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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

L. XIV. TORONTO, AUGUST 16, 1862. No. 16.

The International Exhibition.

OF FARMING IN THE NORTH OF ENGLAND
AND SCOTLAND, &c.

LONDON, England, July 11, 1862.

REPORT OF THE CANADIAN AGRICULTURIST.—
The day's proceedings included the winding
up of the duties of the Jurors in a ceremony of
a somewhat imposing nature, as you will see by
the papers in which the proceedings are reported.
I had a position in the procession as one
of the Jurors. The whole occupied about three
hours, and was pronounced by many to be quite
imposing as the opening ceremony. As far
as variety of costume and splendid music were
concerned it was quite a success, especially as
the day was fine, quite an exception to the gen-
eral rule in that respect. Since I have been in
England there have been very few days that it
did not rained less or more. My duties now
being at an end here, I leave to-morrow for
London.

On passing by railroad from London to
Sheffield, I took a different route from that I
traveled in 1851, and passed through a very
fertile agricultural country. The crops, particu-
larly of wheat, looked only middling, the
potatoes better, and the extensive fields of
turnips are very interesting, the turnips in
many cases being ready for thinning and in
others just coming up. The mangels and pot-
atoes look well, but I did not see an acre of
them. They appear not to be culti-
vated here. Arrived at Sheffield, I remained
on Monday morning, and left by an early
train for York, where we remained for some
time in order to view the Cathedral, which in
my opinion is the grandest I have seen
in England. I had not seen it before, but I
found it even finer than St. Paul's. Sheffield
population has increased 50,000 in ten

years and it is a prettily situated place, ly-
ing in the storm of a basin, and extending up
the finely sloping banks in every direction.
For an inland place it is not easy to find a more
beautiful place than Sheffield when not obscured
by smoke of the furnaces. It is a very busy
place, and makes an excellent display of its
industrial products at the great exhibition.
The varieties of articles in their collection
are numerous, and many of them are of
rich character, as well as useful. The country
for two thirds of the way from Sheffield to York
presented a very pleasing aspect, beautifully
diversified with hill and dale, until coming
near York, when it has rather a flat appearance.
On leaving for Berwick on Tweed the same re-
mark applies for some distance, when it again
assumes the beautiful undulating surface that
is pleasing to the eye, especially when the
slopes are covered with luxuriant crops of grain,
and well cultivated turnip fields.

Arrived at Berwick we found we were too
late for the train that stopped at Ayton, and
had to stay until Tuesday morning, when we
took the early train for Ayton station, and after
breakfast were driven a distance of four miles
to Mr. Heriot's (related to Dr. Small, of Toron-
to.) This is an exceedingly delightful drive
over a very fertile tract of land, lying in sight
of the sea coast. At Mr. Heriot's we were most
hospitably entertained, and had a most inter-
esting ramble about the fields, the crops upon
which, including wheat, are as fine as I ever
saw. The Messrs. Heriot, father and son, are
well entitled to rank amongst first-rate farmers.
They are cultivating about 900 acres, besides a
range of 600 acres of sheep pasture or moor
land at some little distance, which I did not see.
They had a good many sheep upon the pasture
field on the farm under cultivation. They have
very little land from which they take hay on
this farm; their horses are fed on oat straw and
grain. They have no such thing as naked fal-
lows; the wheat land is prepared by a crop of

beans or turnips. That is the system generally pursued here, and with great advantage, as they are in the habit of sowing winter wheat as late as Christmas, and it then does well. This gives them a long season for feeding off the turnips from the ground before sowing their wheat. Their ploughs are at work nearly all the time. This is one great advantage they have over us in Canada.

On Wednesday we took leave of our kind friends and came to Edinburgh, passing through a tract of finely cultivated country. We arrived in time to go to Holyrood and Calton Hill, the churches, the college, &c., and left in the afternoon for Dunblane, where we staid until Friday morning, when we got into the wrong train and went north for a short distance before discovering our mistake. This caused the loss of a day, as we had to return to Dunblane station, and then take train for Callendar, were too late for the Boat on Lake Katrine, and had to stay at the Trossacks all night. This mistake was not without some compensating advantages, as we had the opportunity while waiting at Dunblane, to see the old Cathedral there, and take a walk round the place, the views about which are delightful, including a fine rapid river. We had also time to climb up the mountain at the Trossacks until we were tired. Saturday morning was very wet, but we went by the first boat up Lake Katrine, and by cars across the hills to Loch Lomond, thence to the head of the Loch, and then down to Glasgow, where we found ourselves one day later than we had intended, and were prevented from getting to our friends at Conachie until Monday. I had written to my worthy friend John Thomson of Mouldy Hill how we were situated, and he met us with his carriage at Gretna, and drove us to his home a very delightful drive of ten miles. After dinner I went on a tour of inspection over the farm, and the next day our friend drove us up the valley of the Esk to Bonize, past Laugholme, in all a distance of about fourteen miles. This is one of the finest drives in Scotland, and the country is extremely interesting. Several very fine mansions are included in the views. The Holmes, or what we call the Flats, are very fertile, the hills rising to a great height on each side, covered with the finest herbage to the very tops, and dotted over with sheep. These are of the Cheviot breed mostly, though some take a cross from a Leicester Ram when they intend to sell the lambs, as many of the best farmers do, and feed off the ewes, buying fresh ewes every fall. The crops in this part of Scotland, and indeed all over the island of Great Britain, have been very much injured by the extreme wetness of the season. The general opinion is that the wheat crop will be below an average, and in this part the bean crop is very seriously injured, as well as the potatoes, and the turnips have been got in much later than usual. It is said to be the wettest and coldest season they have had for many years. The sportsman will not have their usual shooting, as the young game have been destroyed by the excessive wet and cold.

