





Published under direction of the Board of Agriculture of Nova Scotia.

*Omniū rerū, ex quibus aliquid acquiritur, nihil est agriculturā melius, nihil uberius, nihil homine libero dignius.—Cicero: de Officiis, lib. I, cap. 42.*

VOL. IV.

HALIFAX, N. S., APRIL, 1880.

No. 4.

HALIFAX, 10th April, 1880.

The publication of the **NEW REGISTER OF THOROUGHBRED CATTLE** will be commenced in next number of this **JOURNAL**. As the publication of pedigrees will be continued monthly, and will not be repeated in any case, breeders are requested to file their copies of the **JOURNAL** carefully, for after reference. It is probable that sets of the **JOURNAL** will become very scarce and valuable, as the only available Record of our Thoroughbred Stock.

The publication of *Annual Lists of Thoroughbred Cattle for Exhibition purposes* has not proved satisfactory, and will be discontinued.

THE Board has made arrangements for importing a quantity of Sugar Beet Seed for the use of Members of Societies who may wish to give the Beet a trial.

Forms of Application for the Registration of Thoroughbred Stock in the **New Register** have been printed, and may be obtained on application to the Secretary of the Board. Transfer Certificates have also been printed, and may be obtained in the same way. No application for registration or transfer can, under any circumstances, be received except upon the prescribed printed form. The Secretary's instructions are pre-emptory to return

all applications not made on the proper forms. These forms are to be pasted in order in a book, and, being uniform in every way, will constitute the permanent record. From this explanation it will be obvious that letters, post cards and such like documents, however full and explanatory they may be, cannot be received as entries in the **New Register**.

It is proposed to make an Importation of Stock from England this season. We shall be glad to receive from breeders any suggestions they have to offer.

THE SUGAR CROP OF NOVA SCOTIA.—It will be seen by advertisement that the Central Board of Agriculture has imported half a ton of new and fresh seed of the Imperial Sugar Beet of Germany, for the use of Agricultural Societies. Messrs. E. & S. Smith, of Bellfield Farm, Windsor, lately sent a quantity of last Fall's crop of roots, raised on their farm, to the laboratory of Dalhousie College, where they were worked up by the Agricultural Class. Thirty lbs. of the root yielded 3 lbs. 2½ ozs. of the most concentrated syrup (not counting waste), which, for want of proper appliances, is not yet crystallized. This is equal to a yield of ten per cent. of sugar on the gross weight of roots, which is

more than is usually obtained in the factories. There can be no longer any doubt of the feasibility of producing sugar in Nova Scotia to any extent that may be necessary.

THE percentage of Sugar obtained from Messrs. E. & S. Smith's Sugar Beets, grown at Windsor, is equal to two tons of Sugar per acre, and this may be increased considerably by improved cultivation. The poorest acre of land in Nova Scotia may readily be made to yield its two tons of Sugar. All Sugar produced will necessarily have to go to the Sugar Refinery to make it fit for market.

#### CENTRAL BOARD OF AGRICULTURE

COMMITTEE ROOM, PROVINCIAL LIBRARY, March 23, 1880. }

Present—Hon. Hector F. McDougall, M. E. C.; Col. Laurie, for District No. 1; Jonathan Rand, for District No. 2; Chas. E. Brown, for District No. 3; David Matheson, for District No. 5; John Ross, for District No. 6; Professor Lawson.

The proclamation of His Honor the Lieut.-Governor in Council, appointing the members of, and constituting the Central Board of Agriculture, having been read, it was moved by Mr. Ross, seconded by Hon. Hector F. McDougall, that Colonel

Laurie be re-elected President for the year. Passed unanimously.

Moved by Mr. Matheson, that Charles E. Brown, Yarmouth, be elected Vice-President. Mr. Brown declined the honor, on the ground of the necessity of the Vice-President being within easy reach of the city, and moved that David Matheson, Pictou, be elected Vice-President. The motion was seconded by Mr. McDougall, and passed unanimously.

Mr. Ross moved that Professor Lawson be re-elected Secretary and Treasurer, seconded by Mr. Matheson, and unanimously passed.

The President was requested to invite the Agricultural Committee of the House of Assembly to meet with the Board, and confer on the more important matters to come before the Board. Wednesday, at 11 a. m., was named as probably a convenient time.

It was arranged that the Board would receive the delegates from the King's County Exhibition Committee on Wednesday, at 2 p. m.

The Executive Committee submitted form of application for registration of thorough-bred stock, in accordance with resolutions passed at previous meetings. A discussion ensued on the requirements necessary for registration, in which Messrs. Rand, Ross, Brown, and other members, took part. The final consideration of this matter was deferred.

The Board adjourned for an hour.

#### AFTERNOON SESSION.

2 o'clock, p. m.

Business resumed. Present: same members as at the morning meeting.

The Secretary read a card received from Mr. Longworth, expressing regret at delay in reaching the city.

Moved by Mr. Brown, that the form of application for registration of animals, so far as it relates to those whose sires and dams are registered in the new Nova Scotia Register, be approved of and sanctioned, and authorized to be printed and circulated. The motion was seconded by Mr. Ross and carried.

Moved by Mr. Ross, seconded by Mr. Matheson, that the second part of the form recommended by the Committee, and which applies to animals whose sire or dam is not already registered in the new Nova Scotia Register, be approved and sanctioned, and authorized to be printed and circulated. Carried unanimously.

