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THE JOURNAL OF EDUCATION AND AGRICULTURE,



PROVINCIAL, NORMAL, AND MODEL SCHOOLS, TRURO, N. S.

FOR THE PROVINCE OF NOVA SCOTIA.

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Vol. II.

Halifax, Nova Scotia, May, 1860.

No. 11.

EDUCATIONAL.

THE TRAINING SYSTEM.

[In the March No. we furnished some specimens of native talent, by the insertion of a few exercises written by the young ladies attending the Normal School. We promised to give a few more of these exercises in our next number, but this we were unable to do in consequence of the length of our Educational Report. We, however, gladly redeem our pledge, and subjoin two essays on the Training System of Education,—the former by Miss A. K. P. of Truro, and the latter by J. A. M., Jr. of Annapolis County. These essays, too, will show the degree of attainment at which many of our pupils arrive in their knowledge of our system.]

NOTHING can be done efficiently without a system. The farmer who commences the cultivation of his land does so with some plan in his mind's eye, or fails in the attempt. The house-keeper beginning her day's toil, must have some course of conduct marked out, else her work will be as far behind when night steals on as it was when morning dawned on its commencement. If a system is necessary for those who are dealing with matter, must it not be much more requisite for the development of mind? Certainly it must. And a teacher not only requires a system, but he requires one that is applicable to every case. Such a one is the Natural or Training System—the one adopted in the Provincial Normal Seminary, Truro.

The old rote or mechanical process formerly adopted in our country schools, consists of making the children commit to memory words to which they may not be able to attach any idea. The teacher, of course, offers no explanation! How

long such a practice would have been endured by our progenitors we do not know, but this we do know, that a star arose casting such light around that the supporters of this irrational method were obliged to beat a hasty retreat, giving way to the great Pestalozzi, who produced a complete revolution in education. He assumed these fundamental principles—viz., 1st. We must act according to nature; 2nd. Make the child use its own powers; and 3rd. Undue cultivation of memory, to the exclusion of the other faculties, as contrary to the meaning of the word Education. He reduced everything to Number, Form, and Words—of course number included all connected with figures—form, everything in the external world—and language, the workings of an internal existence. Thus he had an unbounded field to examine,—calculation—the sciences and metaphysics. Though we revere him as a great educationist, and admire his system because of its near approach to our own, yet we cannot help detecting errors where they exist. He thought that through nature we could know the attributes of nature's God, without being helped by Revelation.

The Monitorial or Madras System flourished next. It consists in teaching through the medium of the advanced pupils who are taught themselves by the head master. It secures a cheap education,—one teacher being able to have a very large number at his school, and it affords an opportunity to those who have an aptness for their business, to display their skill.

The Intellectual method contemplates the development of intellect without any reference to our physical and moral constitution. It consists of simplifying by the analysis of words and sentences.

The Intellectual and Emotional embraces the instruction of man regarded as an intellectual and social being.

The Natural or Training System is a series of adaptations to the nature of the children, and makes them exercise their own powers—hence its name Natural, according to nature, and Training, to make.

What is the nature of these children? It is complex, composed of a body, an intellect, and a conscience; these in inseparable union and in reciprocal dependence; a diversity of endowment; different epochs of development; diversity of attainment; and they are social beings. This system adapts itself to man's complex nature, by Physical, Intellectual, and Moral Education: to his nature united, by training the constituents simultaneously; to his diversity of endowment, by presenting a variety of subjects; to the different epochs of development, by teaching young children through the medium of visible objects, older are required to exercise their memory, and when about fifteen or sixteen, by calling their reasoning powers into action; to their diversity of attainment by presenting outlines. An outline contains the leading points of any subject you happen to be discussing. And this system adapts itself to man as a social being, by operating on the sympathy of numbers. Because of these adaptations it is called Natural, and because it makes the children use their own powers it is called the Training system. This involves the method of imparting knowledge, and not the knowledge itself. The *modus operandi* is of vast importance, because it is by it that mind is developed. The modes are Analysis and Synthesis, Individual and Simultaneous, and Questioning and Ellipsis. When proceeding analytically, we go from particulars to generals, or from the known to the unknown, and this is, consequently, adapted to young children. Synthetically, we go from generals to particulars, which is better adapted to more advanced pupils; from their knowledge they can classify and come to a discussion of particulars. The individual method is employed when the teacher desires to come in direct contact with one in the class. The simultaneous is used in explaining general principles. Questioning and Ellipsis form the mode by which the lesson for the following day is pictured out. These methods are to be used at the discretion of the teacher.

We have ascertained the features of other systems, of this, and now we desire to know—in what the Natural or Training exceeds all other methods? Dare we for a moment compare it with the old rote or mechanical process? Dare we bring an artificial form beside one based on reason? We will not. I shall merely point you to a poor little urchin standing beside his master. In his hand he holds an A B C book, and with his blue eyes examines every feature in his teacher's face. "Do you know your letters, sir?" questioned the master, roughly. "No-o," answered the boy, in his native tongue. "Say B," continued the teacher, in the same tone of voice, and directing his pointer to the letter called B. "Say a Bee," returned the boy, opening his honest eyes in amazement. "Say B, you blockhead!" roared the master, ferociously. "Say B, you blockhead," replied the poor lad, slowly, amid the laughs of the scholars and a teacher's frown.

This is the rote system! Now we will cross the Atlantic and come to Nova Scotia, to a school-room in a country place. We will enter unobserved and watch the procedure. The teacher stands beside a blackboard, and before him is a class learning the alphabet. Why do their blue eyes sparkle and earnestly gaze at his face? Simply because they understand his interesting stories, and feel the accents of kindness.—I listen! he is teaching them the form of the letters—"straight line—two straight lines forming an angle—letter n," &c. This is the Training system! Think, only think of the immense value of such training to any child! Parents, do you wish your children to be treated as rational beings, and be taught to remember the school-room as a place where bright memories cluster, rather than one where pleasure never was? or do you wish them to be stuffed with words minus ideas, and have an inward horror of all schools? If you desire the former, employ teachers who profess to act according to the Training

system; if the latter, call in some admirer of the Old Rote process.

The advantages that our system has over the Pestalozzian are many. He merely pictured out objects—no picture out words as being the symbols of objects. He was defective in moral training—we contemplate moral and religious instruction.

The Monitorial fails in moral training. The advantages of ours over the Intellectual system. There is the mere imparting of knowledge—ours is the cultivation of mind. We plough the field (mind) and sow the seed (knowledge). They touch not the field and sow the seed! What would your farmers think if they saw a man scattering oats on the surface of uncultivated fields? They would think such a person crazy, —much more crazy are we if we plant our knowledge without preparing mind.

Teachers! we have a great work to do! Let us press onward! Mind, immortal mind, is untutored, and must be trained. Who will enter hand and heart into the work of tutoring it?

ESSAY NO. II.—BY J. A. M., JR., OF ANNAPOLIS COUNTY.

The last century has been remarkable for the advancement made in the arts and sciences.

Amid improvements of such a nature it is a matter of wonder and regret that the cause of education, a subject of paramount importance, should have been so much neglected. It is true that some improvement has been made in this respect, but still the mass of the people do not seem sufficiently alive to its importance.

Lately, however, the public appear to have become aware of the fact that the wealth and prosperity of a country depend upon education, and corresponding efforts are being put forth for its advancement. Various theories or systems of education have been devised for the purpose of reducing the business of educating to a science. None of these systems, however, seems to merit so great attention as the one commonly known as the "Natural or Training System," which was originated by Professor David Stow, of Glasgow, Scotland, in the year 1826.

It consists in a complete series of adaptations to the nature of man as a compound being.

The leading features of this subject as differing from others are, first, in addition to instruction in all the branches usually taught in schools, it gives direct moral training; second, it provides a means of intellectual communication termed picturing out in words, conducted by questions and ellipses, analogy, and illustrations from objects with which the children are previously familiar. The answers to these questions are chiefly simultaneous, though occasionally individual, thereby training the pupil to observe, perceive, reflect and judge for himself. The pupils are thus taught to draw their own conclusion and to express it in their own language, or in such terms as they fully understand, being made to perceive the drift of the lesson as distinctly with the mental eye as they would real objects with the bodily eye.

Though the machinery by which this training process is carried on may at first appear somewhat complicated, yet it is simple. The teacher, however, in order to be successful must be thoroughly master of the art. Moral training requires that the teacher superintend the pupils in their sports in the play-ground, reviewing their conduct, and making suggestions as regards their amusements, on returning to the school room.

If this mingling of the teacher with the pupils be not carried on, in order to moral training, the establishment may present something like an approximation to the training system, but it is not *the thing itself*. It is in the play-ground that the teacher is to observe character and study disposition, without a knowledge of which he cannot do justice either to the moral or intellectual development of his pupils.

The exercise of the body and mind being thus intermingled the school is rendered agreeable to the child, so that where

this system is thoroughly carried out wrangling among the pupils, unconcern about school when at home, and playing truant are quite out of the question.

The leading idea in every lesson should be pictured out before recitation, always giving ideas or literal facts rather than technical terms. In this manner should all subjects be presented to the minds of the pupils; the teacher telling them only what they do not already know, thus leading them step by step to draw the natural inference or conclusion for themselves.

The landscape painter pictures in colours, the trainer in words. As painters differ in power and efficiency in their art, so do trainers in theirs. The requisite qualifications, however, are not nearly so rare as those for a painter or public speaker.

Plenty of physical exercise, both in door and out, should be provided, and conducted under the direct eye of the teacher. By this expedient a means is provided for the expenditure of the surplus of animal spirits, which, if not discharged in doing what is right, will be in what is wrong.

It is a great principle that children cannot be idle; neither can they always be intellectually employed without injury; a play-ground is therefore as indispensably necessary for intellect as for moral or physical training. In it the pupils find relaxation for their intellectual powers, others being called into action, and revive their spirits by breathing the pure and free air of heaven. Thus we see that without a play-ground the carrying out of the system is incomplete; it being impossible to train the whole child.

Bible Training.—The Scripture lesson should occupy the first hour of the day. The pupils being assembled in the school gallery the teacher proceeds, after singing a hymn in which the whole school unite, to read a portion of the Word of God. Then choosing a text, which, being repeated simultaneously by the pupils, he goes on to picture out the true meaning of the text by means of what is called an emblem; illustrating by a natural object to bring out the true meaning of a spiritual one. Moral cultivation cannot begin too early; it must grow with the growth and strengthen with the strength of the body, being the only rational and hopeful experiment for proper moral development. During the spring time of life, the weeds of sin and folly may be prevented from growing, by the pre-occupation of the ground by moral instruction.

Early rather than late training secures success in the prosecution of any branch of business or calling in life. This fact is none the less true in its application to the improvement of the mind, the cultivation of the moral affections, and the physical habits. The religious instruction, as well as the intellectual, should be elementary.

It is the province of the teacher to lay the foundation broad and deep, not knowing but that hereafter an immense superstructure may be required to be erected thereon, cultivating correct habits of thought, and action in the pupil, by which he is to educate himself throughout the varied period of his existence. Early training, except in a few cases, alone gives cause for hope of a prosperous and useful manhood.

