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THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, DECEMBER, 1863.

No. 12.

A PARTING ADDRESS.

It has become the task of the Editors to announce that the present number of the *Agriculturist* will close the series published under the direction of the Board of Agriculture of Upper Canada. When the Board assumed the responsibility of the publication, now some six years ago, it did so for the purpose of occupying a field which otherwise appeared likely to be left vacant. It is true that several excellent Agricultural periodicals, published in the adjoining States, had a considerable circulation in this Province, and doubtless conveyed much useful and interesting knowledge to their readers; but the *Agriculturist* was the only purely Agricultural Journal published in Upper Canada, specially designed for, and edited with a view to the wants of the Canadian farmer. But, from various causes, chief amongst which was the want of adequate support, the publication of the Journal by individual enterprise appeared likely to cease. The Board therefore believed that they should be doing good service to the cause of Agricultural progress in the Province by acquiring the right to continue the publication under their own control; especially as it was necessary that they should be possessed of some medium for communicating official and other information direct to the farmers and Agricultural Societies of the country.

The Editors have done their best to carry out the intentions of the Board, but, labouring under the disadvantage of having their time greatly occupied with other matters, and receiving little

extraneous assistance, they have felt that they could not, at all times, do that justice to the task which they could have wished. Besides, from not having the facilities of a printing office of its own at command, to ensure prompt and satisfactory execution of the mechanical work of getting out the numbers, and, from its official position, not being well able to avail itself of those resources of advertizing and canvassing which are at the command of private enterprise, the Board has not been able to obtain that wide distribution for the *Agriculturist* which was desirable. Still, notwithstanding these drawbacks, the Editors believe that their efforts have not been unattended with some good results.—Much sound and valuable information has been culled from various sources, and diffused throughout the country. The circulation of the Journal has steadily, although slowly, increased. A wider interest in the truths of Agricultural Science has been gradually awakened; and contributions to the pages of the Journal from the hands of the farmers themselves, which were at first few indeed and far between, have become of late more frequent and valuable. Progress has been slow, but on the whole not discouraging; and, had the Board been called upon to continue the publication, with the improvements which would from time to time have been effected, it would eventually, the Editors believe, have attained to the exercise of a widely extended and useful influence.

But an enterprising and well known publisher of this city, the Hon. G. Brown, who is besides

very extensively engaged in Agricultural pursuits himself, having lately announced his intention of publishing a semi-monthly journal in the exclusive interests of Agriculture, the Board feel that they are thereby relieved from the task which they had assumed. Mr. Brown has facilities at his command which will enable him to do full justice to his undertaking. We believe that he will pursue this undertaking earnestly and energetically. The Board therefore have relinquished the right of publishing the Agriculturist, in his favor, and this journal will henceforth cease to appear. But the Board will not in consequence be left without a medium for communicating with the farmers and Agricultural Societies of the Province. By arrangements made with Mr. Brown, the pages of the new paper will be open to them, and will meet the necessities of the Board in this respect quite as well as a journal published under their own direct supervision. Besides, the new arrangement will, by affording him more time, enable the Secretary to prepare an Official Report *annually*, embodying all that is important and interesting in the Reports furnished the Board by the Agricultural Societies of the Western Section of the Province. The completion of another volume of Transactions will now be proceeded with, without further delay.

The new Agricultural paper will be published under the name of "THE CANADA FARMER." We refer to the Prospectus in another column, and bespeak for it a hearty support on the part of the farmers of the country at large. We trust that those steady friends, who have hitherto given their valuable support to our humble efforts in the Agriculturist, will not fail to exert their influence in favor of our successor.

As we have good evidence for believing, from arrangements already completed or in progress, that no pains or expense will be spared by the enterprising proprietor of the "THE CANADA FARMER" to make that journal inferior to none of its class on the continent, we trust that not only will all our subscribers transfer their names to the new list, but that sufficient encouragement will be given in all parts of the Province to place this important undertaking on a permanent basis.

In conclusion we cannot help saying that we do not part with our readers and contributors, who have accompanied us so long, without a

feeling of regret; and we cheerfully embrace this opportunity of thanking them for their generous confidence and support. We desire to associate the bidding of them farewell with similar wishes of a HAPPY NEW YEAR.

THE "CANADA FARMER."

From the spirited manner in which this new Agricultural Journal has been commenced we are persuaded that we may confidently recommend all our friends to give it their support. The publisher has facilities for conducting it with efficiency not possessed probably by any other establishment in Canada; and it cannot be without advantage to have Mr. Brown's well known energy fully enlisted in the cause of Agriculture.

Preparations have been already made for getting out the Farmer in the best style. It is to be printed on fine paper from a new font of type, and a full staff of Editors, Reporters, Artists, and Wood cutters has been retained. Mr. W. F. Clark, a well known and able Canadian writer, is to be Editor in chief. Mr. Beadle of St. Catharines is to take charge of the Horticultural department, and promiecent professional agriculturists are to contribute to the Live stock, Chemistry and Veterinary departments. We hear that the first number is to be illustrated with drawings of some of the leading prize animals at the late Provincial Show. We fully expect that the new paper will be worthy of hearty support; it is the only agricultural Journal now published in Upper Canada, and it ought to receive a hearty welcome from all who are interested in the Agricultural progress of our Country.

AGRICULTURAL SOCIETIES.—THE ANNUAL MEETINGS.

The Township Agricultural Societies hold their Annual Meetings all over the Province in the second week, and the County Societies in the third week of January. At the township meetings the chief business consists in receiving and adopting (if approved of) the report and proceedings for the past year prepared by the Directors, and electing the officers, viz: President, Vice-President, Secretary and Treasurer, and not fewer than three, n

more than nine Directors, for the ensuing year. We desire to impress upon the officers of Agricultural Societies, especially upon those who may happen to be new to the work, the importance of having these reports correctly and properly prepared. Each report should contain a list of the members of the Society who have paid their subscriptions for the past year, and the amount paid by each, a list of the prizes awarded at each exhibition held by the Society, with the names of the parties to whom, and the articles for which such prizes were awarded; a correct statement of the receipts and expenditure of the Society, showing the sources from which the income has been

derived, and the objects upon which the expenditure has been made. The law requires a "detailed" statement of such receipts and expenditure, but this does not ordinarily involve a great amount of labor, as in most cases the prizes paid constitute the main bulk of the items of expenditure, and they are embodied in the "prize list" as a necessary part of the report. Besides the detailed statement however, there ought to be given, for convenience of reference, a summary statement or balance sheet in a condensed form. We submit the following as a simple form of such balance sheet, being in fact the form more or less closely used in the majority of cases already:

_____*Treasurer, in account with* _____ *Agricultural Society.*

DR.	\$	cts.	CR.	\$	cts.
To balance from last year	—	—	By amount paid for premiums	—	—
To Members' subscriptions	—	—	By expenses of preparations for exhibition, printing, &c.	—	—
To Government Grant	—	—	By paid for other objects	—	—
To receipts from other sources	—	—	By balance in hand	—	—
	\$	—		\$	—

It would be well also in all cases where it can be done, to give an additional balance sheet

showing the exact present position of the Society in somewhat the following form:—

Statement of the Liabilities and Assets of the _____ *Agricultural Society.*

LIABILITIES.

ASSETS.

LIABILITIES.	\$	cts.	ASSETS.	\$	cts.
Due on Premiums awarded and not paid	—	—	Subscriptions due and unpaid	—	—
Due for work on (or purchase of) show grounds and buildings	—	—	Real property belonging to Society	—	—
Due on Stock belonging to Society	—	—	Live Stock belonging to Society	—	—
Due on other accounts	—	—	Other property	—	—
Total liabilities	\$	—	Total Assets	\$	—

Besides the information above mentioned the Report should embody "such remarks and suggestions upon the Agriculture and Horticulture of the township, and Arts and Manufactures therein, as the Directors are enabled to offer." There should be also appended to the Report the names and Post Office address of the officers and directors elected for the ensuing year. This is very necessary for the purpose of affording the Board of Agriculture the means of communicating readily with the Society when re-

quisite. The Report, when adopted by the Society, should be immediately entered in the Society's Journal or Minute Book, and a correct copy, certified by the President or Vice-President, transmitted to the Secretary of the County Society, in time for the annual meeting of the latter in the following, *i. e.*, the third, week of the month of January.

The business at the annual meetings of the County, or Electoral Division Societies, is nearly similar to that at those of the townships. The

Reports from the township societies have to be received, and a Report, similar to those already described for the townships, and containing information under the same heads, submitted by the Directors. The officers to be elected by the County Society are a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors. The Report, when adopted, should be entered in the Society's Journal, and a true copy, certified by the President or Vice-President, forwarded to the Board of Agriculture, at Toronto, as soon as possible, but in any event not later than 1st April following. The names of the Officers and Directors elected for the current year should be appended to the Report, and the Reports received from the Township Societies must be transmitted to the Board of Agriculture by the County Society along with their own.

It is also the duty of the County Society at its annual meeting to nominate four persons to serve as members of the Board of Agriculture for the ensuing two years in place of those retiring by rotation. The four members who retire from the Board at the end of the present year are Messrs E. W. Thomson, of Toronto; Hon. H. Rutlan, Cobourg; Hon. G. Alexander, Woodstock; R. L. Denison, Toronto. The retirement of these gentlemen, however, does not render them ineligible for re-election.

The names of the four persons so nominated by the County Society, are required by the Act to be immediately transmitted to the *Bureau* of Agriculture, at Quebec.

A CANADIAN SHORT HORN HERD BOOK.

The Board of Agriculture proposes to publish at an early day, a Herd Book, containing the pedigrees of all the pure blooded Short Horned, or Durham Cattle, which have been imported into, or bred in Canada up to the present time, so far as they can be obtained. It is intended to make the work a complete Book of Reference for Canadian Breeders, affording all the information necessary in reference to the derivation of their stock, without the necessity of consulting either the English or American Herd Books. Every Short Horn Breeder knows the importance and value of such a work, and it is not necessary therefore in this place to dilate

upon it. The Canada Short Horn Herd Book will afford in one compact work, up to the present time, so far as Canadian Breeders are concerned, all the information which is now spread over twenty large volumes of the American and English Herd Books, and which could not be procured in this extended form at a cost of less than a hundred dollars. It is intended that the price of the Canada Herd Book shall be moderate, probably not over three or four dollars per copy. There is already material on hand for a considerable volume, and further pedigrees will be received up to the 1st May next.

Persons wishing to have the pedigrees of their cattle inserted should forward them at once to the Secretary of the Board of Agriculture, Toronto. Each pedigree should be written out in full, and should give the following information, viz: The sex of the animal, the name, the colour, the exact date of birth, the name of the breeder, and of the present owner, the name of the sire of the animal, with his reference number in the Herd Book, or Canada Stock Register; then the name of the animal's dam, and of her sire, with his reference number; the name of the animal's grand dam, and of her sire with his number; and so on, tracing back in a direct line through the female side, for at least five generations, or till the pedigree terminates in a dam already recorded in the Herd Book. If any of the sires mentioned are not Herd Book animals, the full pedigrees of such sires must be given, and they will appear in the Herd Book in their proper places, for convenience of reference, as independent entries.

All pedigrees, the insertion of which has been paid for in the Upper Canada Stock Register, kept at the office of the Board of Agriculture, Toronto, will be inserted in the Herd Book without further charge. The charge for the insertion of others will be half a dollar each.

As the number of copies printed will depend upon the extent of the demand for the work, all persons who wish to have copies are requested to inform the Secretary of the Board of Agriculture as soon as possible, so that their orders can be filed, and the extent of the edition regulated accordingly. The amount need not be forwarded till the work is ready for delivery.—Every County and Township Agricultural Society in the Province, will sooner or later find it

indispensable to be possessed of at least one copy for reference. Such Societies are therefore requested to take the subject into consideration on the first convenient occasion, and if they desire to secure a copy, inform the Secretary of the Board to that effect as soon as possible.

LECTURES ON AGRICULTURE AND THE VETERINARY ART

This Course, under the auspices of the Board of Agriculture and University College, will commence January 21st, 1864, and will be completed in four or five weeks. The subjects embraced will be the leading facts and doctrines of Chemistry, Geology, Botany and Meteorology, in their relation to the Science and practice of Agriculture, in which Prof. Buckland will receive important assistance from the respective Professors of these departments of science in the Provincial University. Mr. Smith, the able Veterinary Surgeon to the Board of Agriculture, will treat on the anatomy, physiology, and diseases of farm animals, and give practical instructions in dissecting.

This course, like that of last winter, will be specially adapted to the wants of young men practically engaged in the work of the farm, with a view of eliciting a spirit of enquiry, and the love of knowledge, in relation to their every day pursuits: a principal object being to put them in a way of observing and studying for themselves.

The course will be open to all, free of charge; so that the only expense, except for a few text works, would be board and lodging for a few weeks. Further particulars may be obtained by addressing Professor Buckland, University College, Toronto.

"THE AGRICULTURIST."

FARMERS WRITE!—THE AGRICULTURIST AND ITS EDITORS—HOW TO IMPROVE IT—USE AND VALUE OF SUCH A JOURNAL—STONES, SNELLS, NIMMOS, MILLERS AND OTHERS.

We purpose, time and opportunity permitting to have a little talk with the *Agriculturist* and its readers. Short letters are the best for such a journal, but if there is much to say, as it issues but once a month, it will take some time to complete the task. We will not therefore lecture upon it, but trust a few words will not

be amiss. The position of the *Agriculturist*, being also the Journal of the Board of Agriculture of Upper Canada, renders it most desirable that it should be in the hands of all the intelligent farmers of the country, but we are afraid that too many take but little interest in it. We have examples in the *Country Gentleman* and *Albany Cultivator*, and the *Genesee Farmer* of very successful and widely read periodicals, attracting much attention in Canada. It cannot be said that our Canadian periodical has not on its pages a staff of able and responsible editors, and we therefore enquire what is the matter? Every reader of the American papers referred to knows that one of their leading features consists in the contributions by farmers themselves from all over the United States; illustrating their occupation; giving their experience; making and answering inquiries; criticising and commenting on the various practices of each other; enjoying communications; establishing acquaintance; creating interest in each others welfare, and prompting good feeling and the progress of this great leading branch of industry. Their journals are a ready source of correspondence between the leading farmers of the country, who comprehend that nothing is lost by imparting to others valuable knowledge derived from experience. There is much no doubt that is crude thrown together in this way, but the result is a great deal that is valuable and instructive.

The want of this is a leading defect in our *Agriculturist*. But whose fault is it? Prof. Buckland and others assure us, that means have been taken, circulars written; correspondence solicited, with a view of changing this, but without effect. Our farmers will not write to each other through the journal. They leave it in the hands of the Toronto editors, one of them a Professor, another Secretary to the Board, a third is Consulting Surgeon and a Licentiate of the Edinburgh Veterinary College. Very well. Other means must be taken.

We suggest that the Board offer premiums for short essays on subjects suggested by themselves. Try a little competition. If this will not do, or at the same time, stir up our Stones, Snells, Nimmos, Millers, and others—drop the great meed of praise showered upon them—put in a little criticism—assail the Durhams—pitch into the Galloways—tell them their Leicesters and Cotswolds, or their Durhams and Ayrshires are too fat or too lean, overfed or too high priced. Do something to set them in motion with their pens, and we shall soon see more readers of the *Agriculturist*.