On Wednesday morning we left for Liverpool via Carlisle, passing through some fine tracts of country, and many of the manufacturing towns in which the chimneys of the manufactories are smokeless, the business being very seriously affected by the scarcity of cotton. The distance to Liverpool, 119 miles, was performed in four hours. We arrived here about 10 o'clock, and embarked on board the "Bohemian" to-morrow, bidding good-bye to the shores of glorious Great Britain, Glorious in every sense of the word. May we of Canada long rejoice in the privilege of forming an integral part of the Empire of which she is the head.

Yours, &c,

E. W. THOMSON

A FEW MAXIMS ABOUT MANURES.—With manure no good farming is possible. The way to purchase manures is only by analysis. For practical ignorance cannot be blessed; less it be pleasant to buy things at double value, and lose good crops into the bargain. In manuring grass lands "it is the safest and soundest economy to obtain the effect at once and not by niggardly or piecemeal applications." Manure is the farmers' capital.

Letter from a Canadian in England

[We take the liberty of appropriating for pages the subjoined extract of a private letter addressed to one of the conductors of this Journal, by Mr. James Fleming, seedsman and florist of this city, dated London, July 1862.—Eds.]

I intended writing you a few lines on this, but really there are so many things to attract the attention in this immense city one's time is wholly taken up by sight-seeing. I have enjoyed my trip exceedingly, but as climate is concerned I prefer Canada. The weather here has been unusually cold since the commencement of spring, and the crops have of course been affected accordingly. There are symptoms now of improvement if summer set in, in earnest, the harvest will not far short of an average. My impressions on seeing land on the Irish coast were not of the most pleasing kind; the scenery looked damp and black, the weather had kept back vegetation, and the landscape appeared denuded of trees. However, the appearance of the farms and gardens very improved as I got into the country, which is very pretty, and in favorable spots highly productive.—We landed at London, a fine old town, surrounded by walls, occupying an important position in Irish history. For breakfast I walked round its walls and to Belfast, which is a fine city, full of life and commercial life, and which of late has greatly increased. This is the centre

linen trade, and many thousands are employed in its factories. Quite a number of the operatives are unfortunately out of employment, in consequence of the American troubles. I was not fortunate in finding your friend, Professor Hodges of the Queen's College, at home.

The College is an extensive and handsome building, mainly of brick, with stone facings, not equal, however, to the university of Toronto, but based on the same non-denominational principle, and open freely to all. I had time to visit the Botanic Gardens close by, and was highly delighted with this interesting and beautiful retreat. It is mainly supported by subscription; government, I understand, affording little if any aid. Mr. Fergusson, the head gardener or Curator was very obliging, and the arrangements of the grounds and healthy state of the trees and flowers indicate the combination of no ordinary skill and industry. The *Auricularia Impuricata* grows finely here, some noble specimens being 16 feet high, of beautiful proportions. Laurels attain to a great size, some fine trees 35 yards in circumference, and 25 feet high. Their red berries and verdant shewing foliage must contrast strikingly and pleasingly with the snows of winter.

From Belfast we proceeded by railway to Dublin, staying a day at an inland town called Ennaghon. The country along this route is well cultivated and looks remarkably well. The potatoes, of which there is a large breadth, looked exceedingly promising, and I heard nothing of the disease. Hay and oats were a good crop; the former was being cut, but the difficulty seemed to be to cure it, in consequence of the damp, cloudy weather. Every expedient was tried to dry it; groups of laborers in the fields shaking out the mown grass with their rakes and fork, but we were told that in some cases, reaping, mowing, and tedding machines were employed, but which were unpopular with the laborers, who threatened them with destruction.—Dublin is indeed a fine city, favourably situated, and surrounded by a wide and beautiful country, interspersed with the splendid residences of the nobility and gentry. The Phoenix Park, immediately adjoining the city, and comprising 1400 statute acres, is a princely domain, well arranged walks and drives, and beautifully adorned with magnificent groups of fortresses, and deer are to be seen by thousands. These fine grounds is the residence of the Lieutenant. My visit to the Royal Botanic Garden at Glasnevin, one of the many beautiful suburbs of Dublin, afforded both instruction and pleasure. The gardens are prettily arranged, with capacious green and hot houses; one of large dimensions is now in course of erection. The specimens of rare exotics are numerous and exceedingly fine, while the palms and other tropical plants have attained a great height, and are generally of beautiful proportions. This garden is mainly supported, I believe, by the Government, and the Curator, Mr. ... is a gentleman of distinguished attainments in all that relates to practical and orna-

mental gardening.—There is another Botanic Garden, in connection with Trinity College, an old and magnificent institution, arranged for the practical teaching of Botany, general and medical, which appears well adapted to its valuable purposes.