Present to the mind the broad outlines of every subject, and he will not fail either by study or observation to acquire what is necessary to complete the whole,—quality rather than quantity, being the grand object of the training system.

By the Bible training lessons we elevate the motives of action in the youth; establish the principles of conscientiousness, benevolence and veneration; imbue a spirit of just self-respect, and lay a firm and proper foundation for all the other Christian graces.

Intellectually, it renders visible to the mind's eye of the child the true meaning of each word composing the lesson; giving also a clear and distinct idea of the whole subject, and fixing the same indelibly upon the memory and understanding, by means of ideas, or real facts. It prevents long lessons or tasks at home; by which the children often become tired of their books. By the old systems the teacher merely hears the lessons which the child may have committed to memory at home; which does not add to the information of either, except by the acquisition of so many vocabularies.

The parents deceive themselves by determining the amount of education their children are receiving by the number of books they use, the length of their lessons, and the time that they occupy in study during the evening.

Picturing out, conducted orally, serves to communicate instruction to all, whether they can or cannot read, it adds to what may be contained in the lesson, the teacher's own experiences and research from different authors, and mightily increases the intellectuality of the pupils.

The gallery awakens that important mental sympathy which is ever at work either for good or evil. It also provides a more convenient platform for simultaneous and other exercises of like nature. The first power of mind called into exercise by the child is observation. The initiatory education of children should therefore consist in facts deduced from the representation of visible objects. This picturing process must necessarily require time, but it conveys a clear and definite understanding of every object presented; lays the foundation of knowledge firm and sure in the mind; points out the bearings or relations existing between different parts of the subject, and leads the children, logically, to draw their own conclusion.

Training lessons, conducted orally, without the aid of books, have a decided superiority over the mere analyses of a lesson; inasmuch as the whole range of authorities, to which the teacher may have had access, being brought to bear upon the point under consideration, greatly increases the means of information of the pupils.

Any branch of education may be conducted on what is called the training system, always bearing in mind to give ideas rather than technical terms, known facts rather than mere words.

It is a somewhat intricate and vastly extended process, especially when applied to the junior classes; the complete system being required to train the child—the whole child. The teaching of writing, arithmetic and book-keeping does not differ materially from the ordinary improved methods. In these branches little more than the mere mechanical labour requires to be performed; excepting arithmetic, which demands mental exercise, to a greater or less extent, even where no system of education can be said to exist.

Reading and Elocution, which may be termed the art of acquiring and of communicating knowledge, are taught after a new and somewhat novel method. Reading consists, first, in thoroughly understanding the signification of certain characters or figures; second, audible reading, or elocution, in conveying the true meaning of the passage read to the minds of your hearers, either by modulation of the voice, gesture of the body, or otherwise.

A few simple rules, such as keeping the mouth well open, resting on the consonants, avoiding a monotonous tone, and making a pause at the end of each word, so as to give a slow and distinct articulation of every word and syllable composing the sentence, are all that is necessary to secure good reading. This last exercise, viz., pausing after the words, should be frequently practised, especially during the first few weeks or months that the school is in operation.

The pupils will thereby acquire a habit of distinct articulation in reading which they will ever afterwards retain.—Reading may generally be conducted on the simultaneous principle, which saves time, and produces the most perfect concord as to the tones of the voice, which effect is caused by the sympathy of numbers.

The teaching of *English Grammar* is, by the training system, best conducted by dividing the school into sections—each section or class (commencing with the most juvenile department, viz., children only four or five years of age) taking that peculiar portion or stage of advancement adapted to its previous attainments or ability. The first stage consists in finding out the different parts of speech and classifying them; the second, in subdividing the great classes; the third comprehends the inflections, or such parts of speech as are capable of being used in different forms; and the fourth, the relation existing between words belonging to different classes.

As a great general rule for the teaching of practical gram-

mar, the teacher should make use of proper language himself, and mildly correct his pupils when they fail to imitate his example—always requesting them to give the rule for such a correction.

English Spelling may, like grammar, be taught in stages. The difficulties in connection with the teaching of this branch arise from the numerous anomalies or irregularities of the language. It should be taught as well by the eye as by the ear. We know of no better method for making good spellers than by requesting the pupils to write such sentences upon their slates as contain words liable to be misspelled, and to spell the same aloud as they have written them, dwelling upon and correcting the errors, if there be any. These words in which they are most liable to err are thus ferreted out, corrected, and impressed upon the memory in such a manner as will cause them to remain.

As children have no idea of number in the abstract, we should, in teaching *Arithmetic*, always use visible objects as representations of the symbols or figures; and as soon as the fundamental rules—addition, subtraction, multiplication, and division—are acquired, apply number to value, weight, measure, &c., associating, as before, visible representations.

Geography may be taught in three divisions, which we denominate stages, viz., the *Initiatory*, the *Systematic*, and the *Advanced stage*—commencing with the *Synthesical* and ending with the *Analytical*. The *Initiatory stage* comprehends a knowledge of the cardinal points, the definitions, and the productions, animal and vegetable, of the earth. The *systematic stage*, which includes the apparatus for teaching the great general principles and manner of presenting the subject.—Under the advanced stage falls a thorough knowledge of *Physical*, *Mathematical* and *Political*, in all their various departments.

History may be considered under two heads, *Practical* and *Systematic*. *Practical History* consists in teaching it in connection with *Geography*—combining events with the names of those places of which the *Geography* lesson may treat.—The benefits arising from this process are great. The memory is assisted, first by the association of ideas, and second, by a more vivid impression being made upon it than when it is merely learned by heart from the book. *Systematic History* consists in teaching first by outline, taking up certain great leading epochs; second, great outline—different kings under each of these epochs or dynasties—account of their lives—length of their reigns—leading events, and the poets, statesmen, philosophers, warriors, &c., who flourished during such period or reign. Having gone thus far, the pupils are ready to commence the study of history from the book.

Physical Training.—Though we mention this department last, it is far from being the last in importance. We regard it as the main-spring by which, in a great measure, both the intellectual and moral are to be regulated. It is alike conducive to the health of the body and to the vigor of the mind, and also to the cultivation of habits of order and physical obedience, which greatly strengthen and assist in the moral training.

Physical training, both in the play-ground and in the gallery, however, may be viewed more as a means to an end, than for its own real benefit,—the great end being to arrest and secure attention,—thus preparing the pupil to receive intellectual and moral instruction. It should, therefore, in connection with vocal music, form a portion of the exercises in the daily workings of every school establishment.

The training system cultivates the whole nature,—not merely the head, the habits, or the memory, but every phase and feature in the physical, intellectual and moral nature of the recipient.

Our reason for denominating this system training is because we find in Scripture the command "train up a child in the way he should go and when he is old he will not depart from it." It does not say, *teach up*, or *instruct up*, but *train up*. It does not tell us to train up the head, the affections, or any other one part, but the child—the whole child. And, further, we understand the word *up*, used as it is here, to denote that

the training should not commence at any advanced period, but at the earliest youth, at the beginning of life.

"In *no way* he should go;" this way is undoubtedly that which is marked out in God's Word.

"And when he is old he will not depart from it," but will continue to educate or to train himself—and in precisely the same manner in which he was dealt with in youth.

In proportion, therefore, to the intellectual and moral culture of the youth will be the degree of usefulness and benefit to his fellow-man to which he will arise in life. The foregoing observations imply that the training should be carried on continually, either by the parents or by proxy, and what better proxy, we would ask, can possibly be employed than the teacher.

Too frequently, alas! do we find children trained up in the way they should not go, and when they are old they do not depart from it. The affections and habits, both physical and moral, should be properly exercised and trained in the way they should go, which way is universally acknowledged to be in accordance with the revealed will of God. Often do we hear ministers of the Gospel and others, whose duty it is to train the youth in the way they should go, tell them what is right to believe, what is right to do, and set them a good example, without once attempting to extend to them such inducements, or place them under such circumstances, as will enable them to do the thing. The force of habit is great; it has been said by some to be second nature; thus, although the teacher spend his whole life in Scripture texts or instructions, it will not suffice; he must see that the child practically does in real life the things required in the text—this renders the process training. Having already seen that the nature of children is compound, we now proceed a step further by stating that this compound nature is incapable of separation, that its various parts are indissolubly united and mutually dependant one upon the other, the body upon the intellect, the intellect upon the conscience, and *vis-a-versa*.

Such are our ideas as regards the application of the training system of education to the youth. We conceive that none can be so suitable for the proper development of their mental and physical powers; none so full of expedients to meet every case, no matter how obtuse the intellect or how immoral the habits. We hope that ere long it will become a household word, a living and adopted principle, in the schools throughout the length and breadth of our land.

OFFICIAL.

CLOSE OF WINTER TERM OF NORMAL SCHOOL, 1859-60.

Our readers are aware that the whole of the last number of the *Journal* was devoted to the publication of our Annual Report on the state of Provincial Education. This prevented us from noticing the closing services of the last Term of the Normal School. These services, in all their leading features, were the same as on former occasions. It was cheering to observe the interest on the part of the public, in this institution, continuing unabated, the attendance of visitors being as large as ever. In consequence of the increased attendance of the pupil-teachers, scarcely any accommodation could be provided for the visitors. This is a serious inconvenience, and should the same number continue to attend, ought to lead to the adoption of decided steps for the enlargement of the premises.

The following is a correct list of the Graduates of the last Term:—

First Class Diploma.

Miss Charity Snadden,	Miss Ellen Keiller,
Jessie Baxter,	Annie Green,

Miss Maria Corbett,
Annie Pitblado,
Elizabeth Lauder,
Isabella Kent,
Jane Reil,
Martha Stuart,
Lillian McLeod,
Jane Bremner,
Susan Waddell,
Muggie Walker,
Elmina Cox,

Miss Janet Chipman,
Ellen Page,
Janet Matheson,
Lois Kenny,
Sarah Butler,
Lizzie Palfrey,
Mr Calvin Raymond,
Reuben Raymond,
John A. Morse,
George Kent,
James Forbes,

Second Class Diploma—1st Division.

Miss Elizabeth Miller,
Fanny Fisher,
Margaret Murny,
Jane Purney,
Caroline Fisher,
Louisa Henderson,
Hannah Eilon,
Mary Smith,
Margaret Densmore,
Rachel Harvey,
Annie Minard,
Maria Minard,
Eusebia Minard,
Ellen Long,
Rebecca Archibald,
Lizzie Stephens,
Jessie Dickson,
Georgina Sutherland,

Miss Margaret Flemming,
Mary J. Miller,
Hannah Dumphy,
Mr George F. Campbell,
Edmund Archibald,
Lemuel Sperry,
James Ross,
Donald McLean,
Frederick Kelly,
Arvid Gates,
James Calder,
John Campbell,
John Miller,
William Norrie,
James McLean,
Donald McKay,
John McDonald.

2nd Division.