Moved by Hon. Mr. McDougall, that the third division or form of application, for the registry of stock in cases where the dam is not already recorded in any authoritative Herd Book, be approved of and sanctioned, and authorized to be printed and circulated. The motion was put to the meeting and carried.

The three several forms of application have each a declaration appended.

The President stated that the Agricultural Committee of the House had agreed to meet the Board at 11 o'clock, on Wednesday.

On motion of Mr. Brown, the Secretary was requested to distribute to the owners of animals recorded in the old register, the forms of application for registration sanctioned by the Board, and he was directed not to receive applications for registration, except on the proper official forms, which are to be filed in their order, under such regulations as the Board may prescribe, and constitute the *New Register*. The motion was seconded by Mr. Matheson, and passed.

Moved by Mr. Brown, seconded by Mr. Ross, that the Report of this Executive Committee in regard to registration of stock be received and adopted.

Colonel Laurie having to leave the meeting on other pressing business, David Matheson, Vice-President, took the chair.

A communication was read from the Barrington West Passage Agricultural Society, explaining their reasons for departing, in some measure, from the regulations of the Board, the insular position of a portion of the Society having rendered this necessary during the past.

Moved by Mr. Brown, that in view of the explanations given, a rateable grant be authorized to the West Passage Society, provided the Government will provide the necessary funds, as the total amount authorized has already been appropriated and paid out to the various Societies of the Province.

A letter was read from Mr. Gayton, with minutes and schedule of returns from a new Agricultural Society proposed to be organized in West Pubnico, County of Yarmouth.

Moved by Mr. Brown, seconded by Mr. Ross, and passed, that the West Pubnico Agricultural Society be authorized to be organized under the Act for the Encouragement of Agriculture.

A letter was read from George Laurie, Secretary of the Little Harbor Agricultural Society, County of Pictou, explaining the society's accounts. Moved by Mr. Brown, seconded by Mr. Rand, and agreed, that the explanations are satisfactory.

Read a post card from Mr. Fisher, Secretary of the West Cornwallis Agricultural Society, explaining accounts.

Moved by Honorable Mr. McDougall, seconded by Mr. Ross, that the Secretary of the Board communicate with the West Cornwallis and Kings' Central Societies, requesting them to comply more strictly with the requirements of

the Act, otherwise the Board will be unable to authorize a continuance of their grants. Passed.

The Board adjourned, to meet again on Wednesday morning, at 10 o'clock.

Wednesday, March 24th, 1880.

The Board resumed business this morning at ten o'clock. Present:—Colonel Laurie, President; D. Matheson, V. P.; Israel Longworth, Truro; John Ross, Bunkardario; Chas. E. Brown, Yarmouth; Hon. H. F. McDougall; Jonathan Rauld, Cornwallis; Prof. Lawson, Secretary.

At 11 o'clock, the following members of the Agricultural Committee of the House of Assembly were introduced:—Col. Blair, M. P. P. for Colchester, Chairman; Angus McGillivray, M. P. P., Antigonish; John Morrison, M. P. P., Victoria; Nathaniel Spence, M. P. P., Hants; J. S. Ford, M. P. P., Queens; W. C. Bill, M. P. P., Kings.

Colonel Laurie, President, pointed out the inadequacy of the Legislative grant of \$6000 to meet the requirements of the eighteen Counties, each being entitled by the Act to \$400, which would make \$7,200. This year the actual appropriation paid to Societies amounted to \$6,538, which the Government had enabled the Board to meet by increasing the grant to the extent of \$538.

Colonel Blair addressed the meeting, calling special attention to the importance of establishing some system of Agricultural education, which might be done by adding a Chair of Agriculture to the Normal School at Truro, the only difficulty being the scarcity of funds. If there were any available funds, he thought they could not be devoted to a better purpose, not even excepting importation of stock.

Mr. Ford read resolutions passed by the Agricultural Societies in Queen's Co., (already published in proceedings of House of Assembly) and urged the justice, propriety and necessity of providing for agricultural improvement in those parts of the country that were not readily accessible to the means now in operation in the more favored and more central districts of the Province.

The Hon. Mr. McDougall spoke of the Cape Breton exhibition. Last year, he said, the people of the Island were not in a position to avail themselves fully of the advantages offered by an exhibition. It was different now. He had this morning received a telegram from North Sydney to the effect that steps were already being taken for holding the exhibition this season. A fair opportunity should be given to enable them to make the exhibition what it should be, and to bring the agriculture of the Island on a parallel with that of the more advanced counties of the Province.

Mr. Longworth spoke on the subject of Agricultural Education. He referred to the manifest interest in this subject, as shown by the proposals of King's College in Sackville, the address of the Chairman of the Agricultural Committee at the opening of the Legislature, and the favourable notices in the papers. As the town of Truro contributes more to the support of the Model School than the Government does to the Normal School, it is but reasonable, if anything is to be done in the way of Agricultural Education, to make provision for it in the Normal School.

Mr. Ross spoke likewise in support of the establishment of a Chair of Agriculture in the Truro Normal School, and he hoped that whilst provision would be made for the Agricultural Education of the Province, the interests of Cape Breton would not be overlooked.

Colonel Laurie called attention to correspondence (laid on the table by the Secretary) with Agriculturists in New Brunswick, proposing a joint model Farm and Agricultural College. He pointed out the inequalities of advantages necessarily falling to different localities.

Mr. Spence spoke of giving choice to Cape Breton societies to expend any grant for exhibition in the Island, either for that purpose or for the purchase of thoroughbred cattle.