Leaving Dublin I crossed the channel to Holyhead in Wales, and from thence by rail to Chester, passing over the Menai Straits, a narrow arm of the sea dividing Anglesea from Carnarvonshire, through the celebrated tubular Bridge, which is a mean affair indeed compared to the later one at Montreal. This is an interesting ride, the highest mountains of Wales being visible in the distance. Passed the ancient cathedral town of Bangor, near which are most extensive slate quarries, and the residence of Col. Pennant of Penryn Castle, who has a herd of short-horns second perhaps to none in the United Kingdom. The gardens and grounds belonging to this princely residence are proportionately beautiful and extensive. Most of this country is only adapted to hill pasture, for small black cattle and heath sheep, the mutton of which is superb. The valleys are generally wide and beautiful, yielding heavy crops of grass and also of roots and grain; but at present in consequence of the ungenial state of the season, the crops in general look but indifferent.—I had an opportunity of staying part of the day in the fine old city of Chester, and of walking around its walls, which are still, notwithstanding their great antiquity, in a good state of preservation. Every street contains houses or buildings that are rare specimens of the old style, extending back many centuries. The soil around here appears in most places to be very rich,—the pastures appearing peculiarly so. It happened to be one of the market days for the sale of horses, the display of strong, heavy animals was very large; a description by no means generally adapted to Canada. From this to London we passed over, for the most part, a very fine country; the crops were better and forwarder, much of the hay having been secured, but, I was told, in rather indifferent order.—The English mode of hay-making involves a great deal of labor, which is conducted upon system; and it is surprising to a stranger how they succeed so well in making comparatively good hay in seasons like the present.

I remained in London eight days, during which time I was wholly taken up in sight-seeing, of which I can only be said to have made a commencement. I have neither time nor ability to describe any thing fully and must leave the magnificent Exhibition to abler hands. Although the Canadian department is small, and for mere display cuts a poor figure compared with some others, yet we have a number of good things, that attract attention, and have received a full share of medals. The one awarded to myself for a collection of agricultural and horticultural grains and seeds, I duly appreciate.

I afterwards proceeded to France, having a strong desire to see the gardens and horticultural operations in the vicinity of Paris. The-

South of England had a beautiful appearance, highly picturesque: consisting of woods and pastures, orchards, hop-gardens, and corn fields, stately mansions, comfortable farm houses and neat cottages, often literally covered with the jessamines, ivy, honeysuckle and rose. In France I found the weather getting better and the crops more forward; in the more immediate vicinity of Paris they looked abundant. The farmers in forward situations were busy with harvest work.—In what little I saw of French agriculture the implements employed were exceedingly primitive and rude; but I am told that great improvement has commenced in these matters, as well as in the breeding of stock in some districts.

Paris is indeed a beautiful city, every thing so clean, and the public buildings and ornamental grounds are extensive and magnificent. I cannot attempt details. I spent a day at Versailles, far too short to afford but the merest glance at the Palace and Royal Gardens. The Parisians have excellent opportunities for relaxation and rational amusement in the city and its environs, which, judging from the vast numbers of people every day crowding the public places, they fully appreciate. The *Jardin des Plantes*, and *Vilmorin's Horticultural Grounds*, are exceedingly interesting and instructive to visitors, displaying great skill and systematic industry.

I shall depart in a few days for Birmingham, Manchester, and Sheffield, and when in the latter place hope to see Chatsworth, and shall afterwards proceed to Scotland. I must now conclude these hasty and very imperfect observations, trusting that I shall pick up information and a number of plants and seeds that may be turned to some good account for Canada, after my return.

Farming Prospects Northwards

EDITOR OF THE AGRICULTURIST.—DEAR SIR, Having just returned from a trip to the foot of Lake Superior, I can give some opinion of the value of the country I have passed through as a farming country, and although to people who have made the same journey my remarks can have little interest, yet to those who have never seen the country they may be acceptable.

From Toronto to Barrie the crops looked exceedingly well, although I had seen and heard many complain that they would be ruined for the want of rain. On this section much of the fall wheat was cut, but still in the field, and on my return day before yesterday all was cut, and some housed. Every farmer that I talked to said much in favor of the fall wheat, especially, and most agreed in thinking the spring grain and roots would be a fair crop.