One of your editors lately went abroad—and he went east, and he gives us a few notes of his trip, and he saw beautiful things of course. The Bay of Quinte was picturesque—Amherst Island a magnificent property—Prince Edward afforded varied and pretty scenery—fine hops turned up in view—Brighton and Cobourg and his hospitable friend the Hon. H. Ruttan came

in for a notice, as did also the garden of Asa A. Burham. Leaving these gentlemen and nice things, the Editor fell among farmers and gives us an account of an agreeable day with Mr. Hume on the north ground. He stopped a short time with the Wrights, Roddicks, Alcorns and others, not to forget a well known name, Mr. John Wade,—then the rail ran away with him to Toronto; aye into Toronto, among the Professors, Presidents of Boards, Lawyers, and other professional men, among the busy merchants, and the great conglomeration of the western metropolis. Well, will not the readers of the *Agriculturist* say they were glad the Editor took his little trip and penned his scattered and hurried notes, and that they were interesting to read? Would not more trips and more notes of intelligent farmers and of their doings be desirable? Would they not add to the interest of the only farmers' journal we have? To be sure they would. But what the Editor did can be well done by parties in different localities, better acquainted with what is going on; having more time, and by short pertinent letters. More knowledge of our country—of its intelligent farmers—of their experiences—are wanted, and there is no better medium of circulating it than the journal.

The Agricultural Association has brought many farming men into notice, and aided them in improving their business, and incited them to expend their means in introducing improved breeds of cattle, sheep, and horses. It has helped the Canadian manufacturer of implements and introduced a great many improved processes to the agriculturist. It has dipped into the arts; aided the horticulturist, and others, and created a demand for crystal palaces, and pushed on for large and extensive industrial exhibitions, partaking as we think latterly of an element not uncommon in Canada, and which may be described as one that has ideas too large and goes too fast for its means, and which may result in difficulty and some disappointment. But of all this again. We must confine this present talk to that of the agriculturist—to a small attempt to draw the attention of its readers to a plain duty, that of writing for it—to pointing out to the intelligent farmer that it is a means of monthly correspondence with his brethren, as anxious to hear from him as he can be from them—to the fact that he can make it a means of imparting and receiving information—a great medium for strengthening the agricultural interest of the country.

W. O. BUELL.

Perth, 13th. Oct., 1863.

P.S.—We sent you a notice of Mr. J. McIlquham's farm stading—we have our Wisers, Motherwells, Spaldings, Bells, McDonalds, Camerons, McMurrays, Nicols, Stewarts, McLarens, Clarks, McIntyres, Campbells, Dodds, Harts, Meeghans, and lots of other improving farmers, whom we wish to see earnest readers of your journal, who may be included in future notices. But we wish

to see an example set by the leading exhibitors at our provincial exhibitions writing for you. If they will not, we cannot then let them know what good friends they have in this quarter, and that this hitherto quiet snow locked region of the land, has its eyes on their western neighbours, and that they must not hope to carry off all the premiums and all the shows, and all the Crystal Palaces, and all the Officers of the Board of Agriculture west. With the help of friends we have a Glengarry Vice President, and know who were for, and who against us, and how better to appreciate the action of the delegates and of the Board in time to come.

THE VETERINARY ART IN RELATION TO AGRICULTURE.

Professor Brown, late of Cirencester College, opened the winter series of discussions at the London or Central Farmers' Club, by a lecture on the above subject. We take the report as abridged and commented on in the last number of the "*Irish Farmers' Gazette*," and which will be found particularly interesting and instructive to many of our readers, who will not fail to observe from a notice in another part of our present number, that the Board of Agriculture have made provision for systematic instruction in the Veterinary art, under the superintendence of Mr. Smith. After tracing the progress and relation of Agriculture and the Veterinary Art, Prof. Brown observed:—

"As civilization advances the two things become distinct. The Veterinary art, no longer in the hands of the farmer, became the property of the ignorant and the uneducated, so that the name of horse-doctor was an opprobrium. Thus we might trace its struggles through various stages of existence, up to the present century, when it took its place as a distinct profession, with its schools and colleges, enlisting among its members men of education, and ranking fairly as one of the liberal professions."

Professor Brown went on to say, that notwithstanding the position of veterinary science at the present time, it is a melancholy fact that an immense number of animals die yearly from diseases which veterinarians seem powerless to remedy; and he attributed this, not to any deficiency in veterinary science, but to the fact "that agriculture has not availed itself to the extent it might have done of the improvements in the veterinary art." The country is full of uneducated, unqualified practitioners, while educated men are comparatively few in number; and thus a large amount of mischief is done, and the mortality among stock very materially increased. I

connection with this point, the Professor made the following observations:—

"I am free to admit that the ravages of epizootic diseases are altogether irremediable by medical treatment. Beyond all question, the attacks of such maladies as pleuro-pneumonia and small-pox in sheep are beyond the reach of the veterinary practitioner. Science has not discovered a remedy for either of them; but under a properly regulated system they could never have done the mischief in the country that they have. For example, a certified inspector is sent for to inspect a farm. The tale has gone forth that pleuro-pneumonia is there. Thinking calmly on the matter, one is often tempted to smile on the whole affair. Reports go forth that on a certain farm pleuro-pneumonia has appeared, and that by well-directed efforts on the part of the owner its ravages have been stopped. Gentlemen, such a thing has never happened yet. I have myself been called in, in some of these supposed cases of pleuro-pneumonia. After walking among the stock, I have said to the owner, 'I do not discover any signs of the disease. On what is your opinion founded?' The reply has been, 'These animals showed certain symptoms; we treated them in a certain way, and the disease stopped.' I have inspected the remains of animals that have died, and found nothing of the disease. In one case a gentleman had been induced to fumigate his sheds with vapour of tar, or something of that kind, as a specific for the malady, and he told me that by so doing he had saved all his stock with the exception of one animal. That one, I have no hesitation in saying, he had suffocated. An animal might have had a cold or a cough; but I am enabled to say there was no case of pleuro-pneumonia. Cases like that to which I have thus referred are not uncommon. One sees receipts constantly given which are of no use; one sees some trifling application in the nature of fever medicine—nitric ether, simple nitre, or something of that kind—advertised as a successful remedy for pleuro-pneumonia on a farm; and what I contend is, that there has not been any instance of that disease on the farm where the supposed remedy was successful. It must, indeed, have been evident to the scientific man that there never had been such a case. Is it reasonable to suppose that a disease which has baffled the accumulated science of the time, and on which no medicine that has been discovered has the slightest influence, would yield to a dose of nitre or nitric ether, which one uses for a common cold? On the face of things the notion is altogether absurd."

He considered that if the connection between the veterinary art and agricultural practice had been thoroughly realised, such mistakes as those to which he referred could not have occurred; and in order to show some of the leading features of the relationship between

veterinary art and agricultural practice, he referred to the origin of the animals which we have to deal with, or, in other words, the question of breeding.

With respect to horses, he stated that "cart horses"—that is, the breeds of horses used in farm work—although frequently badly managed in point of stable accommodation, as well as general treatment, had yet, by some means or other, "escaped the deterioration which has affected other classes;" and he illustrated the deterioration he referred to by comparing the hacks of the present day with what they were at a former period, it being, "only by the rarest chance," he said, "that one meets now with an animal that will carry one pleasantly;" that, no doubt, plenty of animals are to be found that will carry a man safely to his destination and back, but the hacks which will ensure pleasure in riding them are few and far between. This he attributed to the careless manner in which they are bred, and the practice of putting whatever animal a man has to everything that turns up—the saddle in the morning, then the gig after breakfast, with, perhaps, a turn in the dung cart or plough before night. This is certainly not the way to make a pleasant hack, but it is the jack-of-all trades fashion which is unquestionably very much in vogue.

From the hack, Professor Brown passed on to the hunter, and "in this case," he said—

"You may get an animal that is very fast, and will jump remarkably well; but in anything like the old-fashioned run of five-and-forty minutes, how remarkably few animals will you find in at the finish! How much is there sacrificed of good bottom and tone, and length of body and shortness of legs, to the miserable system of breeding a pretty-looking horse, with anything but a long body and anything but short legs! If the animal has a small head and tolerably thin neck, which he curves in a dignified manner, public taste seems to be quite satisfied. Now this state of things ought not to exist; and with a proper association of veterinary science with agriculture it could not exist."

Having disposed in this manner of the horses of modern times, Professor Brown next turned his attention to the other classes of stock, respecting which he said:—

"I grant that you have done a great deal in that respect. Your short-horns are a marvel. At every periodical inspection I find them advancing; and we have here, perhaps, the most astounding instance of progressive development which natural history furnishes. It appears from the remarks of M. Girard, who was in his day a scientific man and a close observer of cattle—I am speaking now of French cattle—a good animal had in his day its permanent teeth well up and its dentition perfected at the age of five or six years. I constantly find short-horns with full dentition under three

years of age. The attainment of perfect dentition is, I need scarcely say, a proof that the animal has reached the period of maturity. In the case of sheep we have advanced a year, and in that of pigs a year and a half. The pig, which used to require three years, has now perfect dentition and full bodily development at the age of eighteen months. This shows what can be done when a certain thing becomes advisable, and attention is directed to it. It seems a strong fact in support of Mr. Darwin's notion that you can almost do what you like in such matters. Pigeon fanciers tell us that they can breed to any particular colour that they wish in the feathers, and what has been done in the case of pigeons affords a strong presumption in favour of that theory. But remember that where you have precocity of development there is a corresponding want of tone in the system. It appears to be an invariable law that that which is quickly produced shall not long continue. Hence it is that those animals which you have succeeded in breeding in such wonderful perfection in so short a period are remarkably subject to disease. You will rarely find the lungs of a sheep two years old free from organic malady. Such animals are constantly exhibiting in the internal organization tapeworms and hydatids almost without number. Moreover the problem has yet to be solved what particular kind of food is best adapted to sustain the animal's body, and to bring it to early maturity without any unnecessary loss of its tone or nutritive properties. I do not stand here to tell you that a sheep of the age of five years would be much better food for the people than a sheep of the age of one year. But the question is, not which animal is best for the market, but which will pay best, commercially speaking. It would be altogether unreasonable and absurd to expect the farmer to keep his sheep up to the age of four years, merely that people might have better mutton. Of course, one would always prefer four-year to one-year-old mutton; but one is tolerably contented so long as the mutton supplied is in a healthy condition. It is admitted that the presence of sheep on the farm is a necessity of English agriculture; in fact, our system of wheat growing, in connection with turnip husbandry, is dependant on that animal. But the question for the agriculturist to decide is, how long the animal may be most profitably kept. My own opinion is, that, as they are at present bred and fed, if the growing flocks of the country were retained two years instead of one, the loss of the farmer would be irremediable, and the percentage of deaths terrific. Knowing what I do about the condition of such animals about the age of one year, which may be regarded as the term of tolerable maturity and general development of the bodily system, I hold that with the same method of feeding—I mean feeding largely upon roots containing an enormous percentage

of water, and tending to produce a flabby and loose condition of body—the animals would suffer seriously if they were kept much longer. While the present system of feeding exists, no remedy for the evils which accompany it can be suggested."

At a subsequent part of the proceedings, Professor Brown explained that when he referred to the danger of keeping sheep until they attained a greater age than is usual in many parts of the kingdom he alluded to wethers, not to breeding ewes, which are not forced at an early age, and are, therefore, placed under more favourable circumstances for the attainment of longevity than the other class of sheep, which are destined for the butcher as soon as possible.

The system of fattening stock for exhibition called forth a strong protest from Professor Brown; and in order to show what he, as a professional man, has to say against a system we have frequently reprobated, we ask the attention of our readers to the following extract:—

"The object of agricultural exhibitions should be to encourage the development of the most perfect forms of animals—not to create a large amount of fat; and the animals which I see from year to year are far from satisfying me in this respect. I observe more and more fat laid on, apparently for the purpose of concealing defects; and I regret to be obliged to say of the judges, some of whom probably are present this evening, that they are in some degree responsible for this. I do not know whether it is really the case that they judge favourably according to the amount of fat upon an animal's body, but I do know that breeders generally are under the impression that they do so. Breeders say, 'It is no use sending that animal to the agricultural show; it is not fat enough for that purpose!' That is language which ought not to come from the mouth of any breeder in the kingdom. In examining the internal organization of animals which have died, I have found, in many cases, fatty disease of the liver—a disease which it might well be supposed was confined to men who loved to gratify their taste for turtle soup, and other things containing a large quantity of oleaginous matter. I have found this disease not only among stock, but even among horses and cats. It exists, I believe, at the present time among horses, cattle, sheep, and calves to an enormous extent; and the presence of such a disease as fatty liver proves that there is something essentially wrong in the present system of feeding, and suggests the importance of proceeding on regular scientific principles, which, though they may be imperfect, are, nevertheless, as far as they may go, tolerably well defined."

We must state, however, that there was a difference of opinion on some points connected with the over-fattening system between Professor Brown and Professor Voelcker, who was

present at the meeting. The last named high authority considered "that the great practical mistake in the art of feeding was, the excessive supply, not of fat-producing, but of flesh-producing materials," and he stated that in oil-cake there was nearly 30 per cent. of flesh forming substances.

"He (Prof. Voelcker) thought a great practical mistake was made at the present time in the art of feeding, in the excessive supply of nitrogenous food. He could not understand, speaking chemically, how even 10 lbs. of oil-cake could be assimilated with any advantage to the animal, or without deteriorating, in some way or other, its constitution. They had been too much in the habit of regarding an animal as a manure producing machine. Certainly, it was a manure producing machine, but only to a certain extent. They must not make the ox, or any other animal, merely a machine of that kind. They could not feed even a thrashing machine so as to overload it, without doing it some injury: and by giving cattle 10 lbs. of oil-cake, which was considerably below the quantity sometimes given, they must injure them. This was not an opinion expressed at random; he knew as a fact that injury was done by an excessive quantity of cake, and especially cake that was rich in nitrogenous matter. It happened in the case of linseed cake that the nitrogenous matter was associated with an oil which was well known to possess laxative properties that took away any injury. But when they gave any other description of cake, however good it might be, in which the nitrogenous food was not associated with the medicinal linseed oil, injury was done. In his practice, cases had continually occurred in which the stomachs and intestines of animals had been sent to him, with a request that he would examine them and see from what cause they died. He could find none; but on inquiry he found that the mischief arose from an excessive supply of cake which was exceedingly rich in nitrogenous matter, especially nut-cake and cotton cake. [A Voice—Decorticated cake?] Yes, and it was remarkable that the decorticated cake, which did not act mechanically, like cake which was made from the whole seed, and having the shell on, might be considered indigestible. The pure decorticated cake—the genuine, highly nutritious article—in many cases produced serious mischief. He, therefore, differed to a considerable extent from his colleague in the supposition that it was an excessive supply of fattening food that produced disease in cattle. He was rather inclined to think that it was an excessive supply of nitrogenous food. According to this view, 5 lbs. of cake of a good description was about the maximum quantity that ought to be given to an animal; all above that he considered calculated to do more harm than good."

Professor Voelcker's opinion led to a slight passage of arms between him and the lecturer,

illustrating the old proverb that "doctors differ;" Professor Brown holding that oil-cake was not nitrogenous or flesh-producing food, and that it was the oil, or fat, it contained which produced disease in those animals to which it was given too liberally. Professor Voelcker maintained, on the contrary, that "the oil was a remedy just as he considered a dose of castor-oil useful, if his boys had eaten too much plum-pudding." Professor Brown, however, stuck pertinaciously to his view of the subject, and had, of course, "the last word" in his privilege of reply.

Returning, however, to his lecture, he showed that the veterinary art had a much wider field in relation to horses than in relation either to cattle or sheep, because in the case of the horse the carcass is worth nothing, and, therefore, it is always worth while to keep him in health; whereas diseased cattle and sheep could be, and were, sent to the butcher, rather than incur any loss from impaired condition, even in the event of the animal being successfully treated.

"If you get," he said, "a valuable hunter back from the veterinary surgeon a mere bag of bones, but with sound wind and limb, you know perfectly well that a certain amount of care and keep will restore him to his former condition, and the result is that you are satisfied, and the veterinary surgeon obtains the credit of having achieved a good cure. On the other hand, if a fattening ox loses all that he has gained during six months, and it takes six months to bring him to his former condition, the veterinary surgeon gains no credit, and at the same time you are considerably out of pocket; therefore I do not think farmers show any want of a due estimation of the veterinary profession when they decline to submit their animals, under such circumstances, to medical treatment, or can be blamed for not keeping their animals without such treatment in a condition of disease which necessitates a loss of bulk."