Hon. Mr. McDougall thought that as the people were prepared for the exhibition on the Island this year, attention should not be diverted from it.

Mr. Ford referred to his own county where lumbering had left the people no option except to go into farming or leave the country, and it was greatly for the interest of the country to improve agriculture, to give the people means of comfortable living, and retain them at home.

Mr. McGillivray spoke of the great importance of teaching the elements of Agricultural Chemistry in the schools, and would impress upon the Government the desirability of continuing and supporting the Board in its highly beneficial arrangements. Distant sections should receive special consideration.

Col. Blair thought there should be an importation of stock of **DESIRABLE QUALITY**. We must work not for the present so much as for the growing Agriculture of the future.

Mr. Morrison referred to the fact that Agriculture was taught in the Normal School when started, and, as salaries had been increased, arrangements might be made to have it taught now, without increased expenditure. Cape Breton was not reconciled to the loss of the exhibition last year.

Mr. Matheson referred to Guysborough County, which he represented, as equally out of range of exhibitions and other

general operations of the Board and Legislature, as any other County, and equally deserving, on this account, of special provision. The Board had exercised their judgment in the way of appropriations to societies. There was now a great improvement.

Mr. Ford said that the grant for Agriculture should, if possible, be increased, so as to give increased encouragement to every district in the Province, and in such a way as to give as equitable encouragement as possible, and, whether in Queen's or Guysborough, effective encouragement.

Colonel Blair said, in reference to the Normal School, that the Superintendent of Education and the Principal of the Normal School, had both informed him that the officials have at present all the work they can possibly do.

The President thanked the Committee for their attendance, and the meeting then adjourned.

#### AFTERNOON SESSION.

The Board resumed business at 2 o'clock, p. m. Present: the same members of the Board as were present in the morning.

Dr. C. C. Hamilton and W. Starr, Esq., attended as a delegation from the Exhibition Committee of King's County, who presented the draft of the Prize List prepared by the Committee for the Provincial Exhibition of 1880, to be held at Kentville.

The Board proceeded to examine the Prize List and Regulations.

Moved by Mr. Brown, that the time for holding the Exhibition be fixed for the first week in October. Seconded by Mr. Matheson.

Moved by Mr. Rand, that the time proposed by the Exhibition Committee, commencing on the 27th September, be adhered to. Seconded by Mr. Longworth.

The amendment was put to the meeting, and passed.

Moved by Mr. Longworth, that the Regulations be modified, so that imported stock, other than that kept for breeding purposes, may be entered for competition, if in the Province, and owned by the exhibitor for a year previous to exhibition. Seconded by Mr. Brown and carried.

The following resolution was passed: Moved by Mr. Longworth, seconded by Mr. Brown, that in that portion of the Prize List relating to thoroughbred cattle, the several breeds, other than Short-horns, be placed on the same footing, as regards number and amount of prizes offered, as already fixed for Ayrshires.

25th March, 10 a. m.

Present—Col. Laurie, President; D. Matheson, John Ross, C. E. Brown, I. Longworth, Hon. H. F. McDougall,

Jonathan Rand, Dr. Lawson. Dr. Hamilton attended on behalf of the Exhibition Committee of King's County.

Col. Blair reported that the Agricultural Committee of the House of Assembly were not yet prepared for a final conference with the Board.

Moved by Mr. Brown, that the Herd Prizes for the respective breeds be raised to \$50, \$40 and \$30 for Short-horns, and for the others to \$50 and \$40. Seconded by Mr. Matheson.

Moved in amendment, by Mr. Longworth, that the Herd Prizes remain as in the Prize List submitted by the Committee. Seconded by Mr. Rand.

The amendment was put, and lost.

The motion was then put, and carried.

On motion, resolved, that in class II., the prizes for section 69, changed to 4 and under 5 years, be \$10, \$8 and \$6, and that an additional section be added, \$10, \$8 and \$6.

The Board adjourned.

#### AFTERNOON SESSION.

2 o'clock, p. m.

Business resumed.

Dr. Hamilton and Mr. R. W. Starr again attended on behalf of the Exhibition Committee of King's County. The Board proceeded with the further examination of the Prize List.

A sample of Fish Guano, manufactured by Mr. Oakes, at Digby, was placed on the table, and examined by the members.

Moved by Mr. Brown, seconded by Mr. Ross, that a Committee of five, of whom three shall be a quorum, be now appointed, to transact all business in the intervals between regular meetings of the Board, such Committee to report any action by them at the next ensuing regular meeting of the Board, for approval. Passed. Committee: Col. Laurie, D. Matheson, Hon. H. F. McDougall, I. Longworth, Jonathan Rand.

On motion of Mr. Matheson, resolved, that all members of the Board be notified of meetings of the Executive Committee and of the probable business.

Moved by Mr. Brown, seconded by Mr. Longworth, That, in entering animals whose owners have furnished the required information and declarations, and have, in other respects, fully complied with the requirements of the Board, the Secretary shall re-number all animals of each breed consecutively, as they are entered in the New Register, and shall issue new certificates for such, and deliver the same to the owners of the cattle on their giving up the old certificates. Passed.

A letter, (23rd March,) from Pine Tree Agricultural Society, Co. Pictou,

was laid on the table. It gave a satisfactory explanation of an imperfect entry in the Society's accounts,

The Bye-laws of the Richmond Agricultural Society were submitted;

The Board then adjourned.