Miss Sarah McKeen,
Agnes Johnson,
Lydia Knowles,
Catherine McKay,
Esther King,
Mary Creelman,
Margaret Bruce.

Mr Thomas McLeod,
Neil McMillan,
David Whiston,
Allan McMillan,
John H. McMillan,
Hiram Eaton,
Samuel Jackson,
Benjamin Christmas.

SUMMER TERM OF NORMAL SCHOOL, 1860.

The Summer Term of this institution commenced operations on Wednesday the 9th inst. On the following Wednesday, Dr Forrester delivered the usual opening lecture, choosing for his theme the duties of the Teacher. After briefly adverting to the fourfold aspect in which this subject may be regarded,—embracing, first, the duties the Teacher owes to himself; secondly, to his scholars; thirdly, to the parents of the scholars; and lastly, to the profession or his fellow-teachers,—the lecturer discussed at length the first of these,—throwing his observations under the following heads:—*The health of the Teacher, his personal habits, his self-improvement, and his professional advancement.* In showing that it is the bounden duty of the Teacher to attend to the state of his health, Dr F. brought before his auditors many plain and important remarks on diet, sleep and exercise. On the second point, viz, his personal habits, he called particular attention to the matter of dress, cleanliness, order, courteousness, kindness, and punctuality. On the third point, that of mental improvement, Dr F. pressed upon the students the vast importance of pursuing a regular course of study, of allocating a certain time to each branch, according to its importance, and of adhering rigidly and punctually and perseveringly to the prescribed course, aiming more at accuracy than quantity, and allowing the invigorating breeze of moral culture to per-

vade and refresh the whole. On the third topic—the professional advancement of the Teacher—the lecturer dilated on the indispensable necessity of his (the teacher) studying thoroughly, in all its essential features, the nature of the recipients of education, of using the best means for the development of that nature in all its ingredients, of being completely master of the various branches of education he professes to teach, and of preparing accurately the lessons of each day, and of making himself well acquainted with all the external means requisite for carrying out such an education, such as school premises, school organization and management, appropriation of time, government, &c., &c.

The attendance is larger than at any former Summer Term, there being not less than 74 enrolled. But the most cheering feature in the attendance this summer is the unusually large number from the Western Counties. The following is a list of the students, with the counties whence they came, and the denominations of professing christians to which they respectively belong:—

NAME	NATIVE OF.	DENOMINATION.
Miss Eliza J. Marshall,	Colchester,	Episcopalian.
Lilla Sutherland,	Pictou,	Presbyterian.
Mrs. A. Dodge,	Annapolis,	Methodist.
Miss Ada Hill,	Digby,	Episcopalian.
Leitia Clark,	Digby,	Baptist.
Sophia Murdoch,	Colchester,	Presbyterian.
Hannah Crosby,	Yarmouth,	Baptist.
Isabella Nash,	Pictou,	Presbyterian.
Matilda Faulkner,	Colchester,	Baptist.
Eleanora Cullen,	Cumberland,	Baptist.
Julia McNutt,	Colchester,	Baptist.
Elizabeth McLean,	Pictou,	Presbyterian.
Fanny Allison,	Queens,	Baptist.
Arabella Page,	Cumberland,	Baptist.
Martha Dexter,	Digby,	Episcopalian.
Nancy Gummell,	Colchester,	Presbyterian.
Jessie Blair,	Colchester,	Baptist.
Maria Hamilton,	Halifax,	Episcopalian.
Esther Hamilton,	Halifax,	Episcopalian.
Harriet Blair,	Colchester,	Baptist.
Anna Cocke,	Colchester,	Presbyterian.
Rachel Pollock,	Colchester,	Presbyterian.
Margaret J. Peppard,	Colchester,	Baptist.
Mary Cousins,	Digby,	Episcopalian.
Mary A. Quirk,	Annapolis,	Episcopalian.
Annie Hamilton,	Colchester,	Presbyterian.
Amelia Spencer,	Colchester,	Baptist.
Mary J. Creelman,	Colchester,	Presbyterian.
Eusebia Minard,	Queens,	Chr. Baptist.
Margaret Densmore,	Hants,	Presbyterian.
Lydia Knowles,	Colchester,	Baptist.
Harriet J. O'Brien,	Hants,	Presbyterian.
Lizzie Stephens,	Colchester,	Baptist.
Jane Crowell,	Shelburne,	Methodist.
Amelia Spencer,	Colchester,	Baptist.
Mr Marshall Jost,	Guysboro',	Methodist.
Edward McCurdy,	Colchester,	Presbyterian.
William McCurdy,	Colchester,	Presbyterian.
Albert Hemeon,	Shelburne,	Episcopalian.
Hiram Eaton,	Colchester,	Presbyterian.
George Ross,	Colchester,	Presbyterian.
Martin Mitchell,	Lunenburg,	Episcopalian.
John McCurdy,	Colchester,	Presbyterian.
Alexander McRae,	Richmond,	Presbyterian.
James Ross,	Colchester,	Presbyterian.
William Horner,	Annapolis,	Methodist.
— Horner,	Annapolis,	Presbyterian.
Reuben Wentzell,	Lunenburg,	Lutheran.
Millidge Oakes,	Lunenburg,	Episcopalian.
Hanford Denton,	Digby,	Baptist.
George H. Norrie,	Colchester,	Presbyterian.
David Webster,	Kings,	Baptist.
David Douglis,	Hants,	Presbyterian.
Anthony Paton,	Yarmouth,	Baptist.

NAME.	NATIVE OF.	DENOMINATION.
Mr. ———— Ross	Yarmouth.	Baptist.
Watson Porter	Kings.	Methodist.
Rufus Smith	Hants.	Presbyterian.
Charles Hiltz	Lunenburg.	Episcopalian.
Thomas W. Hilton	Yarmouth.	Presbyterian.
John Gibson	Shellburne.	Methodist.
Anthony J. Crosby	Yarmouth.	Baptist.
Charles Church	Lunenburg.	Baptist.
Jonathan Pearson	Queens.	Baptist.
Kineman Parker	Lunenburg.	Baptist.
Ezekiel Starrett	Lunenburg.	Baptist.
James Lynda	Colchester.	Baptist.
Donald McLean	Inverness.	Presbyterian.
Benjamin Rogers	Yarmouth.	Methodist.
Samuel Raymond	Yarmouth.	Baptist.
J. Levi Miller	Hants.	Presbyterian.
John A. Morse	Annapolis.	Baptist.
Samuel Jackson	Annapolis.	Baptist.
William Sargent	Shellburne.	Methodist.
D. McLean	Pictou.	Presbyterian.
D. McAuley	Cumberland.	Presbyterian.

CORRESPONDENCE.

To the Editor of the Journal of Education and Agriculture.

DEAR SIR,—

Last Friday, by request I attended an examination of the school taught in Hammond's Plains by Mr R. O. B. Johnson, and an educational meeting in the evening; and as I know that you and your intelligent readers are pleased to hear of the advancement of education, and especially in connection with the Normal School at Truro, I send the following.

The exercises commenced at 1 o'clock, P. M., and continued till after 5 o'clock. I did not arrive in time to witness the examination of the junior classes, but am informed that it was very satisfactory by Mr Dakin, teacher at Bedford, and others present.

The branches in which the pupils were examined, were: Reading and Spelling, English Grammar, Geography, Mental and Slate Arithmetic, Anatomy, and Physiology. Considering that the system has only been forty-two weeks in operation there, we think that to teacher and pupils belong the meed of praise. In fact, the examination would compare honorably with anything I ever witnessed under the circumstances. The singing was most delightful.

It was through my influence that they obtained a teacher from your noble institution, and although they pay a much higher salary than has been paid in that locality, yet I believe the people are now prepared to admit that the highest priced articles are not always the dearest.

It is an exceedingly trying time to the people in the Plains. They are generally coopers, and in consequence of the failure in the fishery, their trade is comparatively valueless. Moreover, almost every house has been visited the year past with sickness and death from scarlet fever.

After the examination, Mr Norman Hays, one of the pupils, presented the teacher with a neat little gilt edged Bible as a token of respect, accompanied with an appropriate address in behalf of the school, to which Mr Johnson made a touching and appropriate reply.

The educational meeting in the evening was highly interesting. After appointing me as chairman, the following resolutions were unanimously adopted, which will show the light in which they regard the teacher and the system which he has so successfully taught. The meeting was addressed by the chairman, Mr Dakin, Messrs. C. Bezanzon, S. Thomson,

and others, on the subject of education, your valuable journal, &c.

1. *Resolved*.—That in view of the dreadful malady which has bereaved many a fond parent, and caused their hearts to bleed, that this meeting unitedly join in prayer to Almighty God for the restoration of health to this community.

2. *Resolved*.—That evident success has attended the exertions of the teacher and trustees during the past year, that the school be continued for the ensuing year, and that Mr R. O. B. Johnson be the teacher.

3. *Resolved*.—That the trustees, as our representatives, enter an agreement with the teacher for the sum of £100, to be raised by voluntary subscription.

4. *Resolved*.—That a vote of thanks be presented to the subscribers for their liberal aid during the past year, and that they be solicited to continue their support for the ensuing year.

5. *Resolved*.—That a vote of thanks be presented the Rev T. H. Porter for the interest he has taken in the cause of education.

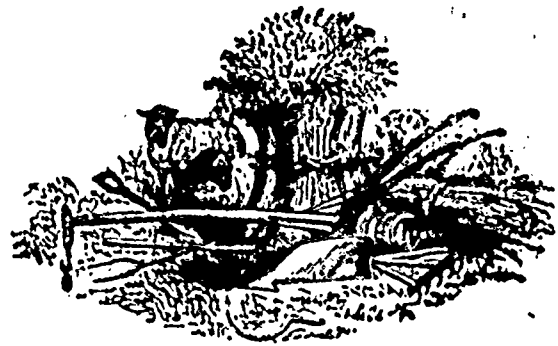
6. *Resolved*.—That a vote of thanks be presented to Mr Dakin for the interest he has taken in this school.

7. *Resolved*.—That the chairman be requested to send an account of these meetings, with the resolutions, to the *Journal of Education and Agriculture* and the *Christian Messenger* for publication.

T. H. PORTER.

Sackville, May 1st, 1860.

AGRICULTURAL.



REPORT ON AGRICULTURE FOR 1859.

In pursuance of the Resolution come to at the last Session of the Legislature, I beg to submit to the Branches of the Legislature, in Parliament assembled, my first Annual Report on the subject of Agriculture.

Believing that my appointment, as the medium of communication between the Legislature and the Agricultural Societies throughout the Province, contemplated something more than the maintenance of the present organization of these Societies, even the use of the means within my reach for the diffusion of a livelier interest in this important branch of the public service, I at once addressed a circular to the different Agricultural Societies, containing the Resolution referred to, with the following Queries:—

CIRCULAR.

TRURO, 1st June, 1859.