He blamed farmers, however, for not consulting veterinary surgeons more than they do, when their animals are threatened with disease, and referred to the good results which followed the combination of agriculturists and veterinary surgeons when the small-pox broke out among certain flocks in Wiltshire last year, "as a convincing proof that agriculturists, by associating themselves with veterinary science, and acting together as one man, may do a very great deal towards the prevention of disease."

There was another point also in which he considered veterinary superintendence absolutely necessary, namely, in deciding what diseased animals were fit and what were unfit to be used as human food.

"A large number of animals which are not fit to be sold as food are constantly being sent into the market. Some time ago, wishing to obtain some subjects for examination, I sent to

a large butcher for them, and I received back five or six animals which, though in a bad state of rot, were dressed for the market. I have also been told by an individual that between the town where he resided and London he had within the space of six months killed no less than 750 animals in a state of extreme disease. I believe those animals were all sent to market. Can one doubt this for a moment? What becomes of all these rotten sheep? We see hundreds and thousands of them alive—what becomes of them when dead? To bury them would require whole catacombs; the real catacombs are the intestinal canals of the human body. We hear of the small-pox, scarlatina, and typhoid fever prevailing among the poor; and can we wonder at it, under such a state of things? No one can suppose for a moment that this evil ought to be allowed to continue.

He stated his belief that the chief use of the veterinary science is in prevention, and concluded by urging the extension of agricultural colleges, the establishment of farmers' clubs, and occasional lectures, "the inspection of stock in different parts of the country, and a general combination of interests," as the best means of drawing closer the relation between the veterinary art and agriculture.

We have already indicated some of the points which were taken up in the discussion which followed Professor Brown's lecture, and there was a tendency evinced by several speakers to devote their attention chiefly to the points which had arisen respecting the feeding of stock. This was checked by Mr. Corbet, the secretary of the club, who brought the meeting back to the real merits of the question, in a few very apposite remarks. He asked:—

"Was 'the veterinary art in relation to agriculture' properly a breeding or a feeding question? According to his notion, it was more the former than the latter. If they had an overfed ox, a turkey, or pig, the best thing they could do was to cut his throat; but if they had a thorough-bred stallion, a good bull, or anything of that kind amiss, they should at once send for the veterinary surgeon. He was, he confessed, almost sorry the subject had not been introduced by a farmer, who would have told them what he required under such circumstances. He (Mr. Corbet) believed that what the farmer wanted was a veterinary surgeon, especially in relation to the more valuable portion of his animals, namely his breeding stock. There were not veterinary surgeons enough. How were they to get more? Why, by giving them more work. How were they to give them more? By giving them a better introduction—an object which might be secured by the various agricultural associations throughout the country. In his opinion, every district society should have a recognized veterinary surgeon attached to it. He had sometimes the honour of acting as a judge at country shows.

The first question which he asked when he went into the yard was, 'Have you a veterinary surgeon?' The answer generally was, 'We have not, but we can get one,' to which he replied, "Get him then." A veterinary surgeon had a recognized status; and if all the judges in England were to swear one thing, and a veterinary surgeon were to swear contrary, depend upon it in nine cases out of ten the local gentlemen would go with the surgeon. He thought that one of the primary duties of the agricultural societies of this country was to recognize the veterinary art. Thus far it had been recognized only in a very inadequate degree. Even the Royal Agricultural Society kept the veterinary profession at arm's length as long as it could do so; but the preliminary examination had now been found of very great value. Veterinary science was, in fact, of great importance as regarded the breeding of stock. Professor Brown had told them some curious things about fat mutton, but he did not think that was exactly the point which they had to consider. Supposing they gave a prize for a horse or a bull, what was the effect of that? It was not the mere value of the £5 or £10, but the prize stamped the animal as being a description of stock the breeding of which might be advantageously encouraged and extended. If they had not a veterinary surgeon to step in and condemn, 'on authority,' hereditary unsoundness where it really existed they might go back, and give a prize for a horse that was a roarer, or an over-fed bull which could not get stock, thus doing great injury to the cause of agriculture. He maintained, therefore, that the relation of the veterinary art to agriculture was to be looked for, not so much in connection with fat stock as in connection with hereditary principles and breeding; and he repeated that the best introduction for veterinary surgeons should be made through the various agricultural societies."

The principle set forth by Mr. Corbet, that every farming society should have its recognized veterinary surgeon, is one which has been adopted by the Co. Kildare Society in this country, and ought to be adopted by every association of the kind; and if the veterinary surgeon who is attached to such a society would assemble the members two or three times a year, and give them a little plain instruction with respect to those points which, if attended to, will prevent disease among their stock, he will be rendering his services much more valuable to them and to the country at large. We cannot but express our regret that we have not any means of imparting information on veterinary science on this side of the Channel; our sapient rulers have abolished the only means of instruction we possessed, and though we have those who write themselves down as professors and lecturers of the veterinary art among us, the distinction, so far as public in-

struction is concerned, is purely nominal. Perhaps we may improve, however, even in that point, "in the good times coming."

WIDE RANGE OF FLAX CULTURE.

The following information from a recent Editorial in the *Mark Lane Express*, will be found both suggestive and interesting to Canadian readers:—

The counsel we have frequently put forth, as to the desirability of increasing our own production of flax so as to be more independent of foreign supplies, and at the same time stimulate the activity of our mills, is, we are pleased to mention, beginning to have some effect. On all sides we see progress making of a very energetic kind. In Ireland there has been a much greater breadth put under flax. In Dorset, Somerset, Norfolk, and in certain parts of Yorkshire, flax is grown in small quantities: but in England generally this crop makes but little head. The great consumers of flax and hemp are, however, still obliged to import the chief bulk of their supplies from the north of Europe; and it does seem strange that Russians, Belgians, and Poles, should be able to grow, manage, save the seeds of, and dress flax better than Englishmen, and, in addition, furnish them with that cake which costs so much, as well as adds to the weight of their sheep and bullocks.

The acreage under culture with flax in Ireland this year, according to the statistical returns of the Registrar-General, shows a very large increase over any preceding year. The extent of flax growing in Ireland this year has reached 214,092 acres, an increase of 64,022 acres over last year, which, with 1852, were the years when most land had been put under culture. The great bulk of the increase, 61,000 acres, is of course in the province of Ulster; but even in the other three provinces there is an average increase of 1,000 acres each in the land under culture with flax, as compared with 1862. Down is still the largest flax-growing county, having 45,000 acres devoted to it. Tyrone stands next in order, with 32,000 acres.

The value of the annual production of flax fibre throughout the world was estimated, three years ago, at £20,000,000, and of the seed at £4,000,000; but since the outbreak of the civil war in the United States the price of this raw material has suddenly risen, its production has greatly extended, and its cultivation has received a sudden impetus, so that the entire value of the crop in Europe may now be estimated at £30,000,000 per annum, with every prospect of an increase. In the production of flax in Europe, different countries take the following rank: first Russia; second, Austria; third, France; fourth, Ireland; fifth, Prussia; sixth, Belgian; seventh, Holland.

In the United States flax has never been a

favorite crop as a fibre-producing plant. "It is to be regretted," says the superintendent of the United States census for 1860, "that the manufacture of flax has not attained great magnitude in a country where the raw material is so easily and cheaply grown. Farmers throughout the West have raised this crop simply for the seed, and thrown out the fibres as useless." The census of 1860 shows that there were produced in the States north of the cotton States 4,547,000lbs. of flax. This quantity would require, at 200lbs. an acre, about 23,000 acres for its growth. But in the same States there were grown in the same year 484,794 bushels of flax-seed; and which, at eight bushels to the acre, would require a little over 60,000 acres; showing that nearly two-thirds of the fibre was thrown away.

There are three directions in which we may look for increased supplies of flax from our own possessions—Canada, Northern India, and Australia. Notwithstanding the admirable fitness of the climate of Canada for the cultivation of flax and hemp, and the encouragement in a certain direction which has been given to it, it appears that the importations into that province are very considerable, and last year reached the imposing sum of £30,000. Much has been done of late years in Canada by private and public enterprise to assist the cultivation of this important plant. The Canada Company some years since placed a sum of money at the disposal of the Agricultural Association to be given in premiums for flax and hemp, and the Association itself offered other prizes and diplomas for the same object. In October, 1854, a voluminous report was submitted by Mr. Kirkwood to the Minister of Agriculture, on the system of cultivation of flax as practised in Belgium and the British Islands, and published in the Colonial Parliamentary Reports of that year. The letters of Mr. Donaldson, the Government emigration agent, published in different papers in Canada, furnish an excellent summary of the attempts which are now being made to introduce the cultivation of flax and the promising results already attained. Private individuals have offered prizes to stimulate farmers to grow this product. Associations have been formed in Upper and Lower Canada to effect the same purpose, and recently the Government has imported flax scutching machines from Europe, and distributed them throughout the province.

In 1862, the Colonial Government caused public lectures to be delivered on the importance and advantages of cultivating textile plants in Canada; and the Department of Agriculture and Statistics has been importing first-rate seed from Europe for distribution. Extensive factories are now in course of construction, for the manufacture of flax; and the Board of Agriculture for Lower Canada has imported machinery for a similar purpose. The Minister of Agriculture, after a brief recapitulation of what has been done to promote the cultivation of flax

and hemp in the colony, concludes his report for 1862 with following words:—"The Legislature should, therefore, vote a special amount this year for this purpose."

Something has been done, of late, in India, to extend flax culture, and very good specimens of prepared flax and flax stems from native and from acclimatized seed, grown in Punjab, were sent by the Lahore Committee to the late International Exhibition in London.

Flax is mentioned by Strabo as one of the staples of that part of India. A small quantity of Riga seed, which had been imported expressly by Dr. Jameson, superintendent of the Government Botanical Gardens at Singapore, was lately distributed amongst the peasants, with instructions as to the mode of cultivation. An agent of great practical experience was deputed to examine and report upon the qualifications of different districts for the growth of flax; and a staff of natives were trained by him to act as scutchers.

In 1856, two tons produced under his superintendance, in the village of Goojranwalla, were sent to England, and sold for £92, realizing a net profit of 47 per cent. In 1857, 8cw. of flax, grown at Juddara, a tract of country in the Kangra district, bordering on the river Beas, was sent home, and was valued at from £55 to £60 a ton. In consequence of the success of these experiments, an association, called the India Flax Company, was established at Belfast, and sent out Mr. Wightman, an agriculturist, as agent, to buy up flax produce. He has made the district of Sealkote, in the Punjab, his head quarters, and, as far as can be judged, has every prospect of ultimate success, as the natives are now beginning to see that there is a day of large profit before them, and join heartily in the movement.

The growing of flax in Australia has been at different times spoken of, as an article of commerce; but the matter was allowed to drop, or laid aside as a thing, if not impossible, at least improbable, the soil being, in the estimation of some, unsuitable, as well as the scarcity and price of labour being such as would make it unwarrantable even to give it a trial. There is one great fact that ought to be universally known in the commercial world, and that is that there are in Australia hundreds of thousands of acres of wild flax growing along the banks of the rivers, and on the immense alluvial flats and numerous swamps, in some places so thick that it would be difficult to determine which was the predominant crop, grass, rushes, or flax. Years have now passed on, and no trial has been given to cultivate that valuable plant, which the very soil itself declares in unmistakable language its suitability to grow. There is, then, an indigenous plant growing there, on land the least remunerative now, but which could be made the most productive land in the colonies, whether of South Australia, Victoria, or New South Wales. By proper cul-

tivation a finer article could be produced than any of the European flax, or at least equal to the finest flax produced in Belgium or France. The time is fast approaching when necessity will suggest a greater variety of pursuits than at present exist, and industry will have a wider field and a freer scope in a country possessing so many valuable natural endowments, both as regards soil and climate. At the present time, viewing the agricultural interest of Australia in its depressed state, any new article of production ought to be of the greatest importance. What, then, could be ultimately of more advantage to the colony and to the agricultural interest than the successful cultivation of so valuable an article as flax.

We subjoin the following practical directions for growing and curing flax from the pen of Mr. T. L. Henley, an extensive manufacturer in Yorkshire:—

"1st. Does flax-straw require any care besides being pulled when the seed is ripe, and then being harvested as other corn?"

No. The sooner it is harvested when fit the better, as wet weather injures it to a certain extent, and it will not weigh so heavy in consequence; but this objection applies to almost every other crop in proportion, and flax will bear without injury as much rain as any other crop that can be grown.

"2nd. What is the best seed to sow?"

Riga, if it can be procured at a reasonable price, but English seed will answer every purpose, and if sown early in March may probably do the best, it having, to a certain extent, become acclimatized, and will therefore stand the frost. A friend of mine grew 14 acres this year from English seed; it was sown early, and the frost came after it was up and cut off all the potatoes adjoining, of which there was a large quantity planted, but the flax was not injured in the least. Early sown flax always weighs the heaviest, and will stand the weather better than that sown later; it is also fit to pull a fortnight before harvest commences.

"3rd. When, how, and how much seed to sow, and in what rotation?"

Flax should be sown as early in March as possible: it may be continued until the middle of April, but the earlier it is sown the heavier will be the crop. With regard to soil and rotation, I refer growers to the following, copied from Mr. Warne's work on flax, with some few alterations which experience has taught us to be advantageous. For my own part, I prefer a crop of flax after wheat to any other: the land is generally cleaner, and the unspent manure which has been applied to the wheat-crop is all flax requires. A friend of mine has this year realized within a fraction of £15 per acre by his flax crop in this manner sown from English seed.

MR. WARNE'S DIRECTIONS FOR THE GROWTH OF
FLAX.

Soil and Rotation.—Good flax may be grown on various soils. The best is a sound, dry, deep loam, with a clay subsoil; although Mr. Warne's experience proves that good crops may be produced on very thin land. Except on very poor soils a better crop may be grown after grain. If lea land be broken up and turnips sown, followed by corn, a fine crop of flax may be obtained the ensuing season.

Preparation of the Land and Sowing.—After corn, one ploughing will be sufficient, which should be in the autumn, as the fine tilth produced by the frost renders the land more fit to receive the seed. The seed best adapted for the generality of soils is Riga, although home-grown seed has been used of late with perfect success; the proportion should be $2\frac{1}{2}$ bushels per acre. The ground should be well harrowed before sowing, and lightly rolled; the seed should then be sown broadcast, and a very light stroke of the harrow given afterwards, which will leave the seed buried about an inch, the proper depth; it should then be rolled again. A good crop of rape or turnips may be grown after the flax is pulled.

Weeding.—If care has been taken to clean the seed, and the soil managed as above, few weeds will appear, and the trouble of weeding will be almost obviated.

Pulling and Harvesting.—The time when flax should be pulled is when the seed is beginning to change from a green to a pale brown colour, and the stock becomes yellow about two-thirds of its height from the ground. It is first drawn in handfuls and tied and set up like wheat. It should remain in this state until fit to harvest, which will be in a week if the weather be fine, when it should be either carted and put in rick, or if preferred it may be stooked, i.e., put in small ricks as many poor people do, and left until after harvest. N.B. The cost of pulling need never exceed 10s. per acre.

“Lastly. What is the feeding value of the seed as compared with foreign?”

I can best answer this by referring your correspondents to Messrs. Taylor, of Bradford-on-Avon, Wilts, who for many years have sold large quantities of crushed linseed to the farmers in that neighbourhood for feeding purposes. I believe those gentlemen will bear me out in saying that English seed is far preferable to any other for that purpose. I would also refer them to a pamphlet on “Cattle Feeding,” published by Messrs. Proctor, of Bristol, some two or three years ago, (copies of which, no doubt, would be forwarded upon application), in which they show that a mixture of beans and linseed is the finest fattening food of any that can be procured at the same price.