#### CONSTITUTION OF WEYMOUTH AGRICULTURAL SOCIETY, DIGBY COUNTY.

1. This Society shall be known as the Weymouth Agricultural Society.

2. The officers of this Society shall consist of a President, Vice-President, Secretary, Treasurer, and a Board of five Directors, all of whom shall be chosen annually.

3. The object of this Society shall be the promotion and encouragement of agriculture among its members, according to the spirit of the Chapter of the Revised Statutes.

4. This Society shall hold its regular meetings quarterly on the first Saturdays in March, June and September. Special meetings may be called at any time, when required, by the President, upon one week's notice thereof being given.

5. The funds of this Society shall be expended in such manner as shall be determined by a majority of members present at a regular meeting, but the Directors shall be empowered to transact any business which they may consider necessary to the prosperity of the Society, such business not being in opposition to any direct vote of the Society at a regular meeting.

6. All funds in the hands of the Treasurer, when not required for immediate use, shall be deposited in the Savings' Bank to the credit of the Society, unless the Directors order the same to be otherwise invested.

7. All seeds, implements, &c., imported by the Society shall be sold to the members at wholesale cost price, the Society paying the expenses of freight upon the same.

8. These rules may be added to, amended, or expunged at any regular meeting by a two-thirds vote, providing such amendment be in conformity with the law.

#### PHOSPHATES.

*Part of an Address at the New York State Grange, by Prof. G. C. Caldwell, of Cornell University.*

If there were time for it, I might show that lime and potash, ingredients of the food of plants that are always present in the plant, and in the case of the latter especially, and in quite large and uniform proportions in some parts of the plant, are exported in much smaller quantities

than the phosphoric acid, in the plants ordinarily sold. Phosphoric acid appears to be the ingredient of plant food above all others that we have been carrying off from the soils of our farms in the course of the fifty years or more that we have been cultivating them, and it is only within the last few years that we have given any thought to replacing the loss. In England, where soil has been under cultivation for a much longer period, they began to feel the deficiency of phosphates many years ago, and we are now beginning to follow in their track. In Morton's Cyclopaedia of Agriculture we are told how the farmers of England began long ago to be discouraged. Their soils had been deteriorating for many years, under somewhat the same wasteful system of cultivation, evidently, that has been so largely followed in this country, especially in the west. A point was reached where, whatever system the farmer followed, his crops were steadily diminishing; in some places the condition of things was so bad that wheat was not included at all in the rotation. It was the introduction of bone manure, just at this point, that saved the agriculture of England, and entirely changed the aspect of affairs.

From the consideration of the relation between phosphate in the soil and the phosphate in the crops that we allow to leave the farm, we pass naturally to the consideration of the important subject of phosphates as manures. I should, however, wear your patience all out, if I should attempt to consider all the forms in which these manures are offered to the farmer. I must, therefore, confine my attention to the most important one, superphosphate of lime. This superphosphate, about which so much is said now-a-days—what is it? Before I can answer this question satisfactorily, I must digress a little to explain a very interesting property of phosphoric acid, upon which the difference between a superphosphate and an ordinary mineral phosphate, or the phosphate in bones, is based.

In the early part of my lecture I made the statement that there are several phosphates of lime, containing with the same quantity of acid different quantities of the base. Three of these phosphates are very interesting, from an agricultural point of view. Starting with the one which I have already described as the most common, and the only one found in the rocks, and containing for every one hundred and forty-two parts of the acid one hundred and sixty-eight parts of lime, we can prepare from that, by suitable processes, another phosphate containing one-third less lime, or one hundred and twelve parts; and from that another can be obtained containing still another third less lime, or only fifty six

parts. The first phosphate, the starting point, we may call, as already stated, the tri-calcic phosphate, the substance calcium being one of the constituents of lime. The second we may call di-calcic phosphate, and the third mono-calcic phosphate. The second compound contains twice as much lime, or twice as much calcium, as the third or last mentioned one, and hence the term di-calcic, and the one first mentioned contains three times as much lime or calcium as the third, and hence the term tri-calcic phosphate.

In examining the properties of these different phosphates, we find a difference that has an important bearing in respect to their usefulness as fertilizers. The tri-calcic phosphate is quite insoluble in water, the mono-calcic phosphate is very soluble, and the di-calcic phosphate stands between the other two as to solubility. This is an important difference, because plant-food in the soil must first be dissolved before it can enter at the roots, and the more soluble a constituent of plant-food is in a fertilizer the more valuable it is, because a larger proportion of it becomes accessible to the plant during the season of growth. No constituent of the soil, or any fertilizer that is ever applied to the soil, is absolutely insoluble, and if time enough is allowed the whole of it may be taken into solution; but more than this is always required for remunerative plant growth. There must be a greater rapidity of solution, so that the wheat crop can, during the growing season, easily find its eighteen pounds of phosphoric acid, or the Indian corn its fifty pounds or more, and the turnip crop its one hundred and forty or fifty pounds.