Looking at the wheat harvest going on I could not but think what a benefactor to this country, especially, was the man who invented reapers. The whole crop of fall wheat within a district can with their assistance be cut and

stacked within one week, without subjecting the Farmer as in old times to the annoyance a delay of cutting with cradles and reaping hook at extravagant charges.

From Barrie to Collingwood the road runs through a most uninteresting country, very wet and flat, chiefly sand and poor timber. With few exceptions, here I saw no fall wheat, indeed no farming worth mentioning. I have frequently traveled the road before and each time formed the same impression. Collingwood much improved, and the long wharf (where the steamers and some vessels are lying) covered with Western and Northern produce, more of it indeed Indian corn Chicago, gives one the idea of a business place, very different from that formed some years ago when visiting the "Hen and Chickens" as it was then called.

From Collingwood to Owen Sound the country is very pretty showing some good looking farms and farm steadings. Here the steamer *Clifton* makes a daily passage each way, whereas only a few years ago the Indian canoe was the only boat. Owen Sound is becoming quite a town, with every evidence of prosperity about it.

From Owen Sound to Shebananing the scenery is very fine. The latter place is a little Indian village, apparently very old, and there are not ten acres of cleared land about the whole establishment. Strange to say the post office here is called Killarney. I suppose please some immigrant or the whim of some traveller. It was originally called by its Indian name, and the post master allowed me to look at the old post office stamps which he has preserved and would be delighted to use again if permission were granted. Few things could display worse taste than the altering of the ancient and aboriginal names of this country, surely as much respect might be paid to the ancient tribes of this beautiful country, as the wishes of old country people who desire to perpetuate old country names. At all events there are new places every day springing into being, where such names may be indulged without injuring the feelings of a race not yet extinct, though fast degenerating and disappearing before the vast strides of Canadian civilization.

From Shebananing to the Sault St. Marie the country is as beautiful to the eye as it is worthless to the settler for farming or timber. I must, however, make some exceptions in favor of the Sault, for I saw at the Hon. Col. Prince who is the judge of the new district of Algona some land as fertile as I ever saw. His plots are eight feet long, and everything else grows with equal luxuriance. The old Colonel or he is better known to many "Shot Accordin" lives in good old English style, extending hospitality with open hands to rich and poor. A settler he has done more than all the rest together, as far as I could see. He has but

good house and out houses, cleared considerable land and introduced a fine lot of good stock, very fine horses, thorough-bred Ayreshires and Galloways in horned cattle, Southdowns, and Leicesters in sheep, and poultry of the most improved kinds in great numbers. Indeed, as a settler his example is well worth following.

The Wellington Miners are doing an extensive business, no doubt at a large profit; but the Bruce Mines appears to be at low water mark and doing very little. In this neighborhood such a thing as cultivating the ground is out of the question even for a hill of potatoes, as it is all rock just opposite the mines. St Joseph's Island affords a few people a living by farming, selling their little produce at the mines, which they reach by boats. It is said of forty thousand acres of this island, that about ten thousand is worth farming, but entirely cut off from all communication but by ice and small boats.

At one place where we called, near Garden River, named Sugar Island, we found a cunning Yankee who makes above a thousand dollar, per annum by the manufacture of raspberry jams which he makes from fruit gathered by the Indians, and which comes to him from all directions for miles around. I was told that some years he makes as much as six tons; besides this, he provides wood, milk, &c., for the boats passing up and down. The farmers about the Sault complain bitterly that no means have been taken by the government to establish a grist mill. I was told that some of them would join together to build one if Government would give the latter privilege, which is about the finest in the world, and unbounded. This boon I can scarcely believe the Government will withhold if properly applied for.

Yours, &c.,

R. L. DENISON.

Dovercourt, Toronto, Aug. 9th, 1862.

Galloway and Angus Cattle—The Provincial Exhibition, &c.

EDITOR OF THE CANADIAN AGRICULTURIST.

SIR—I observe by the prize list that has been issued for the next Provincial Exhibition, that Galloway cattle are classed with Polled Angus Cattle, and I confess I am at a loss to see what inconsistency there is in such an arrangement. They are acknowledged both in Scotland and Canada to be two different breeds, and are exhibited in separate classes. I have before me a Scottish paper containing a prize list of the Highland Agricultural Society of Scotland, (for 1861) in which prizes are offered for Galloway, Polled Angus cattle in separate classes.

It would be quite as reasonable to class Durhams and Herefords together, as they are frequently the same colour and both have horns, in the other case they are generally black hornless.

It is really discouraging to farmers that have imported Galloways, and others who have paid

high prices for them and proved them to be an excellent and valuable breed, admirably adapted to the severe climate of our country, to find that the Board of Agriculture has disregarded their merits so much as to refuse to give them an equal position with the other breeds.