VITALITY OF SEEDS.

The period over which the vitality of the different kinds of seeds can be prolonged is one involved in much difficulty. It is rather surprising that such an amount of contradictory opinions should still exist on a matter where, it might be supposed, means could be devised for giving us far more precise information than any that we possess. The experiments which have been undertaken for this end have certainly not been at all satisfactory, and they often seem to be quite opposed to certain well-known facts that give strength to conclusions of a different character. If we remember rightly, the results of Dr. Daubeny's researches, conducted at the instance of the British Association for the Advancement of Science, were that the seeds of plants had very limited powers for resisting the chemical influences to which they were exposed in the soil, and soon become incapable of germinating. So also Mr. Berkeley, the eminent vegetable pathologist, in the last number of the *Royal Agricultural Society's Journal*, expresses somewhat similar views. He there tells us—“Each seed has its own range of temperature, within which alone germinating can take place, and a limited period beyond which its vitality cannot be preserved. Carefully conducted experiments do not confirm the marvellous accounts which are from time to time brought forward respecting the suspension of germination for many centuries.”

It has always appeared to us that what are termed carefully conducted experiments have been of an entirely one-sided character, and not suited to establish any sound conclusions on this subject, at least so far as regards the great majority of the seeds which are sown by nature. The seeds of cultivation—such as wheat, barley, and oats—may be said to be created for the special purpose of supplying food for man. In these there is a large accumulation of nutritive matter, which is surrounded by a thin skin or covering of indurated substance, for the purpose of protecting it from the action of the elements. Wheat, it will be generally admitted, at a cursory glance, does not seem well fitted for resisting for any length of time the ordinary chemical changes to which it is subjected when in the presence of heat, light, and moisture. It is therefore not to be wondered at that wheat is, perhaps, as liable to have its vegetative power impaired by heat and moisture as any seed with which we are familiar. To preserve the vitality of wheat to its full extent, it is well known great precautions must be used. If the grain be committed to the ground in too damp a state in autumn, it is apt to die, or, as is commonly

said, "it starches." The seed will not remain dormant through the autumn and winter, and then germinate in spring. It will either grow or die; but this is not the case with the vast majority of annual seeds that form the pests of the farmer.

Even in the case of the oat, in some of its varieties we begin to see that it shows a striking enough divergence from the wheat. The potato variety, when shed in autumn, will usually either then vegetate or decay. Nor do we have any instances of this variety making its appearance in the land like the seeds of annual weeds in other parts of the rotation. But, on the other hand, the black Tartar oat, which seems to have a harder and perhaps a thicker skin, will lie dormant not only through the autumn and winter, but through a whole summer, while the land is under turnips, and make its appearance amongst the barley crop in the succeeding year. The vitality of the black Tartar oats, then, is much greater than the potato variety—it can better resist the agencies that promote decay in the soil. And again, the vitality of the wild variety of oat is, when buried in the earth, perhaps immeasurably greater than that of the Tartar. In all districts which are infested with this weed, it is well known that laying the land to pasture, for however long a period, has no effect in extirpating it. This plant will often make its appearance on certain spots of a field at long intervals of time, when its seeds are subjected to the quickening influence of light, heat, and moisture. We do not believe there is a single East Lothian farmer who is annoyed with the wild oat coming up amongst his crops who imagines that the laying down of the land for a century in pasture would destroy the vitality of the seeds that have been shed.

Mr. Berkeley, however, has a short article as a leader in last week's *Gardeners' Chronicle*, which is certainly a great advance on the views expressed so lately in the Royal Society's *Journal*. Here we are now assured it is well authenticated that the seeds of "three plants of different natural orders had been dormant at a depth of a yard for thirty-three years, and their vegetative power was clearly as great as if they had sprouted the very first season." Nor could we state anything more forcible in the way of comment to show that the vitality of many seeds may be preserved in the earth for centuries than in the words which Mr. Berkeley winds up his remarks on the particular case he has before him:—"Seeds that could thus be stored up for so many years, without losing their powers of growth, might, as far as we can see, have retained their powers for an indefinite period, unless altered circumstances should occur which should induce decomposition. Indeed,

this is one of those subjects which cannot be settled by any such experiments as Dr. Daubeny undertook. The time required to test it fully extends far beyond the short period allotted for the life of man. We must view the workings of nature as they are every day presented to us in the most common as on the largest scale.

Taking the most cursory view of the matter, it is difficult to see how the greater number of species of wild plants could be preserved if the vitality of their seeds did not extend over centuries. Land that has lain under a thick covering of the perennial grasses is so occupied that hardly any annual plants make their appearance on its surface during any period of the year. But break up this land by the plough and invert the surface, and then the whole is soon thickly occupied by annuals whose seeds must have lain dormant for long intervals. It is needless to mention that the wild mustard will often make its appearance on land that has been broken up for the first time by man. There are few or no annuals seen in a primæval forest; but allow fire or the axe of the woodman to do its work, and the ground at once teems with an endless variety. As we have already said, it seems quite apparent that unless the seeds of most kinds of wild plants were possessed of vitality that extended over centuries, they would soon be extirpated.—*Scottish Farmer*.

BLOOD DISEASES IN ANIMALS.

It is of the highest importance that we should notice the increasing prevalence of very fatal blood disorders which within the past few weeks have carried off large numbers of cattle, sheep and pigs, in various parts of England. For several weeks past, the meat inspectors in the city of London, have seized the carcasses of pigs bearing evidence of having suffered from scarlet fever. In all these cases the skin is deeply tinged with extravasated blood. The fat and muscular tissues are spotted all over with bright scarlet spots; the internal organs, especially the heart and kidneys, have extravasated blood in their substance, and the throat indicates swelling and inflammation. The large majority of pigs seized in this condition, have been sent to London from Essex.

In Lincolnshire the hogs or tugs are dying off in large numbers. On one farm we visited, thirty out of forty had died; on another twelve out of sixty; and information has reached us of losses to the extent of fifty and sixty per cent. in a number of places. These losses occur amongst excellent lambs, but on almost any kind of food. There has been a great dearth of water, and one of the remarkable symptoms of the disease has been intolerable thirst. A fine healthy lamb is, however, seen suddenly to

droop, diarrhoea sets in, the eye looks dull, and fleece clapped. Soon the back feels rigid and lean, the wool is readily pulled out, and the animal is feeble and dull. Diarrhoea, which sets in at the commencement of the disease, continues throughout, and in many cases worms are passed. These parasites belong to the species of thin-necked long worms known by the name of *Tricocephalus affinis*. These parasites do seem, however, to constitute the sole cause of the disease, as in many cases they have been absent. It is much to be regretted that we have no system organized for the investigation of these sheep diseases. The farmers are not enterprising, and go on losing without getting a complete enquiry into the subject, which might serve them much at the time, but especially in after years.

It is quite evident that the milk disease, or splenic apoplexy is spreading. In an article by the Inspector of Meat at Leeds, in the November number of the *Edinburgh Veterinary Review*, we find the following:—

“I have had four cases of beasts slaughtered in this fearful complaint, within the last three weeks. Two of these beasts were brought to this town to slaughter, and were condemned as unfit for human food. The third case was slaughtered at a farm house a few miles from Leeds. The farmer brought the carcass to me for examination. It was a prime neat cow, and had been well dressed; however I condemned it, to the perfect astonishment of the farmer, who told me that he had given £22 for it only four months before, and that I might as well have robbed him of as much money. I have known as many as eleven beasts which have have died in one week from the effects of this disease. About three years since I went to these pastures, and I saw three beasts which had been slaughtered and dressed for human food, hung up in an open shed, another lying dead in the fold yard, and another lying dead in the pasture. These carcasses being out of the limits of this borough, I had no jurisdiction; all that I could do was to prevent them coming into this town. They were bought by a butcher and carried to a neighbouring town, and sold for human food. I can fully confirm your statements—‘remove the spleen and the carcass appears sound.’ The cattle generally attacked with this disease are beasts in good condition, and if properly dressed by a butcher, could be sold at the most respectable butchers’ shops without much fear of detection.”

In the *Medical Times and Gazette* for last week, we find that Dr. Crisp had exhibited before the Pathological Society on the 20th inst., “a piece of a spleen of a bull which had died of splenic apoplexy. The spleen weighed twenty-four pounds, from recently extravasated blood. Fourteen pigs that ate the blood of this and other oxen that died of this disease were killed by it. Dr. Crisp had examined the throats of these pigs, and he found a whitish

false membrane covering the root of the tongue and pharynx.” This shows how dangerous it is to allow blood disease to progress unchecked, and to sanction the sale of some of the best looking carcasses. In the *Lancet* for last week, special attention is drawn to observations by Dr. Parkes, of the Army Medical Department, and Dr. Budd, of Bristol, showing that the temperature of boiling water does not destroy these animal poisons. If we have thus merely recorded the existence of fatal blood diseases in different parts of the country, it is in the hope that such records may lead to a better study of cattle diseases in general.—*Scottish Farmer*.

SELECTING EWES FOR THE RAM.

Where there is an opportunity to choose between several valuable rams, the selection of the ewes to breed to each, requires judgment and careful study. The flock of ewes should be examined, the individual excellencies and faults of each, and hereditary predispositions and actual habits of breeding, so far as can be ascertained, fully taken into account; and then she should be marked for the ram, which, in himself, and by his previous get, appears, on the whole, best calculated to produce improvement in their united progeny. Many of the Vermont farmers thus divide their small flocks of ewes into parcels of ten or twenty each, and take them to the rams owned by a number of different breeders; for, by a prevailing custom, the liberality of which cannot be too highly recommended, all the most distinguished breeders of that State allow other persons to send ewes to their best stock rams for a merely nominal compensation, considering the advantages which are often thus secured. This enables the owners of flocks who cannot afford to incur the serious cost and risk of keeping a number of high-priced stock rams, notwithstanding the services of those which are best adapted to breeding with each class of their ewes. And the young and less skillful breeder can thus, too, obtain the immense advantage of using the most perfect sire rams in the country—those which are too costly for his purchase—and those which will improve his flock more in the first generation than he could possibly otherwise improve it in five generations.

Coupling.—Very few flock-masters now feel that they can afford to bestow the whole annual use of a choice, high-priced ram on the seventy-five, or at the very utmost, on the one hundred ewes he can serve, if he is permitted to run at large with them; and to accomplish this he must be a very strong animal, and must be taken out of the flocks nights and fed by himself. And no even tolerably good manager turns two or more valuable rams at the same time into the same flock to waste their strength, excite, worry, fight, and perhaps kill each other. Even the ewes are frequently injured by the

blows inflicted by a ram while another ram is covering her.

There are several different modes of putting ewes singly. Some keep "teasers" in the flock so "aproned" that they cannot serve a ewe, and daubed with lard and Venetian red under the skirt, so that when a ewe will stand for them she is marked with red on the rump. The flock is driven several times a day into a small enclosure (usually a sheep barn,) in apartments in which the stock are kept, the "redded" ewes are drawn out and each is taken to the ram for which she is marked. After being served once she is turned into the flock of served ewes.

Another mode is to use no teasers, but to drive in the flock selected for a particular ram twice a day, and let him loose in it; and as soon as a ewe is served to draw her out. After three or four are served, the ram is returned to his quarters, and the remainder of the flock to the field. A very vigorous ram may be allowed to serve from eight to ten ewes a day. This last mode is now generally preferred. It takes up but little more time than the other. It saves the expense and trouble of keeping teasers, which must be frequently changed; for after making their fruitless efforts for two or three days, they generally almost cease to mark ewes. Lambs and yearlings are nearly useless for teasers. Good stock rams ought not to be put on this service, for it rapidly reduces them in condition.

Any mode of effecting the object in view—one on the correct management of which the success of breeding so much depends—must be conducted with rigid accuracy, so that the mark on the ewe shall in all cases indicate the ram actually used. An erroneous record is vastly worse than none. It misleads the owner, and cheats the purchaser who buys with reference to its showings.

The served ewes should be returned to the ram after the thirteenth day. If they come in heat again it is usually from the fourteenth to the seventeenth day; but the number is ordinarily quite small if the ram is a good one, and is well managed.—*Practical Shepherd.*

DRAINING BARN YARDS.

One way to keep barn yards dry is to put troughs to the eaves of the barns and sheds surrounding them. Usually all the rain that falls on a large area of surface is drained right into the yard. Then, if the surface is level, and cattle tread it daily, it is difficult to keep it dry, even with underdrains. But with underdrains it is bad policy to let rain water from the eaves leach the manure and run off underground, unless a tank is fixed to receive it, and from which it may be taken for use on the fields. The first and best thing to do then in the way of draining a yard is to prevent water getting into it in the manner indi-

cated above. It is exceedingly convenient and sensible, where there is no convenient source for water, to have a good large cistern to receive the flow from the roofs. With this precaution the amount of water which falls in an ordinary sized barn yard will be small. And a drain of cobble stone; or a well laid stone drain will keep the surface dry if put in the right place. The main drain, on a level, should be a deep one—say 3½ or 4 feet. If it terminates in a meadow all the better—especially if the flow can be distributed somewhat. One of the best modes after drainage, to insure a dry yard, is to clean it frequently. As the stock tread up the soil (if the yard is not paved) and drop their excrement, it should be gathered in heaps—and under sheds if possible. This may be quickly done with a team and road scraper. And it will pay the expense and labour.

Sometimes it is better to drain on the surface—make a paved surface drain, letting the liquid run into an adjoining field if there is no tank to receive it. If the yard is paved with stone, and packed with stiff clay, the surface drainage is easily secured. If there is little or no fall—if the yard is level, and no convenient outlet can be secured, a cobble stone pavement grouted with clay, with intersecting gutters leading to a sunken tank, is perhaps the most practical way of getting rid of water. A farmer with a will to have the yard clean and dry, can, with his knowledge of "the situation," and the means at command, invent a way to get rid of surplus water. The health and comfort of his stock, as well as his own convenience, will induce effort in this direction. And men wonder after the thing is accomplished, that it has not been done before. These little home improvements cost little and yield much in the aggregate.—*Rural New Yorker.*

Agricultural Intelligence.

STEAM CULTURE.

Every year shows a steady, if not rapid, advance in the employment of steam as a motive power in cultivating land in various parts of the British Islands and some portions of the continent of Europe.

An able and well known contributor of the *Farmers' Magazine* for November, gives the following encouraging account of what he recently witnessed with Howard's Apparatus on the Home farm of Lord Archibald St. Maur, near Loughborough, in Leicestershire:

Arrived at the little village of Walton, lying on a hill-side, I found the steam cultivator had done working there, and had gone to a farm two miles distant, Burton by name, near the

residence of his lordship. Following up the scent, we went down into the village just named, and then ascended by the road to an where the engine was steam-
ing away in a field which, together with the whole of the district, had not many years been reclaimed from the Burton Foss, a considerable reach of which is retained by the roadside, for the cows of the villagers.

The apparatus was stationed on a bean stubble where the waggons were at work, carrying off its few last loads of beans; but the cultivator was skimming a clover lea on the other side of it, and doing good work. There was no master there to see that everything was right for the visitor, and I therefore caught the men unawares, and was glad to find all going on well. The tackle since it came has been nearly constantly at work; there have been but few stoppages, the evidence of wear are very slight, and the rope has never given way in the fair direct work of cultivation. One day it sundered at the windlass by becoming entangled; and one day, the cultivator coming in contact with a stone, it snapped. Saving these two mishaps there have been none, and the rope looks not more than one-third worn. The engineer told me that the men employed were all common farm labourers who had been otherwise engaged upon the land before the tackle came. He said the five men had 2s. a day and five quarts of beer between them and the three boys. The rope was nicely carried everywhere, and, by means of the new porters in the line of the implement's passage, the boys then were easily able to keep it off the ground. The men on headlands use three anchors each; two coupled together, one behind the other to sustain the pull, and the other, an idle one, to move forward to the next station. I observed that no holes were dug for the anchors, and that they drew into the ground when the strain was upon them. "They did sometimes give way," I was told, "but very rarely."