DEAR SIR,—

I beg to forward to you, as Secretary of the Agricultural Society, the following Resolution passed by the Legislature last Session, and shall feel obliged by your bringing it before the members of your Committee:—

“*Resolved*, That for the present year the Accounts and

Reports from the several Agricultural Societies should be sent to the Superintendent of Education at Truro, by whom all such accounts when examined shall be sent to the Financial Secretary's Office, and, on his certificate of their correctness, the sum which each Society shall be entitled to receive from the Agricultural Grant shall be paid, and a Report from such Superintendent, showing the condition and operations of these Societies, shall be submitted to the Legislature at its next Session."

I may state that I consented to discharge the duties involved in the above Resolution, in the hope that the present organization of the Societies might be upheld, and that, through the columns of the Journal of Education and Agriculture, the proceedings of these Societies might be more widely diffused, throughout the Province; and, still more, that an opportunity might be furnished, through the record of these proceedings, of presenting and pressing the claims of this important branch of the public industry upon the attention of the Legislature. With these objects in view, and as no formal report was made last year of the condition of the Agricultural Societies, or of the cause of Agriculture generally, might I ask you to forward me at your earliest convenience a reply to the following queries:—

1st. What is the present condition of Agriculture in your district? State whether you consider it stationary or progressive during the last few years, and what causes have mainly operated in the one case or the other?

2nd. Is there anything like attention paid to the Rotation of Crops?

3rd. Are any artificial fertilizers employed by the farmers in your district, or any attention given to the manufacture of Compost Beds?

4th. What is the average quantity of arable land cultivated, and what may be the proportion of Grain and Root Crops respectively?

5th. Do the farmers generally possess a copy of "Dawson's Agriculture of Nova Scotia?"

6th. Is there any periodical on Agriculture circulated in the district?

7th. From your own observation do you think that the Agricultural Societies have been productive of a benefit to the cause of Agriculture? Please make any suggestions calculated, in your opinion, to render them still more beneficial.

8th. State what you consider to be the grand desideratum for inducing an impetus to this important branch of industry.

I am yours truly,

ALEXR. FORRESTER.

To these queries I received replies from about forty Societies, containing much valuable information respecting the present condition of Agriculture in the Province, with many important suggestions, with a view to its future improvement.

Several of these replies I published in the Journal of Education and Agriculture during the course of the summer, making selections from different localities in the Province, that a fairer representation of our agricultural condition might be brought before the public.

I know not how I can better advance the cause of Agriculture, or fulfil the object of my appointment, than by presenting to the Legislature an analysis of these returns, offering as I proceed such suggestions regarding them as I may deem advisable: then I shall state the sums paid the different Societies out of the Public Grant, along with a list of the Societies that have forwarded to me a financial statement of their present condition and a report of their proceedings during the past year.

QUERY I.

The first query has a reference to the present condition of Agriculture. It is to the following effect:—

"What is the present condition of Agriculture in your

district? State whether you consider it stationary or progressive during the last few years, and the causes that have mainly operated in the production of the one or the other of these effects."

All the replies given to this query go to prove that on the whole, decided progress has been made in agricultural pursuits. A few lament that greater progress has not been made, and a few more the indifference and apathy that still prevail; but all seem ready to admit that some improvement has taken place, and in not a few instances that this improvement has been considerable.

Like every other branch of industry in the social economy, Agriculture has had its ebbs and flowings, but no one who knows anything of what Nova Scotia was twenty-five or thirty years ago, and compare its present condition with what it then was, will hesitate to admit that very decided advancement has been made in farming affairs. It is well known that the first grand impulse given to the cause of Agriculture in this Province was the writings and exertions of *Agricola*. The discussions that ensued, presided over and directed by My Lord Dalhousie, the Governor of the Province, originated the whole organization of the Agricultural Societies with the Central Board, and just when the impress produced by these efforts was beginning to be effaced, a fresh impetus was imparted by the appointment of Principal Dawson to the office of Superintendent of Education, with special instructions to direct the attention of teachers and others to the matter of Agricultural Chemistry. Dr Dawson lectured extensively throughout the Province on this subject, and from his profound knowledge of several branches of Natural Science, intimately connected with Agriculture, combined with his rare practical sagacity, succeeded in infusing new life and vigour into the minds of many of our farming population. The substance of the lectures delivered on these occasions was afterwards published, and, at the expense of the Province, was widely circulated. All these movements were greatly aided and strengthened by the arrival of Sir Gaspard LeMarchant as Governor of the Province. That gentleman manifested the deepest interest in the cause of Agriculture, and encouraged it in every possible way, by exhibitions, by the importation of stock of all kinds, and by the dissemination of scientific knowledge. All these stimulants have proved bright spots in our agricultural history, and although they may have been sometimes succeeded by temporary seasons of quiescence, the general progress has been marked and decided.

The answers to the query under consideration go to show that this progress is very observable in the following particulars:—1st. The growing conviction that farming, when exclusively followed, will not only pay, but pay well.—2. The more scientific cultivation of the soil, and the greater attention paid to manures, both organic and inorganic.—3. The partial adoption of the system of the alternation of crops.—4. The steadily increasing growth of Green Crops. 5. The improved breeds of Stock. 6. The gradually increasing use of labour-saving implements.

Various causes are assigned for this improved and improving condition of things; such as the progressive advancement of society in general;—the diffusion of more enlightened and scientific views on the whole subject of Agriculture;—the failure in the potato and wheat crops,—that failure having stimulated to exertion, and rendered the farmer

more skillful and industrious;—the improved condition of the markets;—the increased means of transit;—and the Agricultural Grant.

QUERY II.

"Is there any thing like general attention paid to the rotation of crops?"

The answers given to this query are exceedingly diverse. Were we to attempt to classify them, we would say that out of forty, ten report that the rotation of crops is pretty generally attended to,—fifteen partially,—and the other fifteen entirely neglected. This state of things does not at all take us by surprise. The want of a systematic rotation of crops in Nova Scotia, and indeed in all these Colonies, lies at the root of all our agricultural defects. The long severe winters in this country prevent something like a plausible reason for taking crops of hay, year after year successively, from the same field, and that not unfrequently without the least vestige of a topdressing. The uncertainty of the markets, too, sometimes presents temptations to farmers to grow some particular crop to the all but total neglect of all others; such for instance, as has taken place in Kings County for the last few years, in reference to the potato. The great demand for that esculent, and the high price it brought in the American markets, have prompted not a few to plant the same root in the same field for a succession of years, not without manuring, it is true, but rendering it altogether impossible for them to carry out anything like a systematic course in the management of their farms. In addition to all these reasons, there is perhaps a majority of our farmers who really know little or nothing of the advantages of adherence to system in the rotation of crops. We cannot find fault with them for this. Their ancestors, the first colonists, betook themselves to the clearance of the ground and the cultivation of the soil, without any previous training, and ended their days without any scientific knowledge of Agriculture at all; and as their forefathers farmed so do they, their circumstances having, in a great measure, precluded them from those opportunities of improvement which have been open to others in older settled districts; and even where they have been favoured with such opportunities, there is a stereotyping in agricultural pursuits which nothing but ocular demonstration of the advantages of the application of science to the cultivation of the soil, will supplant.

Now, there are two grand classes of reasons in favour of the rotation of cropping, on which we would make a few remarks.

The first is, that different plants draw from the soil different sorts of food, so that one plant will grow freely in a soil in which another will scarcely grow at all, or, if it grow, will prove exceedingly unproductive and unprofitable. This great law or principle is taught us by nature itself, and constitutes one of the chief reasons of the geographical distribution of plants. Why, for example, does one species of grass grow in the moist meadow, another on the level plain, and another on the Alpine ridge? Simply because that, in these localities, they find the food and the climate most congenial to their respective natural constitutions. Every observing colonist is acquainted with the fact, that the growth of hard wood, after having been laid prostrate by the deso-

lating fire, is succeeded by that of soft wood, and vice versa. And the reason of this plainly is, that the trees of the preceding growth have absorbed all the nutriment congenial to their nature; and therefore they are succeeded by others which are nourished and sustained by the very substances rejected by the preceding. And so is it with arable soils and the various crops under cultivation. The turnip, for example, takes from the soil a large quantity of one kind of nutritious matter, wheat a large quantity of a different nutritious matter, and hay a large quantity of nutritious matter different from both turnips and wheat. Therefore, although a field may give a sufficiency of that kind of nutriment which is principally required by one crop, yet if another of the same kind immediately follows, there will be a deficiency for it; but if a different crop succeeds, there will be found enough of all the materials it needs, fully to manure it; and when a third crop of another description follows which requires nourishment, different from either which have preceded it, the soil may be in a condition to yield a good crop of the last also. But as every crop takes away more or less of all the nutrition which the soil contains, if a succession of crops (no matter how different the kinds which succeed each other may be) are gathered and carried off the land, without the occasional addition of manures, they will be found gradually to diminish in quantity, till they reach a point where they will scarcely pay the expense of cultivation. And this is actually the state of matters in too many instances throughout this Province.

The other class of reasons which go to support the necessity of the adoption of a thorough system of the rotation of crops, is, that from the variety of crops, the occasional failure of one is not so much felt, seeing that the other crops furnish abundant subsistence without it. This other class of reasons might furnish abundant scope for illustration.—Whatever be the science and skill of the farmer in the cultivation of the soil, and in the supplying of his various crops with suitable food, much of the success of his efforts depends on the blessing of heaven. Over this, of course, he has no control, and the only way by which he can defend himself against such contingencies, is the adoption of a system of rotation of crops.

The next point for our consideration under this head is the plan or scheme of rotation best adapted for this country. Without at all entering into this subject it may be stated that this rotation should extend over a period of, at least, six years. It should commence with the green or root crop, the field devoted to this purpose receiving the largest amount of cultivation, of fertilizing and cleaning. After the green crop should come the wheat or barley, which must be sown with rye grass or timothy and clover. This field the next year yields the hay crop, which is afterwards pastured for two years, and then ploughed up for oats or peas. Thus the rotation is completed, and the next year the root crop is renewed in the same field, which is again thoroughly cultivated and fertilized. In commencing this regular process, the arable portion of the farm, whatever be its size, should be divided into six parts, as equal as possible, with a direct communication from the barn-yard to each field, and from one field to the other, so that the cattle may pass from one to another when necessary. This being done, and the fields all properly fenced, then select that field of the series which is in the best condition for a root crop and call it A; then

the best for wheat or barley and call it B; that field which is actually in hay call C; and the pasture fields call D and E; leaving one for the oats, which may be named F. Each field for the first year ought to be appropriated to the crops as above mentioned. By this arrangement the farmer will, at all events, receive as much from the six fields as he does at present, and, at the expiration of the six years, provided he has thoroughly cultivated the green crop field every successive year, which forms, in fact, the key to the whole system, he will get, to say the least, double the amount of produce from every field; and every time he performs the cycle he will but add to its fertility and productiveness. Such are the advantages to be derived from the adoption of this system.

QUERY III.

"Are any artificial fertilizers used or any attention given to the manufacture of Compost Beds?"