I might breed from large Durham cows and a Galloway bull and show those of their offspring that were black and hornless, as Galloways. This would not be right, although, in regard to points, grades are sometimes superior to thorough bred animals. But, as I have shown before, the principle is unsound, they are different breeds, and I claim that it is but right that they should be recognized by the society as such, and should receive the same privileges that are given to the other breeds. Another consideration is, that it places the judges in an awkward position, some of them may be prejudiced in favor of one breed and some in favor of the other for men are generally partial to the breed that they have been most accustomed to. This is especially the case with old countrymen. I should like to hear the opinions of other breeders of Galloways on the subject. And I hope that the Directors will give it an earnest consideration, and, if possible, make arrangements for having it changed before the fair.

You are doubtless aware that at the late exhibitions the judges have recommended that a register should be established for the pedigrees of Galloways. This matter ought to be attended to soon. As there is not a great number of them in the country yet, it would not be difficult to trace them back to the imported animals; but if it is neglected they will get scattered through the country, and there will be a danger of grades being passed for pure bred. Another thing that I wish to refer to, is, that at the last fair there were too many judges appointed for stock. Now for sheep there were two sets of judges to each class, and where persons are showing in three classes of sheep and two classes of cattle, it would require twenty men to show one man's stock to advantage. I am aware that a number of animals that were entered and would have taken prizes were not shown at all, simply because in the confusion of the hour it was impossible to get them out. Surely one set of judges is sufficient for one class. Yours &c.,

JOHN SNELL.

Chinguacousy, Aug. 5th, 1862.

[In reference to the foregoing remarks we would observe that Galloway and Angus cattle have been exhibited in the same class at our Provincial Shows frequently, in fact on every occasion on which the two breeds have appeared there together. The class was nominally for Galloways, but Angus cattle were entered along with them, and the two breeds were considered so much alike that no objection was taken. Last year, however, for the first time the A.

gus cattle were objected to, as competing with the Galloway, and as they were not nominally included in the class, they had either to be rejected, or special prizes awarded them. In order to avoid any difficulty of the kind this year, the words in the heading of the class are changed so as to include both breeds. We do not see that any injustice is done the Galloways. The only difference is that the prize list now includes by name cattle that were always before admitted by tacit consent. But if it is desirable to make a distinct class for the Angus cattle, no doubt it may be done in time. The number and sub-division of classes is already very considerable. Formerly there were only three classes for cattle, now there are six. But if a further sub-division is desirable, there is no good reason why it should not be arranged. We think our correspondent is in error in regard to the judges for sheep. We are not aware of there having been two sets of judges for any breed of sheep except Leicesters, and that has been the case with them for several years, on account of the large number entered in the class, which rendered it difficult otherwise to get through the work in time. As to the difficulty of exhibitors being always able to bring out all their different kinds of stock to each set of judges at the proper time, we believe our correspondent is quite right, and we shall be glad to see it remedied. We shall be glad to receive communications on such subjects from exhibitors and others interested, because it is chiefly by having the merits of every arrangement freely discussed, and the existence of defects communicated, that the managers of the exhibition can hope to arrive at a knowledge of what is necessary to ensure a tolerable degree of satisfaction in the work of the details.—

Ed.]

Exportation of Short-Horns from America to England.

The importation of improved, copies from England has long been deemed a desideratum among American breeders, and during the last fifty years many accessions have been made to our stock from English breeds. Such has been the attention bestowed upon the improvement of our stock, that we are at length enabled to reciprocate by exporting to England, for the use of English breeders, animals which have been brought to a high point of excellence by some of our distinguished breeders.

It is stated that Mr. Samuel Thorn, of Dutchess county, widely known as one of the most successful breeders of Short-horns in the United States, has made two shipments from his herd, which have resulted very satisfactorily, the animals selling at high prices. Mr. James O. Sheldon, of Geneva, who though entering upon the business at a later day, has nevertheless taken rank among our most celebrated breeders, has sent out several animals. One of these, a two years old bull, was sold to the Hon. Col. Pennant M. P., of Penryhn Castle, Bangor, for 600 guineas, or over \$3000! A yearling bull sold for 400 guineas. The Duke of Devonshire purchased another at 400 guineas.

We scarcely know what higher honors could be achieved by American breeders than to be able to compete in England with the best animals bred there, and at prices quite equal to those paid for the choicest stock hitherto brought from the old country.

These facts do not at all prove that our importations of stock from England should cease. On the contrary, we do not doubt that mutual benefits will accrue hereafter from an interchange of this character. It must not, of course be understood that we are prepared to furnish any very large number of animals such as would be sought after by the English breeders; but the fact that we have a few to spare proves the important advance made in this country in the improvement of our farm stock.

Rocky Mountain Silk Weed.

We gave some particulars relating to this plant in a recent number of the journal, page 350. We are indebted for the following additional correspondence to the "Anna of the Botanical Society of Canada," published at Kingston.