All three of the calcic phosphates which I have described are to be found, at least in nearly all cases in our ordinary superphosphates. The tri-calcic phosphate, from its insolubility, is known as insoluble phosphate, the mono-calcic phosphate as soluble phosphate, and the di-calcic salt as the reverted phosphate, because it is supposed to be produced by reversion of the mono-calcic or soluble phosphate back to the di-calcic as the superphosphate becomes old. In reports of analyses of phosphates, the terms soluble, reverted and insoluble phosphoric acid are commonly used, instead of soluble, reverted, and insoluble phosphate. It is hardly necessary to add that the larger the proportion of soluble acid a superphosphate contains, the more valuable it is. In regard to the relative value of the three conditions of the acid, soluble, reverted, and insoluble, there is some variety of opinion among chemists, for the values are hard to fix with any degree of accuracy, but reverted acid is generally considered to be worth from two to three times, and soluble acid from three to four



times, as much as the insoluble acid, such as we find it in mineral phosphates; and chemists are also generally agreed in giving to soluble acid the value of from twelve to twelve and a-half cents per pound. My own opinion is that it would be more correct to call insoluble acid worth only one-sixth as much as the soluble, or two cents a pound. Most of the experiments that have been performed with a view to utilize the ground mineral phosphate at once as a manure, without first converting it into superphosphate, or, in other words, first converting at least a part of its insoluble acid into soluble acid, have yielded such unfavourable results as to justify us, it seems to me, in setting such a low estimate on the value of the insoluble acid in such phosphates. In bone meal the insoluble phosphate is worth more than in mineral phosphates—the South Carolina material, for instance—because it is accompanied by other substances that bring about its solution more readily. The bone meal putrefies or decays wherever it is put, whether in the pile of rotting manure or in the field, and as it decays its phosphoric acid becomes soluble to a great extent, while the mineral phosphate suffers no such change.—*From the Toronto Globe.*

#### SUGAR BEET FOR FATTENING SWINE.

It is well known that a most important advantage to the farmers in Europe who are engaged in the cultivation of sugar beets is the securing of the pulp of the beets used in the sugar manufacture for the feeding of their stock. We have for years been urging our farmers to engage in the raising of the beet, so that as soon as the time for the manufacture of sugar therefrom should arrive, they might be prepared to enter upon the cultivation more extensively to supply the factories which would be erected for the purpose; which would be erected for the purpose; at the same time paying them well in the excellence of the succulent food which the beets would at all times furnish for their cattle, more especially the dairy cows. But the following result of the trial of the beet in its natural state in the feeding of swine, which appears to be well attested, shows a value of the esculent which far exceeds any estimate which we had formed of its virtues:

An experiment was tried sometime ago by a New England farmer in fattening a pig which fed largely on sugar beets. The animal was about a year old, and the feeding on boiled sugar beets, tops and roots, began on the 16th of August, and was continued three times a day until the 1st of October, after which ground feed was given, consisting of two parts of corn and one of oats, three times a day until the animal was slaughtered,

the meal being mixed with cold water. The result was, on the 15th of August, when sugar beet feeding was begun, that the weight was 306 pounds; September 1,336 pounds; October 1,450 pounds; November 1,520 pounds. This is the substance of the statement given, by which we perceive that the increase the last of August, when fed on boiled sugar beets, was at the rate of two pounds per day; the rate of increase on the same food continued through September. When fed on ground corn and oats, made into cold slop, the gain for the next 50 day was less than a pound and a half per day.

The great drought which was experienced through the past summer and fall will severely test the utmost capabilities of the farm to supply food for the stock until the opening of the spring shall again furnish grazing therefor. In various sections of the country the anxiety in this respect is great, and farmers are selling off all the cattle they can get rid of, almost without regard to price. Happy they who availed of the earnest appeals last spring to put in patches of root crops, not only to save their hay, for which there is always a ready market, but as a most excellent aid to the healthfulness and increase of the powers of their cattle, especially the milch kine, in their succulent qualities. The large quantities of dry, woody and indigestible food consumed by stock in winter taxes the digestive organs very severely; and constipation, congestion, etc., are ever threatening danger to the health of the stock. A moderate quantity of roots or green food in the season of dry feed acts as beneficially on the stock as fruit and fresh vegetables do on the human system, in the course of the long, cold season when no perspiration purges the skin. In the season of verdure and plant-growing, fresh vegetable food is so common a portion of our daily diet that we scarcely notice the fact. And so it is with the animals whose care we are charged with.—*From the Baltimore American.*

#### CAN A LADY BE A FARMER, AND CAN A FARMER BE A GARDENER?

I am a farmer's daughter, and lived till past thirty years of age on a farm of 500 acres, and for some years I managed it, so I am not a townswoman who might think the task an easy one. Nevertheless I assert that a thoroughly good farmer can have a perfectly well cultivated garden. It seems indeed to me a disgrace, especially for farmers, not to be good gardeners. Who can at so small expense of labour and of materials turn them to good account in this way, only using odds and ends of either—fragments hardly worth the labour of taking to an arable

field? Never, Mr. Editor, let it be unchallenged in your pages that farmers cannot be gardeners, or that labourers are only to know one kind of work, or that their wives cannot know enough of cooking to make their husbands and families more comfortable and healthy.