This query was proposed entirely for the purpose of eliciting the views of the different localities on the all-important subject of manures, the bank, as it has been expressively called, of the farmer; and, from the answers, we have obtained a considerable amount of information as well as the confirmation of opinions long entertained. By far the greatest proportion of the replies admit that this subject has not yet received one half the attention its importance demands. Some again state that it is beginning to claim no small share of interest on the part of some of the more industrious of our farming population. And a few others refer with much gratification to the advancement that has taken place within the space of a few years in compost beds and in the use of artificial fertilizers.

Our decided opinion on this, as on many other matters connected with our provincial Agriculture, is that we are, at present, in a transition state. Many of our farmers in the more advanced settlements have learned from experience the advantages to their crops of a copious and judicious application of fertilizing manure. Others again are studying the subject, and are beginning to understand the dependence of the plant on the soil, and the philosophy on rationale of that dependence. And others have seen with their own eye the effect upon the growth of certain crops by the application of bone dust or some artificial fertilizer. In one word, attention is now directed to this subject, and all that is required is, the imparting of a more powerful impulse by the diffusion of scientific knowledge and the concentration of experimental efforts,—the former by lectures and agricultural periodicals, the latter by clubs, &c., &c.

The first practical point, in our estimate, to which the attention of the farmers should be directed is the means that ought to be employed for the purpose of increasing and improving the quantity of our common manures, whether they be organic or inorganic. Much has recently been spoken and written on the subject of artificial fertilizers, and, in a more advanced condition of farming, these may be introduced with great benefit. In the mean time, our great concern should be, how to increase the quantity and impart more value to what already is at our command. The natural manures of Nova Scotia are exceedingly abundant; they meet us in every direction, in the barnyard and swamp, in the bog and mountain, in the intervals and marsh, in the vegetable and animal deposits; and the question is,—do our

farmers avail themselves with anything like steady industry of what is thus within the immediate reach of all, some of one kind, and others, of another. We are persuaded they do not, not even of one half, and hence the crops of our Province, both in grain and roots, are not more than one half of what they might and ought to be.

But let us be somewhat more particular. How little comparatively, for example, is done for increasing the quantity, and still less for preserving the virtue, of the solid stable manure. Of the forty thousand of our population engaged in agricultural pursuits, we do not believe there are even a thousand who use the slightest means for the preservation of the strength or virtue of the stable manures, and the result is, that although it may remain the same in bulk, it is as consigned to the soil deprived of nearly one half its value. Some of its ingredients, such as ammonia, are exceedingly volatile, that is, they readily pass into an aeriform state, by a process of evaporation. Others again possess the property of solubility, that is, when the manure is in a process of decomposition, pass into a fluid state and are almost entirely lost to the farmer. And what is necessary to be done for the preservation of one or other of these ingredients? To prevent ammoniacal vapors making their escape, the manure heap ought to be covered when passing through a process of fermentation. This may be done in two ways, either by constructing the barn so as to hold the manure under its roof, or under some part of the flooring; or by the erecting of a roof or shed, so that it shall be protected from the rain or snow. It were well too, and would far more than compensate for the expenditure, were the manure heap every now and again strewed with a little gypsum. This would convert the volatile ammoniacal vapors into fixed sulphate of ammonia, and thus retain its virtue. This, too, would render the air of the stable, when the manure heap is under cover of the barn roof, far more pure and wholesome for the cattle.

But how are the soluble particles, or the parts that have gone into a state of fluidity, to be preserved? These oftentimes contain the very strength of the substance, and every means should be employed for their careful preservation.—For this end, the place where the manure heap is deposited ought to be dug out or hollowed, and the sides and bottom made tight with planks or clay. And the more thoroughly this is done the more valuable will be the manure. It would be of great advantage in the autumn to put two or three feet of peat, moss or bog mud at the bottom of the pit. This would receive any solution that may descend and would add considerably to the quantity.

But whilst every care should be taken of the solid stable manure, what, it may be asked, is to be done with the liquid? It is well known that comparatively few of our farmers use any means for the purpose of gathering and preserving the liquid manures, and in consequence, no small loss is sustained, in the growth both of green and root crops. And the reason of this is obvious. Although the solid and liquid manures may be composed of pretty nearly the same ingredients, they exist in very different proportions. There is, for example, but a very small proportion of nitrogen, potash, and soda in the solid, whilst there is a very large one in the liquid, and these constitute the richest fertilizing ingredients. Nitrogen is considered to be as powerful as the purest guano, and all know the value of the Alkalis in the growth of roots.

Johnston estimates 1,000 gallons of this manure to be equal to that of a hundred weight of gunno. The farmers of Flanders, who save all this manure in tanks, consider the annual value of a Cow in this respect to be ten dollars.— The method of preserving and using this manure is thus described by Dawson :—

“The liquid manures should be collected either in the pit or hollow intended for the other manure, or in a separate pit prepared for the purpose. The latter is the better method. If a tight floor can be made in the stable, it should be stopped from the heads of the cattle, and a channel made, along which the urine can flow into the pit. If the floor is open, the pit should be directly beneath it, or the ground below should be so sloped as to conduct the liquid into the pit. In whatever way arranged, the pit should be tight in the bottom and sides, and should be filled with soil or peaty swar mud to absorb the liquid. Gypsum may also be added with great benefit; and the urine pit may very well form a receptacle for door cleaning, litter which may accumulate about the barn, and every other kind of vegetable or animal refuse. These additional matters may occasionally be protected by adding a new layer of peat or soil to the top. The pit for liquid manure should be roofed over. A method much followed in Britain and the Continent of Europe, is, to collect the urine in a tank and add sulphuric acid to prevent waste of ammonia.— When used, the liquid is diluted with water, and distributed to the crop by a watering cart. This is too expensive for most of our farmers; but when it can be followed, it will be found to give an astonishing stimulus to the crops, especially in the dry weather of spring. Gypsum may be put into the tank instead of sulphuric acid.”

There are other organic manures, such as bog mud, leaves, bark, saw dust, straw, dead animals, blood, fish offal, sea weeds, wood ashes, and soot, &c., &c., all less or more within the reach of our farmers, and the appropriate application of which would increase the produce of our Provinces at least one half more than it now is, and that, too, with the same amount of arable land; but on these manures we cannot now enlarge. The first thing that our farmers should look after is the due preservation and use of their stable manures both solid and liquid; and having done so, they will then be in a right position, and possessed of still greater capabilities, for betaking themselves to the application of others.

QUERY IV.

“What is the average quantity of arable land cultivated by each farmer in your district, and what the average proportion of grain and root crops?”

This query is made up of two members, first, the average quantity of arable land cultivated by each farmer, and, secondly, the proportion of that land under grain and root crops—and these we shall briefly advert to in order.

In reference to the first of these points, there is the greatest possible diversity of answers given. Some saying that the average number of acres under cultivation in their localities is 20; others 25, others 30, and others 40, and a few as high as 50. Perhaps the average amount of the whole may be between 25 and 30 acres,—a third more, we believe, than our farmers can do justice to, either in the way of cultivation or fertilizing.

The common objection brought against farming in this country as an investment of capital, is the expense attendant on manual labour. We have made diligent enquiry into this subject, and find that the wages of good farm servants are as low, if not lower, in Nova Scotia, than they are either in Canada or the Northern States. Neither is the difference of the value of manual labor in this and the mother country so great as many seem to imagine. In Scotland, where agriculture is perhaps in a more advanced state than

in any other country in the world, good farm servants can be had at from £30 to £36 sterling per annum. In Nova Scotia the best farm servants do not cost more than from £45 to £50 currency; and when engaged for a whole year, they may be obtained for a considerably less amount. The greatest drawback in this country is not so much the cost as the scarcity of thoroughly trained farm servants.

This, in a great measure, is to be ascribed to the present condition of farming operations, the services of such being required only for six weeks or so in spring, and the same time in harvest, and the consequence is, that no regular class in the community give themselves up to such an employment, and of course there can be but little proficiency arrived at. We lay the blame of all this state of affairs at the door of the farmers themselves. We ascribe it entirely to a want of system in their farming operations, their making their agricultural pursuits more a matter of convenience than a regular systematic business demanding all their time and energies, in winter as well as in summer.

But what, in the meantime, is the farmer to do, so as to render his occupation profitable? How is he to make up for the deficiency and expense of farm servants?

First, he may do much by the aid of improved agricultural implements, and by the employment of the labour of horses instead of oxen. A man with two horses and improved implements on land under thorough cultivation, will do more in one day, and that a great deal more thoroughly, than, in the old fashioned style with his team of oxen, he would do in two.

But the most effectual of all remedies to this evil, as it is reckoned by not a few, is by the farmer's diminishing, by one half, the quantity of his arable land. We have already stated,—and we reiterate the statement,—that the great majority of our farmers cultivate, or rather attempt to cultivate, at least a third more than they ought to do. They can neither cultivate the soil to one half the extent it requires, nor have they the means of supplying anything like an adequate quantity of proper manure, and the result is, they have not above half the returns of what they might and ought to have. Let them reduce their cultivated land one half, let them expend all their skill and energies in its cultivation, and let them give their soil just about double the quantity of manure they have been in the habit of doing, and let them do it judiciously; and their produce will not only be equal to, but double to that yielded by the old breadth of land, and what is produced will be of much richer and superior character.—Thus, with the same amount of manual labour, and the same quantity of manure, double the return will be made; and the greater the skill and science brought to bear on the cultivation of the soil, the greater and more valuable will be the return—and this remark is of universal application to roots as well as to grain—to the pasture as well as to the hay crop.

Another saving of labour will arise from the systematic alternation of cropping, but on this we cannot again enter.

The other member of the query, “the proportion of grain and root crops,” is of equal, if not greater, importance. The majority of returns go to shew that a comparatively small portion of the arable ground is devoted to green cropping or root crops. A considerable breadth of potatoes is no doubt planted in some districts, especially in those where the rot has proved less destructive, but independently of the still

precarious character of this crop, it is not so generally useful in the feeding of stock, as the turnip or mangold wurtzel or carrot. Of these last mentioned roots there is nothing like a fair proportion grown, even in the best farming districts in the Province. It is true that in some localities we see, on one farm, the breadth of one acre of turnips, and about the half of carrots, but even such a quantity is rarely witnessed, and so long as matters remain in this state we unhesitatingly predict no great advancement in the cause of agriculture in this Province.

It is now, we believe, universally admitted that the large growth of the turnip in England and Scotland has been the main cause of the revolution in agriculture, which these countries have undergone within the last 25 years, and we have no hesitation in saying that an equal, if not a greater, revolution would take place in this country, were the same means resorted to.