COMMUNICATION FROM HIS EXCELLENCY LORD MONCK, ON A FIBRE PLANT SUITED TO THE CLIMATE OF CANADA.

I. Letter from Denis Godley, Esq., Secretary to His Excellency Lord Monck, Governor General of Canada, to Professor Lawson, Secretary of the Botanical Society of Canada.

Quebec, May 16, 1862.

Sir,—I am directed by the Governor General to transmit to you herewith a copy of letter which was addressed to Lord Lyons Doctor Hart, and which Lord Lyons forwarded to His Excellency.

Some of the seeds of the plant to which Doctor Hart alludes, are also enclosed.

His Excellency thinks it likely that the Botanical Society of Canada, of which you are Secretary, may be interested in this matter, and will cause the seeds to be sown.

a view to testing the value of the plant bearing them.

I have the honour to be, Sir,
Your obedient Servant,

DENIS GODLEY,
Governor's Sec'y.

GEORGE LAWSON, Esq.,
&c., &c., &c.

II. Letter from Frederic W. Hart, M. D.,
St. Louis, to Lord Lyons.

St. Louis May, 1st, 1862.

My Lord,—Feeling that Her Majesty's Government is deeply interested in the cultivation of Cotton in the British Provinces, and having, during a sojourn in the Rocky Mountains these last three years, discovered a plant that excels cotton in length of fibre or staple, firmer in texture, and fine as silk,—I determined to plant a few seeds taken from the wild, and last year found to my satisfaction, that the bolls or bolls, which in the wild plant are about the size of hens eggs, under culture grew to the size of a turkey or goose egg, and bore twice the quantity of silk that the Mississippi plant bears of cotton.

I gathered four pounds of silk from the plant, and saved a quantity for seed, some of which I herewith forward you.

On my return to the U. S., I was robbed by the Indian Kiowas on the plains. They stole my silk but left my seed.

The silk weed of the Rocky Mountains grows on the creek bottoms, pushes out in June, and ripens in September, October, and November.

It grows about five feet high, wild. It does not branch in the wild state, but it branches under cultivation and bears full and large bolls or pods.

The seed is all on the outside of the silk, and slips off at a touch, leaving the most beautiful silk I ever saw.

It can be cultivated on the St. Lawrence bottoms, Canada, and in Upper Canada, the whole country is suitable for its cultivation, the climate being similar, and even warmer than that of the localities where I discovered the plant.

As an old Cotton Planter of Mississippi, having raised ten crops in Yazoo, in Mississippi, my brands invariably commanding the highest market price, I feel the fullest confidence in recommending this seed for cultivation in the Canadas, and to the attention of Her Majesty's Government.

Should your Lordship require further information on this subject, I shall be happy to furnish this correspondence.

I remain, &c.,

(Signed), FREDERIC W. HART, M.D.
Lord Lyons, &c.; &c.

III. Letter from Professor Lawson, Secretary of the Botanical Society of Canada, to Denis Godley, Esq., Secretary to His Excellency Lord Monck, Governor General.

KINGSTON, 22nd May, 1862.

SIR,—I had the honor to receive your letter of the 16th May, with accompanying copy of letter addressed to Lord Lyons by Dr. Hart of St. Louis. And I have to request that you will convey to His Excellency Lord Monck, the best thanks of the Members of the Botanical Society for the information which he has done them the honor to communicate, and for the accompanying seeds.

I have also to state, that in accordance with His Excellency's wishes, the seeds have been sown in the Botanic Garden here, with a view to testing the value of the plant as a source of fibre. The crop will be watched with care, and duly reported upon to His Excellency, so soon as the results can be obtained.

In the meantime it may be desirable to indicate briefly the probable character of the plant, and what likelihood there is of its becoming useful,

An examination of the seeds shows Dr. Hart's fibre plant to be an *Asclepias*, of which genus there are many species, inhabiting different parts of the American Continent, all producing a greater or less amount of fibrous material, usually of great beauty and lustre; and fibre-yielding plants of allied genera occur in India and elsewhere.

The beautiful silky material contained in the seed pods of *Asclepiads*, has necessarily attracted attention in this as in other countries, but, as attempts to spin it failed, its use in the arts has hitherto been confined to the stuffing of pillows and beds, and such-like purposes, among the settlers. There is every reason to believe, however, that the silk cotton of our *Asclepiads* may now be economized for spinning purposes, and therefore a greater interest is to be attached to Dr. Hart's plant at the present time than would have been necessary a few years ago.