The farm which I refer to was cultivated over thirty years ago by a master who could take any implement, on arable or pasture land, and show his men the right way to use it. He gave instructions as well as orders, and he never ceased teaching till the work was habitually well done. Some, perhaps, you cannot teach; but his plan seldom failed. He used to say, "Begin early enough with them as boys, and nearly all will learn." The boys came as bird-keepers, then as carters' boys, and when too big for that, they were put under the cowman to milk and attend the cows. There were 100 cows to milk. And afterwards, in whichever line they proved to have been best, their places as men were apportioned them on the farm. They could, however, all of them, more or less, turn their hands to anything their master wished. They were good mowers—from 200 to 300 acres of grass being made into hay; and the home men were always the best, whether as mowers, pitchers, rick-makers, or threshers. They could cut and plant fences; one or two could put up a stone wall as well as any mason; others hang a gate and do odd jobs as carpenters, drainers, diggers, and cleaners of land in every way. They had been taught how to do work at the least expense of labour to themselves; hedging, ditching, timber-felling—all could be done by the ordinary hands on the farm. We should have been sorry had it ever seemed possible to expect that a man or boy was not ready or willing to do all asked or expected of him. The best gardener I ever knew had been taught by this master. He used to feed the fat cattle all through the winter, make the ricks, and do other skilled work in summer; wash the sheep and help the shepherd shear; and mornings and evenings he got time to put in the garden crops in their seasons. The garden was 1½ acre, enclosed within walls, fully planted, every inch of it, with the right crops in the suitable places. Peaches, nectarines, apricots, grapes were grown on the south and sunny walls; Morello cherries, currants, plums, where less sun was needed or could be had; asparagus and sea-kale were grown in abundance, enormous crops of strawberries and raspberries, and all other fruit.

The hedgerows on the farm were planted with fruit trees. Bushels of damsons were gathered from trees placed on ground which would not have been otherwise used. I have seen sacks of Blenheim Orange apples gathered from trees planted

at the bottom of a row of feeding stalls on the bank, which a deep water ditch protected from animals or passers by—for a public footpath was near. Every bit of ground, and every scrap of wall or house was planted with profitable trees, all grafted or grown and put in by the master and one other man besides the gardener, whom he had taught to prune also. The master said he always came through the garden from his farm, and could give five or ten minutes each time, and so do a great deal. And he taught his daughters gardening; and the interest and pleasure he has given us through life we shall never cease to thank him for. I believe no lady's education is complete without a knowledge how properly to manage a garden, and no farmer's till he is a good gardener as well as good field worker.

The men on this farm picked up knowledge of gardening and grafting and planting from their employer, so that when they got gardens of their own they could, and did, make the most of every corner by planting aright. Men were told off to manure and dig the ground in the garden perhaps only an hour at a time, as when rain stopped the carrying on of the hay or harvest work, the master always declaring whatever the weather it was good for something; and, thus, much of the garden work was done at these odd times.

I am now living in a purely agricultural village, where the cottagers are as a whole among the best gardeners I have yet seen among farm labourers. There has been much distress for want of work. Their case would be much worse if they had not a good stock of winter vegetables, good crops of parsnips, carrots, turnips, and above all onions and leeks. They grow the seeds for themselves, or one more careful can, for a few pennies, supply his neighbours of the surplus.

I have an old woman famous for her garden, who for two years has been my only gardener. We have long and interesting talks over our garden work. She gets a prize for the cultivation of her garden. Her husband works on the roads. He and she manage it; and she does mine, and I can show it for cultivation, for pruning, for every crop (she does it all, my health no longer allowing me), and she looks to the greenhouse fire, and has a passion for flowers. She brought me in the summer the most beautiful cactus I ever saw, it had twenty-three full blooms out at once! She had grown it from a leaf in her own cottage window, and it was never anywhere else; but then the mistress and woman gardener have both been taught how to do it, and to know the right season for everything in the garden to be planted. All may do the same if they will.—M. C. C.—*London Agricultural Gazette.*

OBSERVE AN OX in the pasture, field, or byre; notice the enormous quantity of food he hurriedly gathers up, and passes, with but little mastication, into the stomach; observe that when he has filled the large receptacle to repletion he seeks a retired spot, and leisurely proceeds to chew the cud,—in other words he, by a process known as rumination, returns the food into the mouth, and there submits it to a thorough mastication and incorporation with saliva, before its final deglutition.

The digestive organs are admirably arranged for the thorough digestion of the food, and, as we shall afterwards show, under favorable circumstances the whole nutriment of the food is extracted, and readily utilized by the body for the manufacture of flesh, fat or milk; and, under a wise Providence, man, by a study of animal physiology, has in a great measure succeeded in being able to direct the utilization of the food to the production of beef or milk at will, by systematic breeding, and a correct knowledge of the science of feeding, for a science it has come to be.

The gastric apparatus of the ox is remarkable for its enormous development, and its division into a true digestive stomach, and three preparatory compartments.

"These cavities represent a considerable mass that fills the greater part of the abdominal cavity, and the medium capacity of which is not less than fifty-five gallons; one of them, the rumen or paunch, into which the œsophagus (gullet) is inserted, constitutes nine-tenths of the entire mass." (*Chauveau.*)

The rumen or paunch, is a very large reservoir occupying about three-fourths of the abdominal cavity; it is lined by a rough membrane studded by numerous papillæ, and divided by strong muscular bands into compartments; into its upper end opens the gullet; by this opening the food enters, and, just below, and opposite this opening, is the opening into the second compartment.

The second compartment is called the *honey-comb*: this is the smallest of the four; its interior is lined by a membrane raised into ridges forming polyhedral cells, from which it receives the name of *honey-comb*. This sac communicates with the first, and opens into a groove, which is a continuation of the gullet, and by means of this groove communicates with the third compartment.

The third sac, called *many-plies* (*feuilletts*), from the very peculiar laminated arrangement of its interior, it being filled with the unequally developed leaves of its lining membrane, all of which are covered by papillæ. These leaves are attached by their convex border to the

walls of the sac, and their concave border is free; they are of different lengths, and between them there is always a quantity of finely divided food, sometimes soft or semifluid, at others dry and flakey.

The fourth sac, "*la caillette*," is the true digestive stomach, and corresponds, both in its structure and functions, to the single stomach of the omnivora and carnivora. It is in this stomach that the first real process of digestion takes place by the chemical action of the gastric juices.

