promises. . . . *L'Evangeline,* a new weekly French paper published at Digby, N. S., has come to hand. It makes a very creditable debut, and has commenced a series of articles on education.





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