The results of experiments that have been made in India, and by manufacturers in England, with the silk cotton obtained from an allied plant, the *Calotropis gigantea*, or Mudar Plant of Bengal, (which is essentially an *Asclepias*), offer inducement to attempt the raising of *Asclepias* fibres in Canada. The silk-cotton of the Mudar Plant is now becoming an article of export from India for the manufacture of a light substitute for flannel, and has been employed by Messrs. Thresher & Glenine, of London, for this and other manufactures, as appears from the remarks, of Dr. Alexander Hunter made at a meeting of the Madras Agri-Horticultural Society on 15th

January last. The Mudar material works well with either silk or cotton, and is now known in commerce as Mudar Silk Cotton. There is no reason whatever why the silk-cotton of Dr. Hart's plant, and the silk-cotton of our indigenous Canadian Asclepiads, should not prove as applicable to the purposes of the manufacturer as the silk-cotton of India.

It is desirable to observe that the silk-cotton found in the pod of *Asclepias* represents only half its riches as a fibre plant. A beautiful, and apparently very valuable, fibre is also obtained from the stem, which I am inclined to regard as of even greater importance than the silk-cotton itself; it is of quite a different character from that found in the pods, being not cottony nor so glossy, but of much greater strength, resembling in fact not cotton but flax. One of our Canadian species, *Asclepias incarnata*, has been experimentally cultivated with a view to the production of fibre, and the results of the experiments have been given by Judge Logie in the second part of the Botanical Society's Annals, page 87. Specimens of the fibre were exhibited by Mr. Freed, to the Hamilton Association, in 1860, and the Report of Mr. McMicking, a paper manufacturer, is given in Judge Logie's paper, shewing the fibre to be strong, flexible, silky, of a beautiful high color, brilliant lustre, and easily bleached, in fact to good for paper making, but of undoubted utility and value as a fibre. This species is still under experiment in the Botanic Garden here.

The success that has attended the use of the Mudar flax in India, (as well as the Mudar cotton,) seems also to hold out a strong inducement to the use of *Asclepias* flax in this country. The Mudar flax, from its tenacity, is called "Bowstring Hemp" in India, and is one of the strongest fibres known. Dr. Hunter, who has carefully studied the vegetable fibres of India for many years, states that it possesses most of the qualities of flax, and can be worked with the same machinery, as the fibre splits to almost any degree of fineness with the hackle, and bears dressing and beating well. For many years it was employed by the wealthy natives in India for making strong cloths, cambries and lawns, worn by the Rajahs, and is still employed for making fishing lines, nets, gins, bow-strings and tiger-traps, on account of its strength. It does not rot readily in water, as the resinous milky juice of the plant seems to preserve it.

Other Indian Asclepiads likewise yield fibre of great strength, which seems to be partly due to the presence in the plants' juice of an organic product similar in physical properties to caoutchouc or gutta percha.

Judging from the observations and experiments of Dr. Hart, on the Silk Cotton Plant

found by him on the rocky mountains, and from the results of experiments that have been made by others on allied species—on *Asclepias* flax in Canada, and on *Asclepias* cotton and flax in India—it is not unlikely that both *Asclepias* flax and *Asclepias* cotton may ultimately become important materials of export from Canada. The Asclepiads grow luxuriantly in wild state throughout Canada, especially in the western parts, and being strong-growing perennial plants, they are capable of easy cultivation, and would require not a tithe of the field-labour necessary for the growth of common flax.

Permit me further to mention that in addition to the seeds sown in the Botanical Garden, some have also been sent to members of the Botanical Society in other parts of Canada, for trial, and copies of your communication, with Dr. Hart's letter, have been furnished to the members, with a view to enquiry, and to observation and experiment on Dr. Hart's *Asclepias*, as well as on the indigenous species of our country.

I have the honor to be, Sir,

Your most obedient humble servant,

GEORGE LAWSON, Ph D., LL.D.,

Sec. to the Botanical Society of Canada

DENIS GODLEY, Esq.,

Secretary to His Excellency Lord Monck,
Governor General of Canada.

List of samples accompanying the above Letter.

1. Mudar Silk Cotton, from *Calotropis gigantea*. From Mr. Jaffrey, of the Agricultural Garden, Madras, India.

2. Canadian Silk Cotton, from *Asclepias Cornuti*. Kingston, C. W.

3. Canadian Silk Cotton—another kind from *Asclepias incarnata*. Hamilton, C. W. Judge Logie.

4. *Asclepias* Flax—Canadian—in the rough state, unshackled and unbleached, from seed of *Asclepias incarnata*, the same plant which yields Cotton No. 3. Hamilton, C. W. Judge Logie.

Written for the Canadian Agriculturist.

Hints for an Agricultural Report of a Township of Hamilton.

Continued from page 424.

Of root crops the most important is the potato. This crop has become, especially on the heavy damp soils, a very uncertain one; it was first attacked with the still mysterious disease here in 1843, and since then it has never been entirely free from it, though some years it is much more so than others; on the high, dry,

light soils in the township the potato is grown to some extent for sale, but on all heavy soils only for home use. In nothing is there a greater number of varieties than in the potato, every one almost has their favorite sorts—red, white, and blue kinds have all found advocates; we have found some of the early kinds and early planted to do best, they seem less subject to disease, and get ripe before the Fall rains set in.