The intestinal canal consists of a long cylindrical tube divided, by difference of calibre and disposition, into large and small intestines, averaging about 49 yards in length, folded and festooned in the cavity of the belly by means of a thin transparent membrane—the peritoneum.

The interior of the intestines is covered by numerous villousities and glandular orifices or follicles, the whole arranged so that, while the nutriment of the food has been prepared by digestion for absorption which takes place in the intestines, the indigestible matters and effete products are mixed with fluids poured on to the inner surface of the bowels, rendered soft, and the outward passage facilitated.

THE PROCESS OF RUMINATION.—The food being gathered by the lips and tongue, is roughly masticated and swallowed, passing in this bulky form into the paunch (*panse*), while, according to *Owen*, "water that may be drunk, finds its way mainly, as in the camel, into the cells of the second cavity."

The food is subjected to a rotatory or churning motion in the paunch, successively in its course to be moistened by the fluid of the reticulum.

When rumination commences, the coarse food in the paunch is brought within the grasp of the muscular walls of the œsophagean groove or canal where it is moulded into a bolus, and, by an antiperistaltic action of the œsophagus, it is carried upwards, and, by a motion partly voluntary and partly involuntary, it is thrown into the mouth, where it undergoes a longer and more thorough mastication, and a more complete incorporation with saliva, and is again swallowed. By contraction of the muscular walls of the groove the opening into the paunch and *honey-comb* closes, and the soft food is carried direct into the third or *many-plies*, the fluid portions passing direct into the fourth stomach.

The food, after having been compressed between the leaves of the *many-plies*, triturated, comminuted, and diluted by fluid, is passed on to the fourth or true digestive stomach, where it is subjected to the action of the gastric juices, and

the essential process of digestion commences. The food is here converted into a pulaceous mass called chyme, and is passed into the first portion of the bowel (the duodenum), where it is further acted upon by the secretions from the pancreas and liver, and the chyme is converted into a milky fluid called chyle, and is now prepared to be absorbed by villi of the intestines, and by the lacteals carried through the lymphatic glands, and thence to the blood, to enrich it with nutrition, and by it to be carried to each tissue in the body, to repair waste, and build up the tissue.

While the nutriment is thus circulated through the system, the waste products and effete matters are carried out of the system by the peristaltic action of the bowels.

The process of digestion in the bovine species is much more complicated, and, at the same time, more thorough than in monogastric animals such as the horse.

In fact the more conversant we become with the anatomy and physiology of the ox, the more perfect we see the wonderful arrangement, and perfection of adaptation of means to an end, in the digestive system of the ox tribe for the conversion of food into beef to be, viewed in the abstract: the huge, coarse, bony frame, the large feeding capacity and perfection of the digestive apparatus, the quiet, phlegmatic temperament, their sedentary and inactive lives, all point to nature's having intended the bovine species as food for man.

In preceding numbers of the "Journal" we noticed the peculiarities of the different breeds of cattle, some of which are natural, while others are the result of judicious selection and care in breeding. We will here merely notice that, as the result of years of study and practice, breeders have produced certain families of cattle which, in a most extraordinary degree, have developed the fattening tendency. The improved breeds not only produce more flesh in proportion to the food consumed, but they arrive at maturity much sooner, attain a greater size, and together are more profitable to both the breeder and the feeder.

The breeds in which these qualities have been most cultivated are the "Short Horns," the "Herefords," and the "Polled Angus;" and the purer bred they are the better feeders they prove to be.

As few farmers can afford to stock their farms altogether with pure bred stock, grades will be found in many cases to retain the fattening qualities of the pure bred progenitor.

Of all breeds the short horn is the best to use for crossing with: no bull will stamp his characteristics on crosses like the short horn; hence, for producing grades for feeding, the short horn cross

should always be preferred. They grow faster, larger, and produce more weight per pound for food consumed than any other cross.—*Mr. McEachron in the "Montreal Journal of Agriculture."*

### HOUNDS AND HUNTING.

If the position which enthusiastic votaries of the "noble science" claim for hunting as the "national sport" is to be estimated by the arrangements made for carrying it on, and the expenses which are incurred in maintaining the packs of hounds, the claim will probably be admitted even by the closest adherents of Mr. Beesley and Mr. Freeman. Taking the whole of the United Kingdom, there are no less than 162 packs of foxhounds, numbering altogether 5,280 couples. Besides these there are 18 packs of staghounds with 420 couples, 6 packs of other hounds with 200 couples, and 130 packs of beagles and harriers with 2,078 couples, or a grand total of nearly 16,000 "dogs"—if huntsmen will pardon the use of the word in such a connection—devoted specially to the pleasures of the chase. Of course, all these packs cannot be kept up and regularly hunted without an enormous expenditure on food, kennel requisites, and the necessary labour incidental to their maintenance, without reckoning the equally necessary expenditure entailed by the actual hunting. The keep of the horses used for hunting alone will amount to an enormous sum. The largest pack of staghounds is Her Majesty's, which numbers 40 couples, but these figures are nearly doubled in the case of several packs of foxhounds. The Duke of Beaufort keeps 78 couples of hounds, the Cottesmore hounds number just one dog more, Lord Fitzwilliam, Sir Watkin Wynn, Mr. Garth, and the Earl of Zetland, keep 120 hounds apiece. The largest Irish pack is the Meath, which this season contains 70 couple; and the largest Scotch pack is the Duke of Buccleuch's, which hunts the country round Melrose and Kelso, and comprises 54 couples of hounds. Ireland boasts the largest pack of harriers—the Monaghan—of which Lord Rossmore is master, and which contains 30 couples of dogs. The number of foxes which exist in different parts of the country must be very much larger than really is the case if all these foxhounds are to be rewarded with a "find"—let alone a "kill"—every time they are out. All the packs hunt at least once a week, and many of them have four and even five regular days out of every six on which to hunt Master Reynard. Even the harriers do not confine themselves to chasing their ostensible quarry "puss," and many packs of "harriers" number a certain proportion of foxhounds. It is more than likely that the most highly-