Being requested to walk over an adjoining field which had just been broken up after beans seven inches deep, I did so with pleasure. It presented all the appearance of having been twice ploughed and once scarified, whereas the fifteen acres therein contained had only been once moved in one and a-half days. A large set of harrows was standing on the piece which had been half broken down by them. These took a breadth, I think, of seven feet, and by steam were supposed to go over the fifteen acres twice in one day, the teeth penetrating to about half the depth of the tines which had preceded them. I do not refer to the Norwegian harrow, which is also sent out by the Messrs. Howard, but the ordinary three four-beam drag harrows sent out by them to be worked by horses, set in a frame, made to work backwards and forwards, and steered in the same way as the cultivator. I

was assured that six horses would not have broken up the same piece to a greater depth than four inches at the rate of three acres a day at the outside; so that if anybody is inclined for a little bit of calculation, here are some of the necessary items for it, at all events.

Not being successful in my search for the bailiff, I left my card at his house, and he has obligingly sent me the following particulars:

The land in Lord St. Maur's occupation is about 850 acres. Of this quantity 550 acres are arable, and 300 grass. The whole of the arable land is heavy, the substratum being clay, and four horses are generally used in ploughing a furrow 4 by 9 inches. A great deal has been done to prepare the farm by steam. Several fences have been removed, and a considerable amount of timber. The average size of the fields is now about 16 acres. The land has been drained from 3 to 4 feet deep, and since cultivated by steam, "*it dries in half the time of similar land, also drained, done with horses.*"

The apparatus was supplied in the last week in February of the present year. It then consisted of a 10-horse power engine, £295; one three-furrow plough, £50; one cultivator, with windlass, 1,600 yards of 1½-inch steel-wire-rope, rope-porters, snatch-blocks, anchors, &c., £230; duplicate parts and fittings, &c., £53; the set of harrows, £20.—Total, £648.

Beyond the cost of two or three rope-porters accidentally broken, the repairs are *nil*.

The work done is as under: Up to the 24th of June last, 263 acres of the heavy soil had been ploughed and cultivated, and then the tackle was placed under cover till about a month ago, when it was again put to work, and has since broken up, crossed, and harrowed 50 acres, and broken up and harrowed 40 acres of stables.

"From the experience we have had," writes Mr. Mountstephen: "I consider we can break-up our strong land 9 inches deep, at a cost of 4s. per acre, doing upon an average 6 acres per day, including removals, &c. I shall not pretend to estimate the wear and tear, but I am quite satisfied that it will not be greater, if so costly, as it has been with horses. As an instance of the cost of the latter, I sold three horses by public auction for £33, which originally cost £122, and a number of horse implements at less than half their cost.

"I have reduced the horses on the farm from 21 to 13, although 70 acres of additional land have been taken in hand; this was in a wretched state, and would have required 4 more horses, so that I am doing with half the horse-power, besides being much more forward with my work than I ever was before. The horses I now have are more cheaply kept, and have done for harvest, for I have stacked more corn in the field instead of drawing it all to the stackyard."

This additional land taken into cultivation would have necessitated the purchase of six more horses, instead of which it will be observed the writer has parted with 6.

I requested to know whether it was thought that steam cultivation had made any difference in the texture of the soil or its produce? The reply is as follows; "The land is worked with about half the power now where it was steam cultivated in the spring. No increase is to be observed in the crops, the summer having been rather dry; harvest is much earlier, owing to our having been enabled to sow earlier in the spring.

"No difficulty whatever" has been experienced in finding men to work the tackle. "I consider our trial of steam cultivation a great success," writes Mr Mountstephen, "and it is admitted to be so by most of the people who have seen it, and by those who were most prejudiced, especially the old farm labourers, who were certain it would never answer. I am convinced, when our land is once in condition, the cultivator will do all the work, and enable us to dispense with ploughing altogether."

F. R. S.

We subjoin a brief notice from the same source of the performance of Fowler's Steam plough at the recent Agricultural Exhibition in Holland. Fowler's apparatus is distinguished for strength and efficiency, and has hitherto carried off the first premiums and medals in all cases of competition. It is however expensive, costing about a thousand pounds, complete! We saw it plough in England three years ago three furrows at once ten inches deep up a steep incline of dry hard clay, which scarcely any practicable amount of animal power attached to the strongest ordinary plough could have worked at all; the work was done thoroughly and with extraordinary dispatch.

THE EXCURSION TO MR. AMERSFOORT'S FARM AT THE LAKE OF HAARLEM.

The show-yard was entirely deserted on Saturday in consequence of this excursion to Mr. Amersfoort's, who threw open his grounds, buildings, and farm for inspection. The distance from Haarlem is about seven English miles, and an agreeable ride it was. Not far distant from the farm is one of the three engines, of 500 horse power, used as a pumping engine for draining the tracts of land around. The farm being reached we were introduced, in the first instance, to the field where steam-ploughing was going on. The land was nice and level, and anything but stiff, with a clay subsoil and just the place for steam-ploughing to be seen to perfection. It was Fowler's direct system; the engine was a 10-horse one, and pulled a three-furrow balance plough, but

the self-moving anchor seemed to puzzle the novices in steam ploughing; they could not account for it, and it was laughable to hear how some settled the point; but the greatest wonder to all was to see "the mere lads" managing the whole of the tackle, the driver of the engine itself being not more than eighteen while all the others were younger. There was no noise or confusion; each seemed to mind his business, and thoroughly intent upon his work—in fact, to the by-stander, one was at a loss to know if there were any difficulties "where they were." The engine propelled along the road, and between it and the field ran a nice stream of water, and no hedges of any kind, the engine feeding itself direct from the stream. Seeing this work one cannot imagine why those who have the land to plough, and the capital, should hesitate. Adjoining the field where steam ploughing was going on, was a field of mangolds, and to see these roots was enough; the ploughing was ten inches deep, and was well done, leaving a nice angle. From the field we were conducted to the fixed machinery. There was a Ransome's engine and thrashing machine, and shown at work, while another strap set in motion a Turner's crushing mill, Bentall's pulper, a grinding mill, and various other machines. In the yard close by was the "tramway" in lengths, of the Messrs. Crosskill's nicely piled up, ready to be laid down from here to any part of the farm, on which run the trucks, and bring in the produce, for Mr. Amersfoort does not believe in horses for this work. Next came the building where the cows are housed, and a better arranged place we do not remember to have seen.

LADY PIGOT'S GREAT SALE OF SHORTHORNS.

The doings of this lady in this important department of husbandry have attained within a half dozen years to a world wide reputation; and her recent sale at Branches Park realised a total of about five thousand guineas! We select some remarks from an elaborate report of the sale in the *Mark Lane Express*; concluding with an interesting little speech from her Ladyship, whose enthusiasm seems to increase with the measure of her success;—

Those Britons who love the Ring-side, have, as Mr. Gladstone would observe, "one of three courses to pursue." They can back their fancy, and undergo some 3m. 20s. of St. Leger agony on Doncaster Moor; they can run the risk of being bonneted and robbed by "The Fancy," in the grey dawn of a Tuesday, at the Great Western Station; or, if they venerate the short-horn, they can mount the waggons with Weth-

erell or Strafford, as "Mr. Speaker," and hold a pleasant parliament of their own. The present year has been unusually productive of such gatherings in Cambridgeshire, and Branches has just beaten Babraham in its average, which is £57 8s. 10d. for 79, against £55 14s. for 82, and £54 17s. for 63. The spirit which "Lady Pigot's lot" has infused into Royal and country shows, her Royal victories, first with Second Duchess of Glo'ster and Empress of Hindostan, and then with "The Pride" and the wondrous Rosedale, and her daring and too often unfortunate purchases, have been duly noised abroad, and formed the staple talk of many a market table for these four years past. Hence it can hardly be wondered that people were led to invest the dispersion of her herd with the idea of "a sensation sale," and determined, even if they do not buy, to take a run down to Newmarket, and see what they call the fun." Branches Park was equal to the occasion, and the largest company and the best average of the year were the upshot. It lies about seven miles from Newmarket, and true to the traditions of the place, the very first object which catch your eye, as you enter the front hall, are the heads of the departed Stanley Rose and the Queen of Athelstane. Mr. Wetherell was sitting calmly under the first memento of his old favourite, as we gave him our first greeting; but Mr. Douglas would have shrunk from the sight of The Queen, as the complaint of which she died had made her nose as black as a Poll Angus.

Lord Feversham in his chaise-in-four was one of the earliest morning arrivals; but the London division (to whom a special train was allotted at night) had rather a sharp run to be there for the luncheon, and those who especially meant business rested over-night at Cambridge or Newmarket. After the inspection, there seemed a pretty general opinion that the average would not be higher than 55 gs. Princess Edward, Empress of Hindostan, Pride of Southwicke, and Rosedale, were "doubtful"; many of the females were voted very middling indeed, and the majority of the bulls (of which eleven were white) lacked shoulders, and passed muster very badly in the house, although they looked well enough in the "charmed circle." There were, nevertheless, "plenty of plums in the bowl," with good men and true to bid for them, and after a survey of Mr. Booth's Ravenspur, by Sir Samuel from Red Rose, the four hundred sat down to a very beautiful luncheon, which was set off by a long line of prize cups, with the Durham County Challenge Cup as their imposing centre.

The tent was pitched in a very picturesque spot, among the oaks and elms in the park, about two bow-shots from the ring, whose rails (the same which had twice done duty at Babraham) were entwined with ivy, box, and laurel. When luncheon was nearly over, her ladyship left her phaeton and brown ponies, and was led in by

Sir Robert, amid great cheering, to the noble chairman the Duke of Montrose's table. His Grace then rose, and after giving the health of the Queen, proposed that of Sir Robert and Lady Pigot, and spoke of the pleasure he felt in believing that a Shorthorn career which had been so successful hitherto in the show-yard would not end with that sale. Sir Robert in returning thanks, expressed his thankfulness that his grace had not separated husband and wife, but made it certain that her ladyship would lend him her aid in a reply; and trusted that they might in future, as hitherto, keep up the fame of the Booth blood at Banches. Her ladyship then spoke as follows: "In the presence of the distinguished breeders of Skyrrocket and Royal Butterfly, the representatives of Warlabby and Killerby, and my excellent Shorthorn tutor, Mr. Torr, I feel almost ashamed to hear the sound of my own voice. However, I must try and use it to thank you for your great kindness in coming here to-day, and I hope you will give me an excellent average. Now remember, I have won 217 prizes—no, I am wrong—268 prizes; and I intend to come out again with a new herd, and beat the best of you, meet where we may (great cheering and laughter). Permit me once more to thank you from my heart for your kindness, and to propose the health of my old friend Mr. Wetherell, and the glorious interests of the 'Red, White, and Roan.'"

OVER-APPLICATION OF AMMONIACAL MANURES.

The too general application of Peruvian guano, to the exclusion of the more purely phosphatic manures, such as superphosphates, has been forcibly pointed out by Baron Liebig; although the subject was only incidentally alluded to in his letter upon the utilization of sewage. He states:—"I am of opinion that the proportion of ammonia which is brought into the soil by dressing the soil with Peruvian guano is much to large and even noxious for future crops." This observation has been supported by the extended experience of many eminent agriculturists. Several farmers, who upon the first introduction of Peruvian guano, applied it extensively alike to green and grain crops, now find that when the same quantities are applied to the respective field and crops, the results do not correspond with those previously secured; and the crops succeeding those to which the Peruvian guano was applied are not so productive as where phosphatic manures were used. The potato and turnip produce luxuriant tops, but the weight of the tubers and bulbs are less than the large tops would lead the farmer to suppose; while the stems of the succeeding cereals are deficient in stiffness, and the grain is not so plump and heavy as the appearance of the crops when growing indicates. This shows that the amount of ammonia supplied to the soil from the too exclusive use of Peruvian

guano is in excess of phosphoric acid and other constituents of a vigorous and healthy growth.

It is now a common remark among farmers that with each repeated application of Peruvian guano an increase in the quantity formerly used is essential to secure the same full crops; while those who have substituted phosphatic guano, ground bones, or super-phosphate for a part of the Peruvian guano formerly applied, or even for the whole of the quantity, find that the potato, turnip or even green crops grown are more healthy, and, consequently, more productive, while the succeeding corn crops yield more grain and that of better quality. The results obtained from the earlier applications of Peruvian guano to the soil have tended to keep up the repute of this fertilizer; but the experience of those who have continued to use it to the almost entire exclusion of other auxiliary manures shows that it requires to be applied with a due regard to the manurial condition of the soil, more especially as regards the presence of phosphoric acid and potash. These, if not present in sufficient quantities, require to be supplied in some form or other. The most suitable form in which phosphoric acid can be applied to most soils is in superphosphates or fermented bones, while potash can be supplied in stable, farm-yard, and other manures. The disintegration of the rocks and soils derived from several of the rock formations furnish potash in sufficient quantities for most of the cultivated plants.—*North British Agriculturist.*

LEICESTER SHEEP.

We take the following article from a recent number of the *British Farmers' Magazine*:—

A breed of animals is the variation of an established species, of which the marks of distinction have proceeded from the influences of soil and climate, the direction of the sexual intercourse, and the system of management that is adopted. The variations being accidental and contingent, are not definitely, indeed very seldom, perpetuated in the progeny. The changes that occur in the exposure and management of the animal organization, do in many cases very quickly banish the original type, which is everywhere changed into many varieties, and ultimately altogether disappears. This result has been well established in the vegetable world with varieties of plants which hold their type for a time, split into many appearances that are puny and deformed, and ultimately lose all their relation to the primitive exhibition. The animal and vegetable kingdoms being closely related in laws and regulations, the same appearances and results are exhibited in the growths and organizations.

Naturalists find no difficulty in the arrangements of classification till the descending order has come to "species;" which is the

lowest rank in the arrangement. In very many cases, the marks of distinction are insufficient to establish a permanent separation, the differences not being so strictly persistent. Hence species and varieties become confounded, and in many cases uncertainties continue to prevail. The generic distinction is in most cases sufficiently established.

The *Leicester sheep* are generally supposed to have proceeded from the amalgamation of the heavy lowland animal with the smaller hill sheep of Charnwood Forest. In a short time the progeny was dispersed by letting and purchase over the neighbouring counties, and into many parts of the kingdom, forming a vastly-improved animal, and thought to be stereotyped from the forge of Bakewell. Purity of breed was all the vogue, or no intermixture with foreign blood, never adverting to the influence of removal.

The importations into Northumberland quickly appeared in two varieties—the blue-caps and red-legs: the former constituting the larger animal and of superior vigor of frame, lengthy, and handsome, and well covered with wool. The red-legs were smaller in bulk; lower on the legs, very compact, with meat of much fat and less fibre. Each variety had its advocates, till both have disappeared; there is now seen a medium-sized animal of much wool, of medium precocity, rather dull in aspect, a good shape, and forming a variety of sheep that is not exceeded in value or utility by any improved animals in the kingdom.

The Leicester sheep of Nottinghamshire are inferior in bulk, rather leggy, with delicate appearance, an open fleece of wool in curly piles, and a head, face and eye, heavy and dull, and not handsome in form. The ear is hanging and sluggish. The breeders of that county reckon the sheep of Northumberland not to be Leicesters at all; the accusation is retorted from the North; and both are right in their opinion, as will be shown.