One of the most common and formidable objections brought against agricultural pursuits in Nova Scotia is the length and severity of our winters, the expenses thereby incurred in the keeping of the stock and the necessary short time allowed for spring labour. There may be some ground for this objection, although, when we compare the number of real working days with that of countries that have reached the highest celebrity in agricultural pursuits, we are persuaded there is no small amount of exaggeration connected with it. But be this as it may, the real question is, Do the farmers make the provision they ought to meet our protracted and severe winters? Do they avail themselves of the suitableness of the climate for the growth of these articles that are adapted to this state of things? We are persuaded they do not. And here we cannot help noticing, generally, the very remarkable adaptation of the vegetable kingdom. Why, for example, do the watery and juicy and luscious fruits grow most luxuriantly in tropical countries? For the plain and obvious reason, that they contribute more to the comfort and nutriment of the animal kingdom, and, especially, of man. In these climates there is an unceasing, exhaustive process going on by the drainage of the fluids through an over copious exhalation, and hence the supply furnished by the infinitely wise and good Creator for the purpose of meeting this state of things. For the very same reason it is, that biennial plants grow in this country in such exuberance. This class of culinary plants, such as the turnip, carrot, deposit all the nourishment they have absorbed and assimilated during the season in the root, as in a common storehouse. And for what? That the animal kingdom may be supplied with cellular tissue in a fresh and nutritive condition. Nowhere in the world, we believe, do biennial plants grow more luxuriantly than they do in Nova Scotia. And is not this of itself a sufficient evidence of the provision that the Creator has made for the sustenance of the animal kingdom during our protracted winters? And the solemn responsibility thereby imposed upon the farming population to grow even a larger proportion of such crops than is done in other countries; that instead of requiring to depend almost entirely on the dry, insipid hay, they may have an abundant supply of one or other of these fresh and nutritious roots.—Let, then, every farmer who has 25 acres of land under the plough sow five of these with turnips and cultivate them thoroughly, so that there shall not be less than 500 bushels to the acre, and the whole of our agricultural state would undergo a radical change,—would enter on a high and glorious career of extension. Among others the following effects would inevitably follow:—

1. It would render the farmer in a great measure independent of his hay crop, so that in a year of scarcity he would not be under the necessity of disposing his cattle at a heavy loss.

2. It would improve more than anything else the breed of cattle. It would soon be found that the same quantity of turnips would add more to the weight of one, animal than another; attention would thus be more generally drawn to distinctions of breeds,—to the nature of family and individual constitutions among our domestic animals.

3. It would vastly increase the bulk and fertilizing qualities of stable manure, and thus produce a revolution in the growth of the green crops.

4. It would attach a far greater importance to the growth of artificial grasses and clovers, giving thereby a richer and earlier bite of grass in spring and a larger crop of hay.

5. It would inevitably lead to a systematic rotation in cropping.

6. It would demand a more careful and constant working of the soil, both in drainage and subsoil ploughing.

7. It would improve the whole matter of agricultural machinery and farm labour.

This is the place, did our time and space admit, for offering some practical remarks on the growth of these green crops. I should have liked, for example, to have enlarged on what appears to me to constitute the original cause of the failure of the potato crop, the innumerable benefits that have flowed therefrom, physically, socially and morally, and the mode that should now be pursued both in reference to the nature of the soil, of the fertilizing media, and of the set most likely to secure that return, that will prove most beneficial to the animal kingdom. I should have liked, too, to have discussed various topics connected with the growth of the other root crops, such, for example, as the difference in their chemical ingredients, between the potato, the turnip, the carrot, and the mangold wurtzel; and, by consequence, the most appropriate use of them all, and the superior claim of the one to the other for this or that object; and, still more, the treatment that each should receive, so as to secure the best and largest return, whether that appertains to the nature and cultivation of the soil, the kind and application of the manure, the different sorts of each and the selection of the seed, the management of the young plants both in thinning and cleaning, and lastly in storage. But all these points we purpose to discuss *seriatim* in the *Journal of Education and Agriculture*, and, in the mean time, must refer those interested in these themes to Dawson's *Agriculture of Nova Scotia*, or to Judge Peter's *Treatise on the Growth of the Turnip*, or still more elaborately to Johnston's and Norton's *Lectures on Agriculture*.

QUERY V.

"Do the farmers generally possess a copy of *Dawson's Agriculture of Nova Scotia*?"

It is well known that my distinguished predecessor, Dr Dawson, received special instructions to call the attention of Teachers and of the public generally to the subject of Agricultural Chemistry. Dr Dawson faithfully implemented these instructions, and in his official visitations of the Province, delivered lectures on Agriculture both before Teachers' Institutes and the public at large—which lectures abounded with valuable information, both theoretical and practical, and which were afterwards published in pamphlet form. Subsequently, another pamphlet was put forth, embracing a full discussion of the different kinds of live stock best adapted to our Province, and the management and improvement of the same. These two pamphlets were afterwards joined together and published in a volume of nearly 300 pages octavo, under a Grant of the Legislature, with the designation of "Contributions towards the improvement of Agriculture in Nova Scotia." This book was published mainly under the auspices of Sir Gaspard LeMarchant, the late Governor, and was intended to be widely circulated throughout the length and breadth of the Province. Like too many books similarly distributed, I find some districts where there seems to be rather a plentiful supply, and others where it has scarcely even been heard of. There does not appear to have been any regular system pursued in the distribution of the book, and the result has been as we have stated. The plan that ought to have been followed, was to have gifted a certain number to each Agricultural Society, according to its membership, authorized the Secretary to dispose of the copies sent at a reduced rate, say 2s. 6d., and the proceeds to go into the general funds. We have, however, no doubt

that much good has been effected by the circulation of this book. We would strongly urge the propriety of another edition being published in an abridged form, stripped of a goodly number of its technicalities, and ordered to be read by the schools as a text book. This, in the course of a generation, would do more for the agriculture of the Province than all the other appliances put together.

QUERY VI.

"Is there any Periodical on Agriculture circulated in the district?"

The replies given to this question indicate that there is a considerable number of American Magazines or Periodicals, such as the *New England Farmer*, *The Albany Cultivator*, *The Country Gentleman*, &c., in circulation, in some districts of the Province. These owe their circulation mainly to their extreme cheapness on account of their vast circulation, as well as to the efforts put forth by some of their agents, and there can be little doubt but that they have been instrumental in effecting some good. To say the least, however, three-fourths of the matter contained in these periodicals are altogether unsuitable to the style and stage of our agricultural operations. With the exception of a few of the New England States, the climate is widely different, and this of course must give rise to the growth of different crops and to a different kind of cultivation and management. The *Canadian Agriculturalist*, conducted by Dr Buckland, Professor of Agriculture in Toronto University, and Mr Thomson, Secretary to the Board of Agriculture for Upper Canada, is much more ably managed than any American periodical that has come under our notice, and vastly better adapted to our stage of advancement in agricultural matters. But all foreign periodicals will not and cannot produce the same amount of good as one of our own, when judiciously managed. Such a periodical should, as a matter of course, discuss all topics bearing on the past history, the present condition and the future prospects of our Provincial Agriculture; should receive communications from all practical farmers, detailing the results of experiments made with certain soils, or manures or crops, and thereby invest it with a deep local interest; should report all proceedings connected with Agricultural Societies in the Province, their plans of operations and their means of usefulness, and thus the more active and enterprising stir up the more supine and indifferent; should impart the intelligence and information from other lands, best fitted to interest and instruct the farmers in this country. We are thoroughly persuaded that no foreign periodical would produce one tithe the benefit in the furtherance of Agriculture in the Province that one conducted on the foregoing principles would.

It was under these impressions, that in commencing a *Journal of Education for Nova Scotia*, I determined to embrace Agriculture as constituting one important department in a national system of education; and I only regret, that that journal has received so very limited a support from the farming population. In order to enable me to make the best selections, as well as to furnish our farmers with the most recent intelligence of what is doing in other parts of the world on this subject, such intelligence or information as would, in fact, be suitable to our climate and circumstances, I ordered some of the best periodicals in the mother country, in Canada and the States. I have also again and again assured our farmers that its pages are open to their contributions. Indeed I have pressed and urged them over and over again to forward to me such contributions, and some have expressed their highest approval of the *Journal*, and yet few comparatively have written any articles for it. This periodical, I may state, has been undertaken entirely at the risk of Messrs. A. & W. Mackinlay, the Province having refused to contribute a penny towards its support. It has entailed a large amount of additional labour upon me, and this I have gone through, willingly and cheerfully, just because I am satisfied that it is one important means for the promotion and improvement of Agriculture in the Province. The Publishers cannot, however, afford to lose money by the undertaking; and this will be the

case unless some means are used for its encouragement; my other numerous avocations entirely preventing me from carrying on that canvass which would be necessary for giving it a circulation that would prove remunerative, or even self-sustaining. It appears to me that every Agricultural Society ought to be bound to take a dozen of copies or so for circulation amongst its members. At all events this surely is a matter worthy the consideration of the Legislature, as charged with the promotion of this branch of the public service.

But something more is necessary, and something more, in our apprehension, may and ought to be done, with the view of awakening in the minds of our agricultural population a deeper interest in the advancement of the various objects of their calling. When men have passed the meridian of life, there is a beaten track in their worldly pursuits from which it is a hard task to drive them. This is the case with too many of our farmers, even when it is proved to a demonstration that it would be for their own profit to adopt hither and a better way. But there is no such obstruction in the way of the improvement of our young and vigorous farmers; and, therefore, we are exceedingly desirous to form and to foster what we have designated "Young Men's Mutual Improvement Agricultural Societies;" and unhesitatingly do we express our conviction that we know not how the Agricultural Societies now in existence could more effectually promote the cause with which they are identified, than to bend their energies towards the organization and encouragement of such Associations of the young. A few of these Societies have already come into existence, whose members meet once a fortnight, or once a month, for the purpose of discussing subjects connected with their profession, and who are forming Libraries and circulating amongst themselves periodicals as depositories whence they may obtain valued information. Thus, as iron sharpeneth iron so are these young men whetting and stimulating one another to a better understanding of the science on which their worldly employment rests, which conduct, while it opens up a rational source of enjoyment to them, cannot fail to dignify and ennoble their profession, as well as add largely to their future worldly advantage.

QUERY VII. AND VIII.

"From your own observation do you think that the Agricultural Societies, as at present managed, have been productive of benefit to the cause of Agriculture? Please make any suggestions calculated, in your opinion, to render them still more beneficial."

"State what you believe to be the grand desideratum for imparting an impulse to this important branch of industry."