prized vovmin, as the fox has been called, would be less numerous than at present if it were not for the existence of the packs of hounds whose sole object in life is to hunt and destroy them. But abolish foxhunting, and what a blank there would be among the cherished institutions of the country.—*London Globe.*

[Toronto, and latterly, we believe, Montreal and Ottawa, are aping England in the matter of Hounds.]

If our Halifax Sugar Refinery can supplement its regular supplies of West India Sugars by the Beet Pulp from our own farms, it may be enabled to compete successfully with the Quebec Factories in supplying the toiling millions of this Dominion with a cheap grade of Sugar. Sugar Beet culture in this Province promises to be one of the most useful adjuncts of Sugar Refining.

No more orders can be received for Cattle Feeder Potato, the surplus being exhausted.

"The friends of humanity cannot but wish that in all countries the labouring classes should have a taste for comforts and enjoyments, and that they should be stimulated by all legal means in their exertions to procure them. There cannot be a better security against a superabundant population. In those countries where the labouring classes have the fewest wants, and are contented with the cheapest food, the people are exposed to the greatest vicissitudes and miseries. They have no place of refuge from calamity; they cannot seek safety in a lower station; they are already so low that they can fall no lower. On any deficiency of the chief article of their subsistence, there are few substitutes of which they can avail themselves, and dearth to them is attended with almost all the evils of famine."—*Ricardo, Political Economy, pp. 95-6.*

### Light Brahma Fowls.

THE ADVERTISER HAS

### EGGS FOR HATCHING,

SURED by cocks mated with hens from the celebrated "Tees" strain from Pennsylvania, imported by him this winter, and renowned for their very large size. The special prize for heaviest cockerel, any variety, was awarded the advertiser at the recent Halifax Poultry Show. Persons contemplating raising Light Brahma fowls would do well to secure eggs from this newly imported strain, which is not excelled in beauty, or exceeded in weight, by any in the Province.

Price—\$3.00 per 13, or \$5.00 per 25 eggs.

Cash must accompany order.

J. PENNINGTON,  
22 Smith Street, . . Halifax, N. S.



## BONES! BONES! PURE GROUND BONES.

THE Subscriber is now prepared to furnish the

Farmers of Nova Scotia

with this Valuable Manure, at the following prices, delivered at the Railway Station:

Half in. Bones.....	\$28.00 per ton.
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Fine Ground Bones.....	35.00 per ton.
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The half inch bones are very suitable for mixing with sulphuric acid and making

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Thorough-Bred Jersey Bull,  
ASHBOURNE, NO. 114, N. S.

BRED by J. B. Duffus, Esq., Halifax.  
Calved May 8, 1874. Sired by Comet 2;  
out of Jeanine, 103 Am., by imported Comet.  
Dam, Brownie (prize cow). Took first prize at  
Halifax Exhibition in 1874.

Apply to—

apl PROFESSOR LAWSON,  
Halifax.

Central Board of Agriculture,  
HALIFAX, N. S., 7th April, 1880.

THE Board having purchased half a ton of new and fresh Seed grown in Germany, of the IMPERIAL SUGAR BEET (the kind of which a few packages were distributed last year); the same will be sold to Agricultural Societies in limited quantities, at cost and charges, and, when it arrives, will be delivered in order of application.

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1st. "Talbot 3rd," No. 333. Two years old March 10th. Girth 6 ft. 2 in. He is large and handsome.

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3rd. "Zulu." Dropped November 5th, 1878. Took second prize at Halifax. For size and beauty cannot be surpassed.

4th. "Nicholas," No. 421. One year old March 24th, 1880.

### DURHAMS:

1st. "Snowball," No. 352. Two years old December 7th, 1879.

2nd. "Peter Grant." Dropped May 27, 1879.

ALSO.—One Cow "Miss Maud," No. 136. Five years old. Due to calve June 24th.

JOHN W. MARGESON,

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King's Co.

1880.

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Will have a number of Longshan Chicks, (the new breed,) for sale in the fall.

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This is believed to be the finest bull of his age in the Province; he took 1st prize at Halifax Provincial Exhibition; is of good make, robust, and has proved so far, without a single exception, to be a sure stock getter. To ensure a sale he is offered at the low price of \$200.

Apply at Lucyfield Farm, or by letter to Prof. Lawson, Halifax.

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ABOUT fifty bushels of surplus seed of the "CATTLE FEEDER," a coarse Potato employed extensively in Scotland for feeding Stock, and now preferred to Turnips for that purpose. Price \$2.50 per bushel, or \$6.25 per barrel.

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THE pure-bred Ayrshire Bull WAILLACE 2ND, No. CCLXXXVI., N. S. Register. Calved May 27th, 1877; bred by Henry Burrill, Esq., Yarmouth; weighs now 1528 pounds. For certificate of registered pedigree, price, terms, &c., apply to—

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