Among the many varieties that are now seen in the class of the so-called Leicester sheep, the true type of Bakewell is not found, as it gradually disappeared after the wide dispersion of the breed. In the county of Leicester, the most eminent breeders are found to possess varieties of their own production which differ very much in their parts and qualities, being larger or smaller, open or close in the wool, dull or lively, short or scraggy-necked, heavy in the ear, or dull in the eye; face wide, or narrow, tapering to the muzzle; the bones flat, or arched.—The remark extends over all the breeding farms of eminence. Very just exceptions have been made against the animals shown by Mr. Sanday, of Holmepierrepoint, being received as Leicester sheep, properly so-called; the true type is wholly wanting in the leggy carcass, which is light and deficient in girth, wool

open and in curly piles; neck long and scraggy, and rising from the shoulders; the heavy head, eye dull, and the face broad, looking downwards, instead of pointing forwards. These points are wide from the original type of short legs, wide and round barrel, back level from the tail to the ears, which are narrow, pointed and agile; eye quick and lively, face wide betwixt the eyes, tapering to the muzzle, which points forward, with the neck surmounted by a ruff of wool close round the ears; the wool on the body placed in shelves opening with the hand, closely covering the whole carcass.

The Dairy.

THE MILKING MACHINE.

Editor of the Agriculturist.—DEAR SIR—Can you, through the medium of your valuable publication, give me any information respecting that Yankee invention, the Milking Machine, as to where it may be obtained, probable cost, name of Patentee, and practical utility on a large dairy farm. Yours, &c.,
Barrie, Nov. 30, 1863.

JOHN MORROW.

[Our correspondent will find a brief notice of the Milking Machine in the number of this journal for August 1st, 1860, page 370. The New York *Scientific American*, about July, 1860, contained a cut of the machine, and an article descriptive of it, in which it is stated that the name of the patentee is L. O. Colvin, of Cincinnati, Ohio, that the machine, with the pail, to which it is attached, weighs 6½ lbs., that it does not injure the cow, and that it is capable of doing work at the rate of about four quarts per minute, with much less labour than by hand. We are not able at present to state the price of the article. The editor of the *Scientific American* will probably be able to afford full information. We would advise our correspondent, however, to be well satisfied of the practical value of the machine before investing in it.—*Eds.*]

EXPERIMENT IN CHEESE MAKING.

MR. EDITOR,—I intended to have sent you this small paragraph last month, but other matters intervened. I therefore now in my plain way lay before your readers a statement of the profits arising from cows. I take the number as eight, that number with about fifteen good ewe sheep would be a sufficient stock for a one hundred acre farm, with the exception

of a working team, and to rear about two calves a year, these calves to be kept on for cows, and dispose of two of your oldest cows yearly. It will require about 16 or 18 acres of pasturage for eight cows, and if those acres be in two lots pasturing alternately, it will yield more milk.

Cows require stabling in the winter and to be regularly attended to; and you will find good straw with a few roots daily will keep your cows in good condition. I prefer mangels to turnips. I think them easier to raise, and they make sweeter milk. You will require to feed a little hay a week or two before calving. I put the amount of hay down at one ton per cow, but they will not require so much, as the beginning of April is about the best time for your cows to come in. I can only charge the hay and pasturage, as I consider the benefit arising from manure when roots are fed, amply repays for the roots. Besides the milk and butter used in the house would be equal to the extra labour. I have taken the average price of cheese for the last three years at 7 cents per pound.

Dr.	\$	cts.
Suppose eight cows.....	160	00
Eight tons clover hay at \$7 per ton ..	56	00
Eighteen acres pasture at \$3 per acre.	54	00
Interest on Capital	10	00
	\$280	00
Cr.	\$	cts.
By 2904lbs cheese at 7cts per lb	203	28
“ Butter, Spring and Fall, 163lbs. at 12½cts per lb.....	20	37½
“ Six calves	15	00
“ Capital on cows.....	160	00
	398	65½
	280	00
Profit.....	\$118	65½

Should any of these practical remarks prove useful to my fellow men, my aim will be accomplished, “as there are few that throw away an apple because there is a core in it.”

Your's very truly,

A SUBSCRIBER.

DETECTING ADULTERATED MILK.

In a lecture before the Royal Dublin Society last winter, Professor Davy, after referring to the composition and properties of milk, and showing that its nature offered peculiar facilities for its adulteration, whilst, at the same time, it presented many difficulties in the way of their ready detection, proceeded to notice some of the principal methods hitherto employed to determine the quality of milk, all of which he showed to be more or less fallacious, and incapable of affording any positive results as to the real quality of milk. He then passed on to describe and illustrate M. Marchaud's method, which is very simple and easy of execution.

It consists in adding to a certain volume of milk in a long glass tube closed at one end, and of about half an inch in diameter, an equal volume of ether (having previously rendered the milk slightly alkaline by the addition of a few drops of a solution of caustic soda or potash). The same volume of alcohol as that of the ether employed, is then added, the proper quantities of milk, ether and alcohol to be used, being indicated by three marks on the tube. After each addition to the milk, the tube is to be well shaken for a few moments, during which time it is to be firmly closed with the thumb of the hand holding it. The alcohol having been added, and the contents of the tube finally well shaken, it is then only necessary to immerse the tube for a few minutes in a vessel of warm water, (the temperature of which about 100° F.,) when an oily layer will form on the surface of the mixture in the tube, and its thickness will be in direct proportion to the richness of the milk in butter.

By having a graduated sliding scale, whose divisions bear a certain relation to the volume of milk employed, and this latter to a pint or quart, the amount of butter in either quantity of milk can be known in a few minutes,

The accuracy of this method of determining the quantity of butter in milk Professor Davy has satisfied himself of by many experiments; and he is of opinion that it might be of much use as a means not only of testing the milk supplied to different public institutions with a view of detecting adulteration, but likewise for the purpose of having them supplied with milk of a certain degree of richness, and that when it was discovered by this method to fall below a fixed standard, it should not be taken into these institutions.

If such a system were employed, Professor Davy has but little doubt that it would in a great degree lessen the present shameful adulteration of the milk supplied to different public institutions, as well as of that sold to the public generally.

EUROPEAN BUTTER TRADE.

To the Editor of the Canadian Agriculturist.

During the month of October very little North Country butter came here; but from the continent the arrivals of Foreign were very heavy; a little came to hand from America, and none from Ireland.

An extensive business has been done this year in Foreign Butters, and on the whole the trade has been a satisfactory one for our dealers; but the demand is now less, as meantime the Grocers are stocked, and it may be a few weeks hence before they are again buying.

The price however keeps very steady at 11d. to 1s. per lb. for prime dairy cured Danish and Kiel; and for collected butter from the same quarter, 8½d. to 9d. per lb. is the value. There is a fair demand for fine North Country,

but mostly for Bakers and Confectioners (our Grocers now refuse to buy it in winter) and for sweet August and September cure I am remitting 10d. per lb., and lato cure 9d. per lb. free in Leith.

I have had a further consignment from the party who has been curing with the Bay Salt, and can now fully recommend curers to adopt that sort in preference to the bitter Chesnire Salt with which they are spoiling their butter.

The use of the Sugar and Nitre, as recommended in former circulars, will be found a great improvement in curing winter butter.

Put in.	To 10 lbs.		To 20lbs.		To 30lbs.		To 40lbs.		To 50lbs.		To 60lbs.		To 70lbs.		To 100lbs.		To 112lbs.									
	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.	lbs.	oz. dr.								
Salt . .	6	7	12	14	1	3	5	1	9	11	2	0	2	2	6	9	2	18	0	4	0	4	4	4	8	0
Sugar . .	10		1	4	1	14		2	8		3	2		4	6		6	4		6	4		7	0		
Nitre . .	5		10		15		1	4		1	9		1	9		1	14		2	3		3	2		3	8

Too much care cannot be taken in weighing Salt, Sugar and Nitre, and in carefully mixing these together before curing the Butter; an excess of any of them tends to deteriorate the quality and price of the Butter. The following scale has been used by curers in the north of Scotland, and found to answer, viz.:

I am, yours respectfully,
WILLIAM McNAIR
 Leith, 7th November, 1863.

PRINCIPLES OF CHEESE-MAKING.

The following extract from the Report of S. L. Goodale, Secretary of the Maine Board of Agriculture, on the manufacture of cheese, contains much information touching the principles which are involved in that business:—

Having secured cleanliness in all the appurtenances belonging to the dairy—having before us pure milk in clean vessels, the next points are, the degree of acidity, and the temperature at which it should be set, i. e. the rennet added to it.

When milk is drawn from the cow it is sometimes alkaline, sometimes neutral, and sometimes acid, oftentimes in summer, never acid so as to taste sour, but sufficiently so as to exhibit an acid reaction to a delicate test. As soon as exposed to the air there commences a spontaneous conversion of the sugar (of which milk usually contains from 4 to 5 per cent.) into lactic acid. The chemical composition of these two substances, as determined by analysis, is the same; yet they are very different substances, to our sense of sight and taste, and the difference is supposed to be due to the transposition of the elementary atoms of the sugar.

Some hold that cheese is best made from new milk. It is true that when too much changed only a hard, sour cheese can be made from it. It is also true that those cheeses which bear the highest reputation and command the highest prices, both in this country and in Europe, are not made wholly from new milk, but from evening and morning milk mixed. From all the evidence presented, I entertain no doubt but the latter is the better practice; or in other words, that it is desirable that the conversion of milk sugar into lactic acid should have made some progress. The precise degree of progress which is best is not definitely known, nor have we at present any easy method of measuring it with precision, but practically it is found that if milk be kept for 12 hours at a temperature of 65 deg., and the morning's milk be then added, and the whole properly warmed, the best results follow, and the due separation of the whey is more easily effected.

In the Cheddar method, which from its advantages both in the saving of labour and superiority of product, is rapidly displacing older methods of cheese-making in England, sour whey is usually added, but this is unnecessary in this country, at least in most cases during the summer months, because of the higher temperature which here prevails, which insures more rapid progress towards acidity, and more caution is required that it do not progress too far than not far enough. Mr. McAdam, a skilful practitioner and teacher of this method, says: when the temperature of the cold milk is 95 deg. or upwards, no sour whey ought to be used, the acid then being

present in a sufficient degree without it. When the temperature is higher, every operation of the process needs to be accelerated, until the curd is taken out and salted; for when too much acid is present, it affects the curd so as to render the cheese hard, and give it a sour taste."

The temperature of the milk when the rennet is added is next to be attended to, and is a point of great importance. It has been found by experiment that milk coagulates soonest when at a temperature of about 115 deg., but when curdled at so high a temperature the product is much injured. The proper temperature, as determined by experience, is usually from 85 to 88 deg., and the whole range admissible, under the varying conditions which sometimes occur, is not more than 10 degrees, namely, from 80 to 90 deg. If set below 80 deg. the curd is long in coming (unless an excess of rennet is added, which is highly objectionable,) is too tender, and the separation of the whey is attended with greater labor, and, unless extreme care is used, with loss, also. If it be set at a temperature above 90 deg., the curd assumes a toughness which is objectionable, and the cheese made from it is hard and of inferior quality.

How shall the proper temperature be determined? My answer is, by the use of a thermometer, and in no other way. The answer given by the practice of a majority of dairymen and dairy-women is, by the feelings, by the judgment, by the verdict of a practised hand; and doubtless they honestly believe those to be sufficient, and may ridicule the use of a scientific instrument to determine so simple a matter.—But the truth is that feelings, though very useful in their place, are not to be depended on to determine temperature. Our bodies are unconsciously affected by too many disturbing causes to afford a trustworthy index to slight differences. Tell a man suffering from fever and ague that he is no warmer now, when seeming to be on fire, than he was a little while ago, when shivering under a heap of blankets, and unless he is assured of the fact by means of other evidence than his own sensation, he will believe you to be laboring under an egregious mistake; he may likely enough take you for a fool, and perhaps exclaim, "Don't I know when I'm burning and when I'm freezing!" and yet the fact is as you stated to him, and easily demonstrated by the introduction of the bulb of a thermometer beneath the tongue or under the armpit. A very simple experiment will satisfy every one that the sensation of cold or heat is not always, even when in perfect health, in consonance with the fact. Take two basins partly filled with water, one as hot as you can comfortably bear, and the other as cold. Plunge a hand in each, and after a little while pour one into the other and put both hands in it; one hand says the mixture is cold and the other says it is warm.

No: if you desire a good product uniformly, and not merely occasionally, there is no other way but to use the proper means, to wit; the employment of an instrument acting by expansion and contraction *in accordance with a fixed law*, undisturbed by any of the many causes which affect living bodies.

How shall the desired temperature be attained? By heating, of course. But the way of doing this may affect the product. Milk should not be heated by the direct action of fire upon the vessel containing it. If a tub is used, the common method has been by warming the milk in a tin pail or other vessel set into a larger one of water, to which the heat is applied. If this method is adopted the whole milk should be warmed, because if only a portion be heated, and that sufficiently to warm the rest to a proper degree, there is danger that some of the buttery portion will rise as oil and escape with the whey. If a tub must be used, the better way is to introduce a tin pail of hot water into the milk in the tub and gently move it about. By a similar method—namely, by the using of a pail of ice water, the evening's milk may be cooled, when to be kept over night in a wooden cheese tub in warm weather. In this way the proper temperature may be attained, and none of it heated too much. But the best way, by far, is to use improved apparatus, consisting of a double vat, the inner one of tin containing the milk, and the outer one water, which is warmed by a fire of a few chips in the heater below. There are quite a number of these, differing somewhat in construction, several of them being well adapted to the purpose for which they are designed.

The principal advantages presented by the improved apparatus is the saving of labor, and this is a most important item—the reduction being not less than one-half or two-thirds; besides this we have the means of securing a more perfect and uniform system of cooking the curd, by an equal distribution of the heat and perfect control of it. It is managed with ease and at a trifling expense for fuel, only a few chips being necessary. The addition of the tank is a very great convenience, and well worth the cost. It furnishes all the hot water required in the dairy for any and all purposes.

We will suppose the evening's milk to have been strained into the vat as it came in, and cooled to about 65 deg. by pouring cold water into the outer vat. This is considered the most desirable temperature for the milk during the night. If kept much warmer there is danger of too great acidity; if kept much colder, more or less loss or injury ensues to the cheese. If the milk be stirred while cooling, separation and rising of cream to the surface will be greatly checked.

As the morning's milk comes in, it is strained into the vat containing the night's milk; and at the same time stirring in carefully and

thoroughly whatever cream may have risen in the meantime. If coloring is used, it is added at this stage of the process. A little fire is then made in the heater and the whole mass of milk is warmed gradually to 88 deg., at which temperature the rennet is to be added.

Horticulture.

FRUIT ON GRAFTS.

To the Editors of *Canadian Agriculturist*.

In noticing your correspondent's letters of the 24th August and 12th October, I think a very important fact is omitted. The writer does not state that the *Doyenne d'ete Pear* tree he selected his grafts from was in a *bearing* state. An answer to this question would throw a good deal of light on the subject. The whole mystery of the case has probably arisen from the fact that your correspondent has been mistaken in the tree he cut his grafts from. Having lately visited several of the largest nurseries in the State of New York, I embraced the opportunity of bringing the subject before several of the proprietors, and they all concurred in the opinion that there must have been a mistake in the tree the grafts were selected from. One of the gentlemen, a partner in one of the largest Nurseries on this continent, expressed himself very strongly on the subject, and declared before a gentleman who was with me at the time that he would stake the whole of his interest in their establishment that no such freak of nature could take place. The whole mystery of the case probably consists in the fact that your correspondent has been mistaken in the *purity* of his grafts.

December, 1863. Yours respectfully,
POMOLOGIST.

RULES FOR PLANTING TREES.

The season for autumnal planting is now past, but in a few months this important operation may be advantageously performed. Whether autumn or spring planting is to be preferred depends on the species of trees and shrubs, the state of the soil, character of the season, and other conditions of a minor character. The ill success which one often sees in planting fruit and other trees mostly arises from inattention to a few simple but essential conditions. The following practicable rules given by John J. Thomas, a well known American Horticulturist, would, if carefully carried out, prevent much disappointment, and increase both the wealth and beauty of the country:—

1. If the roots of a tree are frozen out of the ground and thawed again in contact with air, the tree is killed.

2. If the frozen roots are well buried, filling all the cavities before thawing any at all, the tree is uninjured.

3. Manure should never be placed in contact with the roots of a tree, in setting it out, but old finely pulverized earthy compost answers well.