As to the first point embraced in these two queries, which we have placed under one head, viz., "Whether the Agricultural Societies have been productive of benefit to the cause of Agriculture," there is an unanimous reply in the affirmative. Whilst some state one benefit, and others, another, as flowing through the instrumentality of these Societies, all seem to dwell on the improvement that has taken place on the breed of live stock and in various implements of husbandry. These are two important matters, and immediately connected with a nation's agricultural prosperity. Respecting the first, all remember the zeal manifested by Sir Gaspard LeMarchant, and the hundreds, we may say the thousands, of pounds expended by the Province, under his auspices, in the importation of various kinds of live stock. And there cannot be a doubt but that great benefit has flowed from the pursuance of this course. We question, however, whether the benefit has been at all adequate to the means expended; not because of any misapplication of these funds, but because of the management of these breeds since they were imported. It is a well known fact in animal physiology, that the purer the breed is the more tender it becomes, and the greater the pains requisite for its sound preservation. And it is just because, in our opinion, no proper provision was made to meet this state of things, that the benefits of the importation of stock, with the exception, perhaps, of the breed of pigs, have fallen far short

of what they might and ought to have been. The neat cattle and the horses reared in warm, comfortable stables, where every effort was made to preserve an evenness of temperature, have been housed in stables where every wind of heaven blew and bent upon them, and where, it may be, the climate differed but little from the surrounding atmosphere.—And then, again, in reference to the food. Though accustomed to the most nutritive, invigorating food, they have received the coarsest provender, identically the same as the cattle in the surrounding stalls, and what they do get, very irregularly administered. This is in winter, and in summer their case is no better; for instead of having a satisfying pasturage within a manageable distance, they are allowed to rove from one field to another, so that no small amount of the nourishment imparted is expended on the labour of acquiring what is necessary to satisfy the cravings of nature. And to wonder that in the course of a year or two the finest of these imported animals show evident symptoms of degeneracy and decay, in the course of two or three more it is hardly distinguishable from the native breed. Though we would not undervalue the occasional introduction of new and pure kinds of seeds and of roots, or of new and sound breeds of cattle, into a country, we are thoroughly persuaded that the true and best way of improving and enhancing the one or the other of these is the preservation and propagation of the seed of the most choice of the plants, the preservation, the proper management and the propagation of the best specimens of the particular animals, whatever they may be.

While on this subject we may state that it appears to us indispensable, if we would rise to agricultural prosperity as a people, that one of the first things that ought to claim our attention is the matter of house accommodation for the cattle. It is a well known fact that the whole animal kingdom consume more food in cold than in warm weather, and this because of the additional carbon that is required to preserve the heat of the body. It is clear, then, that in very proportion to the coldness of the barn will be the demand made on the fodder; in other words, the warmer and more comfortable the less will be the supply of food required. Let, then, the farmer who complains of the protracted and inclement winter, and the difficulty thereby of providing for the proper sustenance of his stock, as forming one of the principal obstructions in the way of prosperity in his agricultural pursuits, let such an individual see to it that his barns are placed in the temperature best suited for the stock, and that that temperature is duly preserved; and this will save at least a third of his provender. Surely this is a matter of no small moment, and demands immediate attention from the intelligent of our farming population.

There is another matter which ought to be noticed here, and which we fear is sadly underrated in the construction of the farm offices—we refer to the point of a due supply of light. Solar rays are indispensable for the healthful and invigorating condition both of the vegetable and animal kingdom. Withhold their influence from the former, and all will become wan and pale and blanched. The effects of the withdrawal of the sun's beams from the animal kingdom are apparent and palpable in the whole countenance, eye, and in the growth too, of those who have been for a lengthened period immured in dungeons or pits. And surely this may be secured for a small amount. Every stable ought to be provided with two or three windows, which, in summer, may be kept occasionally open, and in winter should be constantly shut, except in very genial warm weather.

In addition to the advantages arising from the diffusion of enlightened scientific views on this subject, it might be well, were the Province to give annually the premium of £5 or £10 for the best constructed, the best kept barn.—This would not only be an encouragement to the farmer himself, but would signalize his offices and hold them up as a model for the imitation of others around.

The other matter chiefly referred to in the replies to this query, is, the various implements of husbandry. This, too, is a matter of primary importance, and ought to occupy a conspicuous share of attention in all well-directed agricultural

movements. These implements may be regarded in a three-fold aspect:—1st. Those necessary in preparing the soil for the reception of the seed, such as ploughs, of sorts, harrows, of sorts, spades for drainage, tiles, &c.; 2nd. Those necessary for the sowing of the seed, and for the hoeing or cleaning of the young crop,—such as sowing machines, hoes, cultivators, &c.; and 3rd. Those necessary for the cutting down, the gathering in, the storing and the threshing,—such as mowing, reaping and threshing machines. Now no one can fail to perceive that the slightest improvement made on one or other of these implements, so as to save manual labour and to increase the amount of work done, and to render more perfect the performance, must be of the greatest possible consequence to farmers generally, and, especially, to farmers in a climate like ours, and is entitled to the highest encouragement and support.

And what is the best mode to be pursued in effecting this? whether in stimulating our farmers or our mechanics? We know of none more effectual than that pursued in the mother country by the great Agricultural Societies, by the appointment of annual exhibitions of implements, inviting to the show not only home, but foreign manufactures; and, secondly, by testing their real usefulness and superiority, by ploughing, sowing, mowing, hoeing, and spading competitions.

This, too, is the proper place for considering and discussing the comparative value of the labour of the horse and ox.—There can be no doubt that the use of the ox is of greatest utility in new settlements; indeed it is indispensable, among the stumps of trees, and in some kinds of very stony soil.—But wherever the land is thoroughly cleared and cultivated, it ought to be discarded, and horse labour introduced in its stead. The kind and breed of horses best fitted for agricultural purposes in this country is a matter worthy the consideration of all enlightened agriculturalists. Horses making a quick step with great strength and endurance, ought gradually to replace the old heavy and cumbersome races.

A thoroughly trained ploughman, with two such horses, would do as much work on a well-cultivated farm, and that, too, a vast deal better, in one day, than a man with a pair of oxen in the old-fashioned Dutch style would do in three.

The matter embraced in the last part of the 7th, and in the 8th query, viz.: "What is the best thing to be done to improve our present agricultural condition?" has received the greatest possible variety of answers. The different Agricultural Societies, influenced by their own external circumstances, have recommended, some one thing and some another; others have taken up and discussed the matter more generally, and others more specifically. Instead of attempting to classify these recommendations, let me rather present to the Legislature the outline of a plan, by the vigorous execution of which, the most important of the recommendations made by the different Agricultural Societies will be met. The plan I would now proceed to chalk out is, as will be seen, based on the old organization of a Central Board, with considerable alteration and modification, in our opinion better adapted to the present stage of progress in agricultural pursuits, as well as to foster and carry out a higher spirit of combination and co-operation on the part of those who are engaged in these pursuits.

I. And, first of all, it appears to me indispensably necessary, in order to infuse new life and vigor into this branch of the public service, as well as to effect any substantial improvement through the medium of the Central Board and the Agricultural Societies, that the original Grant of £50 to each county, and £200 placed at the disposal of the Board to be dispensed in accordance with regulations hereinafter mentioned, be restored. This will make the public appropriation to the cause of agriculture in all £1100, which, considering that there are throughout the Province about 40,000 engaged in this pursuit, about one fourth more than are engaged in any other vocation, cannot be regarded as an unreasonable sum, and still more, considering that it does not even amount to one third of what is voted by all the surrounding Colonies for the promotion of this important branch of industry. If the restoration of the original Grant be objected to on the ground that

the cause that led to its diminution still remains, we would say that is just because we would wish to see that cause removed, that we plead for its restoration, deeply persuaded as we are that every £100 judiciously applied to the encouragement of agriculture will directly and immediately, and that sooner than anything else, operate on the revenue of the Provincial Railroads.

H. 1. We would recommend the immediate re-organization of a Central Board of Agriculture, with the same constitution and powers as heretofore; and furthermore, that the Governor be respectfully invited to become Patron of that Board, and to preside at the meetings of said Board as often as his Excellency may see fit.

2. That the President and Secretary of each Society throughout the Province shall be ex-officio constituent members of this Board, and that this Board shall appoint an acting committee resident in Halifax or neighbourhood.

3. That this Board shall hold two regular meetings in the year, one during the sitting of the house of the Legislature, and another during the Annual Exhibition hereinafter spoken of, and that after the transaction of business, the public be invited to attend, and addresses delivered touching the cause of Provincial Agriculture, generally, and, at the Annual Exhibitions, locally.

4. That the Central Board of Agriculture appoint, annually, a committee to take charge of Experimental Garden and Farm in connection with the Normal School at Truro; and that the Principal of that institution be ex-officio member of that committee, and that they appropriate, annually, £50 of the funds placed at their disposal for the furtherance of the objects contemplated by that institution.

5. That the Central Board shall appropriate £50 annually for the promotion of the Great Annual Exhibition, and that they reserve the remaining £100 for the payment of their officers, and other contingencies, such as the importation of new seed, grasses, &c.

III. I would recommend that the £50 be applied to each county pretty much in the way described in the 4th section of the present Agricultural Emolument;—save that when there are more Societies in the county than one, that there shall be no more than one Exhibition in the county in the year, and that the revenue of each Society in the county shall go towards its promotion.

IV. I would recommend, in the fourth place, as the greatest change upon the present Agricultural Emolument, that a Great Annual Exhibition shall be held in some section of the Province, and that this Exhibition shall be under the control and management of the Central Board, and for the carrying out of this Exhibition, I would suggest the following arrangements:—

1st. That the Province be divided into five sections, and that section 1st shall embrace the counties of Halifax, Cumberland, Colchester, and Hants;—2nd section—Kings, Annapolis, and Digby;—3rd section—Yarmouth, Shelburne, Queens, and Lunenburg;—4th section—Pictou, Sydney, and Guysborough;—5th section—All the counties in Cape Breton.

2nd. That these Annual Exhibitions shall be held in some central place, in each of the sections in rotation, and that the places for the first rotation shall be the following:—1st. Halifax; 2nd. New Glasgow; 3rd. Bridgetown; 4th. Baddeck, C. B.; 5th. Yarmouth.

3rd. That the funds of all the Societies included in these sections, both provincial and local, shall be devoted to the carrying out of the objects of these Exhibitions, along with the £50 at the disposal of the Central Board, and whatever other sums may arise from admission or entry fees, &c., &c.

4th. That the President, Secretary and Treasurer of each Agricultural Society embraced in each section, along with the Acting Committee of the Central Board, shall constitute the Committee of Management of the Exhibitions, respectively.

5th. That the whole Province shall be allowed to send articles to these Exhibitions, but those non-resident in the section shall be obliged to pay a certain sum fixed by Committee

at entrance of articles, over and above the expense connected with the keeping and housing of stock, &c.

6th. That the list of articles to be competed for shall be published at least one whole year before the competition, and that this be done by the Acting Committee of the Central Board.

7th. That the Committee of Management in each section shall be authorized at every Exhibition to expend at least £5, in the form of premium, for the best set of farm office houses, and another £5 for the best kept and the best cultivated farm, having a special reference to the rotation of crops.

V. I would recommend that this Central Board be entrusted, generally, with the whole interests of our Provincial Agriculture, and that they use every means in their power for its advancement by the diffusion of sound scientific knowledge, and of agricultural general intelligence, by the introduction and growth of new kinds of grasses, grain, roots, fruits larger and smaller through the Experimental Garden and Farm, and by their equal distribution over the Province, by the encouragement of Young Men's Mutual Improvement Agricultural Associations, &c., &c.

Finally, I would recommend that the necessary steps be immediately taken for inaugurating this new arrangement of things that the first regular agricultural exhibition be held at Halifax in October next.

All which is respectfully submitted to the Legislature now in session.

ALEX. FORRESTER.