4. Trees should always be set about as deep as they stood before digging up.

5. A small or moderate sized tree at the time of transplanting will usually be a large bearing tree, sooner than a larger tree set out at the same time, and which is checked necessarily in growth by removal.

6. Constant, clean, and mellow cultivation is absolutely necessary at all times for the successful growth of the peach tree, at any age; it is as necessary for a young plum tree, but not quite so much so for an old one; it is nearly as essential for a young apple tree, but much less so for an old orchard; and still less necessary for a middle aged cherry tree.

7. To guard against mice in winter with perfect success, make a small, compact, smooth earthy mound, nearly a foot high, around the stem of each orchard tree.

8. Warm valleys, with a rich soil, are more liable to cause destruction to trees or their crops by cold, than moderate hills of more exposure, and with less fertile soil—the cold air settling at the bottom of valleys during the sharpest frosts, and the rich soil making the trees grow too late in autumn, without ripening and hardening their wood.

9. The roots of a tree extend nearly as far on each side as the height of a tree; and hence to dig it up by cutting a circle with a spade half a foot in diameter, cuts off more than nine-tenths of the roots; and to spade a little circle about a young tree not one quarter as far as the roots extends, and call it "cultivation," is like Falstaff's men claiming spurs and shirt collar for a complete suit.

10. Watering a tree in dry weather affords but temporary relief, and often does more harm than good, by crusting the surface. Keeping the surface constantly mellow is much more valuable and important—or if this cannot be done, mulch well. If watering is ever done from necessity, remove the top earth, pour in the water, and then replace the earth—then mulch, or keep the surface very mellow.

11. Shriveled trees may be made plump before planting, by covering tops and all with earth for several days.

12. Watering trees before they expand their leaves should not be done by pouring water at the roots, but by keeping the bark of the stem and branches frequently or constantly moist. Trees in leaf and in rapid growth,

may be watered at the roots, if done properly.

13. Young trees may be manured to great advantage by spreading manure over the roots as far as they extend, or over a circle whose radius is equal to the height of the tree in autumn or early winter, and spading this manure in, in spring.

14. Never set young trees in a grass field, or among wheat, or other sowed grain. Clover is still worse, as the roots go deep, and rob the tree roots. The whole surface should be clean and mellow; or if any crops are suffered, they should be potatoes, carrots, turnips, or other low, hoed crops.

PREPARATION AND MANAGEMENT OF LAWNS.

The following essay, which we copy from the Gardener's Monthly, was lately read before the Pennsylvania Horticultural Society, by William Bright:

The first important point in the preparation of a lawn, is to obtain an open, porous, well-drained soil, of *good depth*. To this end, if the soil be naturally wet, it must be drained in some manner, either by tile or stone drains. If sufficiently drained, the requisite depth may be obtained by thorough ploughing and subsoiling, using such ploughs and such force of team as will open the soil to the depth of eighteen inches at least. On grounds of any extent, this is cheaper than trenching, and quite effectual.

The subsoil ploughing should be performed in the dry weather of the summer or fall previous to seeding the following spring. Free harrowing is of course useful.

The *quality* of the soil must next receive attention, and it is vastly important that this should be of *uniform quality* all over the surface, and of *uniform depth*. Nearly all lawns are graded more or less, and when this is done, be careful that the soil is kept of uniform quality and thickness. The surface soil must frequently be taken off large spaces, and after the grading has been done, it must be replaced in such a manner that it shall as nearly as possible resemble in quality and depth the natural soil of the lot.

Sandy soils, as everybody knows, may be greatly improved by a dressing of clay or good clayey loam, and clay soils by the addition of sand. This is a simple fact, but one not sufficiently heeded in the hurry which usually attends the preparation of new grounds.

As to manuring, if the land be very poor, it may be heavily manured in the fall, with good, short, well-rotted stable manure; or with a compost of muck or stable manure. Bone dust, superphosphate of lime, and wood ashes are of course valuable additions to such a compost. If the land is good,—that is, good corn or wheat land,—it will need no manure. It is not so much

richness of soil as *depth*, freedom from excess of moisture, and uniformly good texture and good quality that we desire.—Mixing poor and good soil, in spots, in various parts of the lawn, when grading, will produce a sod which can never be made of uniform color and beauty by any future dressing or manuring. The soil must be of uniform good quality and uniform depth, to make a good lawn.

The treatment of the lawn, the first spring after it is graded, will be as follows:—The first day, after the frost is out of the ground and the soil is sufficiently dry to be worked, let the winter-washed places be repaired, then harrow the whole surface carefully, and if not quite smooth, hand rake the rougher parts, using also the roller if necessary to obtain a fine smooth surface. A little lime, and well-rotted compost may also be applied at this time if required.

The seed should be sown as early as possible, say the 15th of March in this region. Sow on recently harrowed ground, not too rough. The seed needs to be barely covered with earth. It is better, perhaps, after sowing, to cover the seed with a hand rake, using both teeth and back of rake to cover it. Or it may be covered by the back or top of a light harrow drawn over it.

It is not desirable to sow any sort of grain with the seeds for a lawn, nor to sow a great variety of mixed grasses. The best grass-seed is the common green-grass (*Poa pratensis*), [otherwise known as Kentucky blue-grass, June grass, &c].

As soon as the seed germinates, and the grass comes up an inch, on a dry day pass a light roller over it. When the grass is three or four inches high, cut it with a sharp scythe, as close as possible. Mow it with the blade of the scythe *hard on the ground*.—Cut the grass every two weeks during summer in the same manner. A little hay may be obtained by spreading the grass, when cut, very thin, and mowing it once a day, without injury to the lawn. But it is better to mow *often* and *close*, and remove the grass at once, using it for mulching trees, &c.

Take out dock, dandelion, and other large coarse plants and weeds, with a chisel on the end of a short pole. Pull red clover by hand, but no small weeds will need to be removed by hand if the lawn is mowed often and closely as directed every two weeks. The grass will soon overcome the small weeds.

Mow very close the last thing in the fall, to keep mice from harbouring in the old grass. About the first of November, or later, top-dress the lawn with compost or manure, if necessary, and hand-rake smooth and clean.

Rake the surface of the lawn, in the spring of the second year, and every year thereafter, as hard and close as possible, with an iron rake, to take out the old grass, stones and sticks; and roll when the ground is moderately dry.

Cut the grass early and often the second year, and very close, the same as at first directed.

When the lawn is an extensive one, and well made, a lawn-mowing machine may be used with great advantage, as often as the grass is three or four inches high. If the grass is five or six inches high, the scythe works best. Use the longest bladed scythe that is made.—This gives a more even appearance to the lawn than when a short bladed scythe is used.

The lawn should be so made and so graded, raked and rolled, that the scythe and roller will touch every square inch of the surface. This is of course a point of the first importance.

The great requisites of a good lawn are smooth grading, a good loamy soil of even quality, broken up to a depth of eighteen inches or more, and so porous and well-drained that it will readily part with excess of moisture, and yet of such a character that it will retain a proper degree of humidity to sustain a heavy growth of grass. Well-rotted manure, leaf-mould, clayey loam and clay, of course assist to retain moisture in light soils, and are exceedingly useful additions to most lawns. With the points herein enumerated faithfully attended to, there is no difficulty in obtaining a beautiful and durable lawn.

When the reading of the essay was concluded, a discussion took place in regard to the general subject. Mr. Harrison said he did not approve of mixed seeds for lawns. The great object is to obtain a uniform turf, which is not attained by the use of mixtures. The green-grass (*Poa pratensis*) endures drought better than any other, and the leaf is very fine and of a beautiful rich green tint. Mr. Mitchell had tried the Italian rye-grass; it is handsome but not hardy. Mr. Pollock said his lawn was entirely of Kentucky blue grass or green-grass. It is admitted to be always green, luxuriant and uniform.

CRACKING OF THE APPLE AND PEAR.

The cracking of the apple and the blotches and scarifications frequently observed on its surface have been referred to the attack of fungoid growths or mildew. Various examples have been cited where orchards, sheltered from prevailing winds, have shown a decided exemption from these attacks. In opposition to this supposed cause of immunity it has been asked, Are our orchards more exposed now than they formerly were? As a general rule, we think it quite likely that they are, seeing that in all sections as cultivation increases the forests are gradually thinned and cleared. The effects of destroying the forests of country have already been noted; and we have a partial recognition of the importance of shelter in the precept of many intelligent orchardists who advocate the planting of fruit trees much closer than has formerly been the rule, and also in the practice of encouraging the trees to branch quite to the surface, instead of training to a clear stem five or six feet from the root. Both these expedients have a ten-

dency to prevent rapid circulation of air through the orchard, and consequently are so far a preventive against evaporation from the soil as well as from the surface of the trees. Examples are not sufficiently numerous to warrant a decided opinion; but so far as they have been noted, the prospect of greater immunity by this mode of treatment is encouraging.

The cracking of this fruit has given rise to much speculation, and various theories have been advanced with reference to the cause. For a long period the opinion prevailed that it was owing to a deficiency of certain mineral ingredients in the soil, and various remedies based on this assumption were freely dispensed and tried, but with indifferent success. It is not now doubted that it is the result of a mildew, and that the atmosphere, and not the soil, is at fault. In support of the opinion that it is governed by atmospheric influences, the fact may be quoted that the White Doyenne, one of the finest pears when perfect, rarely succeeds in exposed localities; yet when grown in positions thoroughly protected, it is still produced in all its pristine beauty and excellence. Referring to cases with which we are familiar, we have seen annual exhibitions of this fruit grown in the built-up portions of the cities of Philadelphia and Baltimore, most perfect of its kind, without spot or blemish, when those from trees growing in the more exposed suburbs invariably proved defective. Again, it has been lately shown that, fruited in the quiet atmosphere of a fruit-house, they attain great perfection; and further, we have seen a tree, one of a row that produced worthless fruit, enclosed on all sides by a small box, open at top and elevated a few inches above the soil, produce perfect fruit, while the productions of the adjoining trees were, as usual, cracked and worthless. Whatever may be allowed for protection in the above cases, it is very evident that they were not influenced by the nature of the soil.—*Rep. Dep. of Ag.*

HISTORY OF THE APPLE.

H. T. Brooks, President of the Fruit Growers' Society of Western New York, in a late address before that Association, gave some valuable facts in regard to the history of the apple, from which we take the following:—

The ancient Celts knew the apple, calling it *Abhail*, *Aval*, *Avel*, in different dialects. In 973, King Edgar, "while hunting in a wood, lay down under the shade of a wild apple tree." In 1175, Pope Alexander III, confirmed to the monastery of Winchome, "lands, orchards, meadows, &c. The fruiterer's bill of Edward I., in 1292 mentions the "Poma Costard," which was grown so exten-

sively that the retailers of it were called Costard mongers. The Costard is now rarely found in England, but the Winter Pearmain, that has a still earlier record, being cultivated in Norfolk in the year 1200! is still extensively grown and highly esteemed. (See Bloomfield's History of Norfolk.) The Pippin, the Romet, the Pomme-royale, and Marigold, are very early spoken of. In a note-book, kept in 1580 to 1583, "the Appell out of Essex, Lethercott, Russett Appell, Louden, etc.," are mentioned. The "Husbandman's Fruitful Orchard," published in London in 1597, enumerates Pippins, Pearmain, John Apples, Winter Russeting, and Leathercoats.

John Parkinson, who wrote in 1620, was the first English author who gave anything like a satisfactory account of Early English Apples. He enumerates fifty-nine varieties, with "twenty sorts of Sweetings, and none good." Either he was very sourly disposed, or the best sweet flavors were very coy and slow to come out, discriminating very unmercifully against the ancients and in favor of us. Rea, 1665, mentions 20 varieties, 16 of which were not mentioned by Parkinson; from which we conclude that the popularity of some sorts was of short duration, as is the case in our day. Meager, 1670, gives 83, and Worlidge, 1676, gives 92 varieties. From this period there were sorts enough, the world knows: Coxe in 1816, enumerates 113 varieties; Downing 182; Hogg's "British Pomology," enumerates 942, and yet our "New American Encyclopedia" takes the trouble to tell us there are over 200 varieties.

It is well known that apples were introduced to this country from England by the first settlers. "The Governor and Company of the Massachusetts Bay in New England" introduced apple seeds in 1628. Governor Winthrop was granted Governor's Island, in Boston Harbor, April 3, 1632, on the condition that he should plant thereon a vineyard or an orchard. Orchards were planted near Pawtucket, R. I., 1636, and at Hartford, Ct., 1645. Mr. Henry Coleman says "An apple tree growing at Kingston, Plymouth county, and planted 1669, the year of King Phillip's War, bore, in 1838, thirty bushells of good fruit."—Pretty well for a tree 169 years old—it was a "Hightop Sweeting," a favorite apple with the Colonists.

The apple, like the pear, is tenacious of life; our best varieties, with their owners' permission, will last from 50 to 80 years, and some hardy and vigorous trees have reached at least 200 years of age.

There was recently standing in Prince-George county, Maryland, a Coddling tree sent there by Lord Baltimore over a century ago.

Veterinary Department.

DISEASES OF THE EYE.

A disease we often meet with in practice is Specific Ophthalmia or inflammation of the middle tunic of the eye; this disease is also called Hereditary or Moon blindness and Periodic Ophthalmia. This last appellation denotes its peculiarly characteristic or most remarkable property, as it returns by relapses as though it were a fresh disease, after being absent for more or less considerable time. It received the name of Moon blindness from the earliest authors on farriery, from the supposition that, "as the moon haged, the horse gradually recovered his sight."

All horses are liable to the disease, as it consists at first in inflammation of the middle tunic, which ultimately extends to the whole vascular part of the eye as the ciliary processes, &c. &c. In this inflammation of the choroid coat, or middle tunic, owing to the inelasticity of the sclerotic and cornea, when exudation has taken place the pressure causes intense pain, and as a consequence is accompanied by great fever. The causes of this disease are both predisposing and exciting; the predisposing are hereditary disposition, this hereditary disposition lurking for a long time until some exciting cause brings about the disease. Among the exciting causes, and a very common one indeed, is foul air in badly ventilated stables, also exposure to the sun; external injuries also prove an exciting cause. At first the eruptions much resemble those of simple ophthalmia. We have the watery eye, and red conjunctiva and partial closure of the eyes, the upper eyelid droops upon the cornea to shut out the glare of light, the tears are secreted in great abundance, overflowing the lower eyelid and streaming down upon the face; there is always a retraction of the eyeball, and the cloudiness may not be confined to or even exist in the cornea. The organ is intolerant of light, as is seen when the eye is exposed to the glare of the sun, or artificial light, the membrana metitans or hair protudes and the eyeball recoils within its socket. Another symptom is the peculiar recurrence of the disease, and after each recurrence the cloudiness gradually becomes more intense and condensed. In this disease we frequently find one eye-affected more

than the other and the shifting of the disease from one eye to the other. The portion of sclerotic visible is always intensely red. To the symptoms are speedily added those of fever, the pulse is quickened, the mouth extremely hot, the animal if put to work perspires readily. The inflammation is very prone, on the slightest exciting cause, to return again and again, or affect first one eye and then the other, until one or both are destroyed. As the disease advances the cornea becomes transparent, leaving however a slight muddiness in the anterior chamber of the eye; and one marked symptom is the dullness of the anterior surface of the iris and the smallness of the pupillary opening. As the dullness disappears we find more or less opacity of the crystalline lens and its capsula constituting what is called a cataract.

Percivall mentions in his writings on diseases of the horse that geldings are more subject than mares to ophthalmia. He says, of the fifty cases of troop horses recorded in his own practice thirty nine have occurred in geldings, eleven only in mares. Dr. Arboval is of the same opinion, and agrees with Percivall in thinking that the greater irritation occasioned by the cutting of the tusks than of the other teeth renders geldings more subject to the disease. The treatment of this disease consists more of alleviating than curing—bloodletting and counter irritants are recommended, as bleeding from the facial vein, administering laxative medicines and placing the patient in a well ventilated darkened loose box, and also applying cold lotions. In many cases the extract of belladonna is useful, combined with powdered colchicum. When of some days standing blisters round the orbit and setons on the poll are recommended, both as expediting recovery and preventing the recurrence of the attack.

SHOEING HORSES.

A work modestly entitled "NOTES ON SHOEING HORSES," has recently been published in England from the pen of Col. Fitzwygram, of the 15th Hussars, and which has already attracted much attention, and received no ordinary amount of commendation.

Col. Fitzwygram begins his description of the structure of the foot by showing the reason why shoeing is necessary, namely, the preservation

of the horse's foot from undue wear, "the art of good shoeing" being "to afford the necessary protection with the least possible damage to the structure, or interference with the functions of the foot," a natural conclusion being that "to keep the foot sound and healthy when shod, we must aim at preserving it as nearly as possible in a natural state." This point the writer keeps steadily in view throughout his work, and in that principle—namely, the preservation of the foot in as natural a state as possible—lies the very essence of the subject.

The following extract will give some idea of the practical character of this valuable treatise:—

"Most people have noticed how badly many horses go when newly re-shod; how apt they are to stumble; and it is not until the shoes have been worn some days that they seem again to go at their ease. The reason of this is simple enough. As horses are usually shod, that portion of the toe which would, in a state of nature, have been worn away by friction with the ground, is retained. Not only is this the case, but the evil is further aggravated artificially by the presence of a straight iron shoe, which is made to fit the protected, and, therefore, elongated, toe. It can scarcely be a source of surprise that a horse so shod strikes his toes against the ground and stumbles. The horse has neither ease nor comfort nor safety in travelling until by friction with the ground he has torn off some portion of the projecting toe of his straight shoe; until, in short, he has in some degree by wear assimilated the toe of the shoe to the natural tread of his foot. But the horse which is shod with straight shoes never gains complete ease and comfort in action, because the shoe not only requires to be worn through, but a portion of the crust at the toe must also be removed before a really natural shape and level bearing can be attained. The relief gained by the wearing away of the toe of the shoe is only comparative, and is very inferior to that obtained by the use of turned up shoes, adjusted to fit the crust, previously lowered by the knife to represent the natural rounding off of the toe by wear, as seen in the unshod horse.

"From noticing how badly many horses went when newly re-shod, Mr. Hallan, late veterinary surgeon of the Inniskilling Dragoons, took his first ideas of turned-up shoes. Starting from this simple and notorious fact, he carefully traced out its causes, and was thereby enabled to throw much light on the whole subject of shoeing. At first to remedy the evil just spoken of, he made the new shoes in shape exactly like the old ones; improved going was the natural result. At the next shoeing he followed up his advantage, and made the new exactly like the then old shoes; and so on, each time with improved results. He did this at first only with horses that stumbled or 'toed,' as horsemen say; he thought on the subject, followed it up, watched the results carefully, and at last saw

that nature intended a horse to have a bearing on his whole foot, and not mainly on his toes. He saw, too, not merely that the straight toe caused the horse to trip and stumble in putting down his foot, but that it produced an unnatural, lever like, resistance against the ground, and, consequently, an additional strain on the tendons every time the foot was raised from the ground. After much consideration and various trials, he eventually shod all horses with the shoes so turned up that the wear at the end of the month should be nearly even all over the foot. He rightly argued that if stumbling horses were sensibly relieved by complying with nature's requisitions, all horses would go more comfortably and more safely by following the same unerring guide. Mr. Hallan did not argue for any arbitrary degree of 'turn up' at the toes, but for a general principle, viz., *so to shoe the horse that there should not be an unnatural degree of wear at one part, and a total absence of it at others.* It would be found, however, that in practice most horses, as we might expect in the adoption of a natural system, require very nearly the same degree of turn-up at the toes."

We subjoin the Colonel's directions for shoeing ordinary feet:—

"To shoe horses with ordinary feet we would suggest the following directions to the farrier:—

"1st. With your drawing-knife take off from the ground surface of the crust as much as may represent a month's growth. Remember that there is generally a far more rapid growth of horn at the toe than at either the heels or the quarters. More, therefore, will require to be taken off the toe than off other parts; in other words, shorten the toe. Be careful to make the heels level. Having lowered the crust to the necessary extent with the knife, smooth it down level with the rasp.

"2nd. Round off the lower edge of the crust with the rasp. Do this carefully and thoroughly. If a sharp edge be left, the crust will be apt to split and chip. The preparation of the foot is now complete. It remains to fit the shoe to the foot.

"3rd. Let the shoe be made with a narrow web ($\frac{3}{4}$ inch) of even width all round, except at the heels (see direction No. 8), flat towards the sole, and concave to the ground.

"4th. Turn up the toe of the shoe on the horn of the anvil. The degree of 'turn-up' must be regulated by what you find necessary in each horse to make the wear nearly even all over the shoe. It will be found in practice that most horses take much about the same degree of 'turn-up.'

"5th. Make five countersunk nail holes in each shoe—viz., three on the outside, and two on the inside. Make the anterior hole on each side immediately posterior to the 'turn-up.' Let the second and third holes on the outside divide evenly the remaining space on the heel.

Let the second hole on the inside be opposite to the second hole on the outside.

"6th. Let the nail holes be punched coarse, i.e., nearly in the centre of the web, brought out straight through to the other side. This may be done with safety were a good crust has been preserved.

"7th. Fit the shoe accurately to the foot. It must be as large as the full unrasped crust, but no part must project beyond. The shoe must be continued completely round towards the heels, as far as the crust extends.

"8th. The web must be narrowed at the heels, so that its inside edge must cover the line of the bars, and no more.

"Slope off the heels of the shoe in the same direction as the heels of the crust, so as to prevent the possibility of their catching in the hind shoe.

"Select nails that will fit exactly into, and completely fill the nail holes.

"11th. Twist off the clenches as short and stubby and possible, and lay them down flat with the hammer, and let the pincers during this time be firmly pressed against the heads of the nails. The clenches are not to be filed either before or after turning down, nor is a ledge to be made in the crust to receive the clenches. For ordinary hind feet the pattern of shoe in common use is recommended, but with a clip on each side, immediately anterior the first nail, instead of one only at the toe. This double clip keeps the shoe steadier in its place than the single. The web should be made somewhat wider at the toe than at other parts, in order to allow space for the thorough sloping of its inner edge, as recommended under the head of Over-Reach.

"For reasons which have been already explained, the hind foot does not require to be shortened at the toe like the fore foot; but the other directions given above—namely, as regards lowering the crust, rounding its lower edge, accurate fitting without rasping, punching the nail holes coarse, nailing, and clenching, with the total absence of rasping, paring, opening the heels, cutting away the frogs or bars, &c.—apply equally to hind as to fore feet. Six nails—viz., three on each side—are needed for the hind shoe. Without the third nail on the inside, shoes are apt to 'twist' on the feet. The horse is now shod. Nothing more must be done for the sake of what is sometimes called appearance. The best iron only should be used for shoes. Good iron makes a light shoe wear as long as a heavier one of inferior metal."

Editorial Notices, &c.

THE RURAL ANNUAL AND HORTICULTURAL DIRECTORY FOR 1864: Rochester, New York, Joseph Harris.

This is the ninth volume of this very cheap

and valuable annual, brought out by Mr. Harris, editor and proprietor of the *Genesee Farmer*. Its contents, like its predecessors, are varied, interesting, and highly instructive, embracing almost every subject of importance connected with the routine of the farm, garden, and domestic economy. Several original articles written especially for the Annual, by distinguished contributors will be found of great practical utility. Among them may be mentioned: The Culture of Hops; Flax; Pears; Strawberries; The best means of enriching the soil; The Connection between the roots and leaves of Plants; Picking and Marketing Fruit, Planting Trees, &c., &c.

The price for single copies is only 25 cents. A complete set of eight numbers, handsomely bound in two volumes, will be sent to any address by mail on receipt of \$2 50. Or the last six volumes of the *Genesee Farmer*, and a complete set of the *Rural Annual*, handsomely bound for \$8. These volumes would be quite an extensive library of Agricultural and Horticultural knowledge in themselves, and would be an invaluable acquisition to every young farmer desirous of excelling in his calling.

REPORT OF THE COMMISSIONER OF AGRICULTURE, FOR THE YEAR 1862. Washington: 1863.

Some of our readers may not know that a new Agricultural Department has recently been established in connection with the Federal Government at Washington; or, in other words, that the Patent Office, as far as Agriculture is concerned, has been superseded by a separate and independent department; the first fruits of which, in the above report, are now before us.

The present report is undoubtedly very superior as a whole to any of its predecessors that emanated from the Patent Office, and reflects great credit on the industry and skill of Mr. Commissioner Newton and his coadjutors, who evidently possess the requisite qualifications of conducting this most valuable department of government with ability and success. The volume is handsomely got up, and contains upwards of forty articles on rural pursuits, from writers distinguished for experience and ability. Our readers will form an idea of the contents of the volume from the subjoined summary of the principal articles:

Mr. Goodale, the able Secretary of the Maine Board of Agriculture, has a valuable paper on the Breeding of Animals; Levi Bartlett on Wheat Growing in New Hampshire; L. Bollman, of Indiana, on the Wheat Plant and Sorghum Culture; Sandford Howard, of the *Boston Cultivator*, on Kerry Cattle and Different Breeds of Horses; Joseph Harris, of the *Genesee Farmer*, on Stall Feeding Cattle and Sheep; J. J. Thomas on Farm Implements and Machinery; Dr. Hall on the Health of Farmers' Families. There are also interesting articles on Wild Flowers, the Ailanthus Silkworm, Flour Making, Coal Oil, Preservation of Food, Agriculture in Morocco, &c. The Horticultural subjects embrace—Shelter and Protection of Orchards, Popular Varieties of the Apple and Pear, Climatology of American Grapevines, &c.—We are also indebted to Mr. Grinnell, Chief Clerk of the Department, for copies of the Monthly Crop Report, a document that is got up with much labor and care, embracing the whole Union. The matter which it contains must be of the greatest value to the farming and commercial portions of the community.

STUMP MACHINE.—Mr. G. F. Beebe, of So phiasburgh, Prince Edward County, obtained the first prize for a stump machine at the late Provincial Exhibition. He informs us that it is capable of pulling 25 pine stumps in a day, with one span of horses and two men. Mr. Beebe obtained a Patent for his machine in July of the present year.

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August 20th, 1863.

Contents of this Number.

	PAGE.
A Parting Address to our Readers	449
The "Canada Farmer"	450
Agricultural Societies, Annual Meetings	450
A Canadian Short Horn Herd Book	452
Lectures on Agriculture and Veterinary Art	453
The "Agriculturist," Farmers, &c., &c	453
The Veterinary Art in Relation to Agriculture	454
Wide Range of Flax Culture	459
Vitality of Seeds	461
Blood Diseases in Animals	462
Selecting Ewes for the Ram	463
Draining Barn Yards	464
AGRICULTURAL INTELLIGENCE:	
Steam Culture	464
Lady Pigot's Great Sale of Short Horns	466
Over Application of Ammoniacal Natures	467
Leicester Sheep	468
THE DAIRY:	
The Milking Machine	469
Experiment in Cheese Making	469
Detecting Adulterated Milk	469
The European Butter Trade	470
Principles of Cheese Making	471
HORTICULTURE:	
Fruit on Grafts	472
Rules for Planting Trees	472
Preparation and Management of Lawns	473
Cracking of the Apple and Pear	474
History of the Apple	475
VETERINARY:	
Diseases of the Eye	476
Shoing Horses	476
EDITORIAL NOTICES, MARKETS, &c.	479

TORONTO MARKET PRICES.

TORONTO, DECEMBER 22, 1863.

Fall Wheat, per bushel	\$0 90	to \$1 04
Spring Wheat, "	75 "	88
Barley, "	70 "	80
Peas, "	50 "	53
Oats, "	40 "	42
Rye, "	56 "	60
Beef,	3 00	4 50
Potatos, per bushel	35 "	55
Flour, No. 1 to Extra	3 80	4 50
Turnips	12 "	15
Carrots	20 "	25
Pork, per 100 lbs.	4 75	5 50
Geese, each	25 "	40
Ducks, per pair	30 "	40
Turkeys, each	75 "	1 00
Apples	1 50	2 50
Fresh Butter, per lb.,	15 "	20
Tub Butter	12 "	15
Eggs, per doz	15 "	20
Chickens,	30 "	35
Calves, each	4 00	6 00
Sheep, each	3 75	4 50
Hay, per ton,	10 00	12 00
Straw, "	6 00	7 00
Hides, per 100 lbs.	5 00	5 50
Calfskins, per lb.	8 "	9
Sheep Skins	80 "	1 25
Wool, per lb.	40 "	43
Plaster of Paris, per barrel	95 "	1 00
.	1 80	1 87

PROSPECTUS
OF
THE CANADA FARMER,
A NEW (FORTNIGHTLY) JOURNAL

OF
Agriculture, Horticulture, and Rural Affairs.

The Subscriber has determined to make the experiment whether a first-class Agricultural Journal can be sustained in Canada. He proposes to issue early in January, 1864, the first number of THE CANADA FARMER, and to continue the publication on the 1st and 15th days of each month. Each number will contain sixteen pages *quarto* of closely printed matter. It will be printed on fine paper, from an entirely new font of type. The services of an able agricultural writer as Editor-in-Chief have been secured, and he will be assisted by an efficient staff of Writers, Reporters and Correspondents. First-class Artists and Engravers have also been retained to prepare illustrations for the paper. No exertion or expenditure will be spared to render the new Journal a worthy representative and advocate of the Agricultural interests of Canada.

In the conduct of THE CANADA FARMER, the following ends will be zealously labored for:—

- 1.—To arouse public attention, by frank and temperate discussion, to all questions scientific, commercial, legislative or otherwise, specially affecting the Farming interest.
- 2.—To stimulate the Agriculturists of our country to adopt an improved system of husbandry, by blending the lessons of modern science with the practical experience of the Canadian farmer.
- 3.—To bring under the attention of our Farmers all improvements at home or abroad, worthy of adoption, affecting the management of FIELD CROPS—the BARN-YARD—the STABLE—the DAIRY—the ORCHARD—the POULTRY-YARD—the APIARY—the KITCHEN GARDEN, and the FLOWER GARDEN; and to excite an interest in the progress of Rural Architecture and Landscape Gardening, and in all that concerns the Domestic Economy of the Farm-house.
- 4.—To mark and report all improvements in Agricultural Machinery—foster new inven-

tions—and promote the adoption of all labor-saving machines in the work of the farm and garden.

- 5.—To keep prominently under attention all that specially concerns the Dairy-farmer and the Grazier;—the best breeds of Cattle—the best systems of feeding—the most approved processes of Cheese and Butter making—the best mode of packing—and the best markets to sell in.
- 6.—To keep prominently in view whatever is specially interesting to the Sheep-raiser and Wool-grower—the breeds best adapted to our climate—the best systems of winter and summer management—and the varying prospects of the Wool market.
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- 8.—To report concisely the proceedings of Agricultural Shows, Fairs and Sales throughout the Province—note the condition and progress of the Herds and Flocks of prominent Stock-breeders; record the importation of Thoroughbred Stock from abroad, and publish Engravings of first-class Prize Animals.
- 9.—To watch and report carefully and promptly the actual state and probable prospects of the Produce Markets at home and abroad; and specially promote all movements designed to secure the best prices in the best markets for Canadian Farm Produce.
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Communications on Agricultural subjects are invited, addressed to "The Editor of the Canada Farmer," and all orders for the paper will be sent to

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TORONTO, 7th December, 1863.