SCIENTIFIC.

ARCHAIA.

(CONCLUDED.)

In the fifth chapter we have a close, critical analysis of the 2nd. verse of Genesis. The different theories held on this passage, are discussed—the grammatical construction of the Hebrew examined, and the conclusion drawn, is thus expressed:

“At a far distant time, Elohim, the true God, created the materials of the heavens and the earth. After its creation the earth was still without organized inhabitants. It was covered with dense vapor and destitute of solar light and heat—but processes preparatory to its being inhabited were in progress.” We find next a commentary on the celebrated passage “let there be light.” One of the most sublime sentences in the Bible—one which inspired John Milton when he wrote that Aposrophe—

“Hail! Holy light! offspring &c.”

and which certainly was before Pope's mind when he wrote his famous couplet:

“Nature and nature's laws lay hid in night,
God said—let Newton be—and all was light.”

But Mr Dawson has seen more than poetry in those words: he is astonished at the philosophical propriety of a term—*cor-*—which, including all the inponderables—light, heat, electricity—does not commit the sacred writer to the idea that the light here spoken of is caused by the sun—an idea incongruous with the narrative—and only to be found in systems of a false cosmogony. The author discusses fully the probability of the theory that the sun's light is not a monopoly possessed by that luminary—but that the planets and satellites contain in a smaller degree, the elements of that primordial light which God pronounced “very good.” It is no extravagant inference (though not indulged in by Mr D.) that at a more advanced condition of our planet's history, the aurora of earth may become the luminous cloud which shall constitute our world a sun in the firma-

ment—inferior in bulk, but equal in brilliancy, to the central orb himself. Such a conjecture is based on probabilities advanced in the work before us.

The "days of creation" form the subject treated of in the following chapter. To this point all the lines of controversy converge as to a centre—and on this part of his work our author has put forth all his ratiocinative powers. Acknowledging his obligation to writers of both schools—viz., the *day-period* advocates, and the *natural day* advocates, he refuses to be influenced by either, but rather directs his attention to the record itself. In this he has certainly done well. It is by the plain grammatical construction of the Hebrew text itself that the question is to be ultimately decided; and intuitively Mr Dawson seems to understand the matter in this light, and shapes his course accordingly. We need not be kept long in suspense as to the conclusion arrived at. Mr Dawson believes that *the day of creation was not the day of popular speech*. Nay, more than that God, by a severe precision of language has guarded against any loose interpretation of this part of the inspired record. The author of *Archaia* fearlessly asserts what has been long suspected, that though the word *yom* may mean a period of twenty-four hours, it may also imply the whole period of creation, or any indefinite or unspecified time. Here he quotes Job xviii: 20; xx: 32; Judges xiii: 30; etc., etc. together with two remarkable passages from Origen and Augustine, on period days, to which the reader is referred. See p. 106.

One of the most sublime productions in the English language, not even excepting the best specimens of Howe, Milton or Burke, with which we are acquainted is that lecture by Hugh Miller, entitled "The Mosiac Vision of the Creation." Strange, that though pursuing the same theme, Mr Dawson appears to make no attempt to imitate the eagle flight of the Author of the "Testimony of the Rocks." He is not so inspired by his theme as to merge the calmness of the student into the wild revelry of the seer—and this very circumstance adds to the *unique* and severe purity of style by which *Archaia* is distinguished.

The late Rev. Richard Watson, in his christian "Institutes," asked the question—"If the six working days are lengthened periods, then why may not the day of rest be a lengthened period?" Mr D. takes the affirmative, and the reader is directed to p. 108 for a good statement of the question. The present dynasty of probation is God's Sabbath-day, and God's Sabbath-day's work is human redemption.

On one point in this chapter it appears to us that Mr D. labors ineffectually. We refer to the difficulty attendant on the sacred phraseology "evening and morning" (p. 118.) in applying it to lengthened periods. If the day was a vast collection of ages what was the character of its evening and morning, viewed in the light of the scripture cosmogony; To this question, Hugh Miller, of all the answers we have read, gives the best. The shades of night closes each *pictorial* day—and the light of morning introduces its successor. Mr D. takes new ground, and suggests that the beginning of each period was a time of *inaction*, consequently might be appropriately denominated *evening*—whilst the most active portion of the *yom* its terminating ages—these therefore, constitute the *morning*. We cannot believe that Mr Dawson has here set Miller's hypothesis aside. But we must advance to other parts of the work.

After devoting a chapter to the atmosphere, in explanation of the Hebrew term *Ehemaym*, he proceeds to the consideration of the emergence of the dry land from the primal waters by which our planet was covered. In doing so, he makes some interesting remarks on the amazing knowledge of Geology, possessed by the author of the book of Job, and quotes the celebrated passage—"Surely there is a vein for the silver, &c. Job 28th chapter.

Advancing to p. 172, we find him summing up the evidence to show that plants existed before animal life is betrayed—a point of vast importance in its bearings on the infidel controversy. Very wisely Mr Dawson refuses to run the parallel between the Rocks and Genesis back beyond the Carboniferous day—and hereby he baffles those over sharp-eyed critics, on the one hand, who are ever fancying analogies where none exist—and at the same time, put an end to all such questions as—"but are there not, according to Geology, animal fossils be-

low those of vegetable formation." He does not concede too much—for every one acquainted with the sciences must still believe that Carbonaceous matter exists in the old Azoic formations—and hereafter we may be able to point to some discovery which will inform us as surely of the birth of *vegetable* life, as we now know the period when *animal* life appeared first upon our planet. The geologist knows that vegetable life existed on the fourth—and he cannot say that it did *not* exist on the third day. And even if we have discovered no organic traces of the work of the third day, it is equally true that we have discovered no contradictions to the divine narrative.

At p. 175, we have the analysis of Gen. i. 15-19. "The fourth day" says Mr D. "in geological language, marks the complete introduction of existing causes in inorganic nature, and we henceforth find no more creative interference except in the domain of organization." "Geology probably carries us back to the introduction of animal life; and shows us that since that time, land, sea and atmosphere, summer and winter, day and night, all the great inorganic conditions affecting life have existed as at present."

The chapter on the "Lower Animals" is an admirable refutation of Le Marche's exploded development theory, and its spirit is equally inimical to the arguments of the author of the "Vestiges of Creation." "The great plan must be progressive, and all its parts must be perishable, except its last culminating point and archetype—MAN. Tennyson gropes after this truth in *Memoriam*—

"The wish that of the living whole
No life may fail beyond the grave,
Denies it not from what we have
The liest God within the soul.
Are God and Nature then at strife?
That Nature lends such evil dreams," &c., &c.

—*Archaia*, p. 291.

"Man" becomes the subject treated of in chap. xiv, where Gen. i. 26-31 are reviewed. Some parts of this section are very beautiful, and deserve a more ample consideration than now falls to their lot. Unlike Guyot, the reasoning is of a high and conclusive character, and evinces an extensive ethnical knowledge. Some remarks are made on the site of Eden—and the suggestion is thrown out, that if discoverable anywhere, the remains of a pre-Noahic race are to be found in the Caspian Sea, and its vicinity—that part of Asia doubtless having given birth to the human race. The sixth day closes, and the Creator again pronounces his work "very good." Before leaving this chapter we refer the reader to the brilliant picture of primeval man on the 223rd page.

"The Sabbath of God" is the title of the chapter which follows. It is said of Lord Lytton that when he read for the first time Milton's *Paradise Lost*,—his portrait of the Archangel ruined was so vividly impressed on his imagination, that he was compelled to throw aside the book, and resort to other mental employment in order to dismiss the imagery evoked by the reading of that wonderful work. We know of one who when he read for the first time the idea of the *Creators Rest*, as viewed by the Miltonic imagination of Hugh Miller, was so enraptured by the glory of the thought, as to be incapable of meditating on any other subject for many days and nights. Mr D. does not regard this controverted question with the cold eye of a critic: he has entered into the spirit of the grand but late discovered truth, that the Sabbath-day of God is the Redemption day of man. Thus we are bidden to contemplate a period of rest from labor proportionate to the time occupied in the work of creation—a contemplation impossible, if we suppose God to have rested *twenty-four hours*, and then to have resumed his work.

In the chapter on the "Unity and Antiquity of Man", we find much knowledge, extensive reading, and accurate reasoning, duly exhibited while the author, grappling with erroneous theory after theory, leads his reader back to the *one Adam*—the head of the human race. This chapter will be found, however, to be in advance of many of Mr D's readers—at the same time it will go far to rank him among the ablest philologists of the day.

We admire the concluding chapter the most of all. The author has hitherto expatiated on phenomena as they were presented to his inspection—but does not venture to anticipate the judgment of his reader by premature conclusions. But the *denouement* arrives. When the proper moment comes, he assumes the wand of Prospero, and bids the assembled facts marshal themselves into their proper order. Then do we perceive the golden chain that binds dispensation to dispensation—age to age, nature to revelation, and man to God. Then do we see that the author has not been drawing parallels which can never meet. He has, indeed, been drawing lines, and that with mathematical precision, but they converge to a centre. And he shows that if Geology teaches of matter—matter inorganic—matter animate and organic—Revelation treats of the same matter—as united to a living spirit, rational, responsible and immortal.

We shall here close. If asked to what place shall we assign *Archæa* we reply—Above Hitchcock's "Religion of Geology," infinitely above the "Vestiges of Creation," equal to the "Foot-prints of the Creator," and only inferior to "The Testimony of the Rocks". We are here to be understood as speaking of the work in its scientific and literary character, altogether apart from the school of thinkers with which Mr Dawson is identified. The style of the author of the latter work he does not possess—indeed we question if the mantle of Hugh Miller has fallen on any man of the living age. But with him Mr Dawson bows to the supreme authority of the Scriptures; believes in the unity of God; in the non-eternity of matter, in the immortality of man, and in those new heavens and new earth which are to succeed the human epoch, and whose duration shall only be measured by the reons of that eternity which itself becomes the Sabbath-day which remains for the people of God.

We must apologize for the length of these remarks—but our excuse is that as a Nova Scotian Geologist we could not part with our own friend sooner—and even now we have done him scarcely justice. Let us conclude by using his own words—

"That same old book which carries back our views to those ancient conditions of our planet which preceded the creation of man, also carries our minds forward into the farthest depths of futurity, and shows that all present things must pass away. It reveals to us a new heaven and a new earth which are to replace those now existing, when the Eternal Son of God, the Manifestation of the Father alike in creation and redemption, shall come forth to sweep away all the blood stained tyrannies of the present earth, even as he has swept away the brute dynasties of the pre-adamite world; and shall establish a reign of peace and love and holiness which shall never pass away. When the purified sons of Adam shall be able to look back with enlarged understandings and grateful hearts on the whole history of creation and redemption, and shall join their angelic brethren in the recitation of that final hymn of praise with which the heavenly host greeted the birth of our planet. May God in his mercy grant that he who now writes and he who reads may stand in their lot at the end of the days, and enjoy the full fruition of their glorious prospects."

W. McK.

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