The next root of importance is the Swedish turnip; about half as many acres are sown with them as are planted with potatoes; their cultivation has greatly increased. When we first knew the township, we doubt if there was a single acre grown in the whole township, (putting them all together), now almost every farmer grows less or more of them, some to the extent of ten acres. They are all but indispensable for keeping stock in proper condition during our long cold winters. The fly is the great enemy the turnip grower has to contend with. They are sometimes damaged by lice, grasshoppers, and mildew.

The cultivation of both Carrots and Mangold-wurzels are on the increase, and seem to be grown to nearly the same extent; they are rather a more certain crop than the Swedish turnip, seldom attacked by fly, and (especially the carrots) stand our summer droughts better. Of carrots, the orange, red, and white varieties are all grown, but the white is most common. It attains the largest size. Of mangolds, the yellow globe, and long red are the favorite kinds though other varieties are grown. Likewise sugar-beets and parsnips to a small extent. The same may be said of beans, of which it appears there were seven acres grown in the township in 1860.

There is sufficient hay grown for home use, and to supply the towns in the neighborhood. There is little timothy grown for seed, that being mostly purchased by our farmers, but clover seed is grown to some extent, and in favorable seasons does well; we have seen crops of clover seed in all quantities, from seven pounds to upwards of seven bushels per acre, and sold at all prices from three and-a-half to ten dollars per bushel.

So much for our crops. The weeds that are most troublesome to us are the Canada thistle, the Charlock, and couch grass which are all prevalent in some parts of the township, and are all hard to extirpate once they have got a foothold.

Draining.—Much of the land in the front parts of the township would require thorough draining, and would be greatly improved by it. Several of our farmers have tried it less or more, the materials used in filling, were at first stone or wood or hollow bricks, now, tile is used; it was made in an adjoining township. Mr. J. Wade has drained to some extent, and finds it profitable. Mr. Hume laid about ten thousand tiles last year, besides what drains he had formerly

made. Mr. A. Crawford has sunk nearly three hundred pounds in drains, using first, hollow bricks, and now tiles. Mr. Fowler thoroughly drained one of his fields some time ago, which made a marked improvement on it. Mr. S. Campbell, when in this township, drained extensively, using mostly wood for filling, tiles were not to be had then. Mr. Wm. Roddick, Mr. Alcorn, and many others have drained to some extent, and we believe all who have tried it have found it profitable, and are encouraged to proceed and enlarge their operations; much however, is still needed, indeed *thorough draining* can hardly be said to be fairly begun yet.

Fences.—The great majority of our fences are the old, useful, though certainly not elegant worm fences which are general all over the Province, but many are now fencing largely with posts and boards, or post and pickets, and posts and poles; our main roads are mostly lined with such fences, there are likewise some good stone fences in the parts of the township where stones are plentiful.

Thorn hedges have been tried but have not proved very successful. Mr. Geo Roddick, Mr. Carr, Mr. Wade and Mr. John Wallace have all tried the English hawthorn, but none of their hedges are very thriving. Mr. Roddick's is the most thrifty of any we see, and it is hardly a good fence; some seasons the thorn plants are attacked and the leaves eaten up by a caterpillar, at other times by a small slug similar to the slug that sometimes attacks our cherry trees, and sometimes the mice gnaw the bark during winter, thus completely killing them in places, so that we believe there is not yet a thorn hedge in the township that can be called a good fence. A live fence is very desirable, a plant that would for this purpose prove useful and ornamental is much wanted. Would not some of our native thorn if properly trained answer? We think a native plant indispensable. Willow hedges are sometimes tried, and the present year Mr. Wade has planted out a white cedar hedge.

Having thus gone over stock, crops, &c &c., we would note briefly our Implements. On the first acquaintance with the township, the farmer that had a Waggon, Plough, Drag, or pair of Harrows, Fanning-mill, Cradle, Scythe, pitch and dung-fork, and a few hoes and rakes had a complete set of farm implements; now many of them have Reaping, Mowing and Thrashing machines, Clover-cleaners, Seed-drills, straw an root cutters, Cultivators, Horse-hoes, Horse rakes, Rollers, Subsoil-ploughs, and many others. so that the value of farming implements in the township is set down by the late census at nearly ninety thousand dollars, and we think it rather under, than over stated.

It would be interesting to know who first introduced our various improved implements, but as we do not know this, we may briefly state what we have heard on the subject. Of course, on the first settlement of the township

such implements were not needed, nor could be used; it is only after the land has been cleared that many of them could be of any use. Of threshing machines, we have heard that the first travelling one was brought in here from the State of New York, in 1832, and we think there was only one travelling here on the following year, after that they became common, many of our more enterprising farmers procuring them; of course they were inferior to the kinds now in use, being all the old open kind that sent out grain and straw all mixed together. The first of Pitt's separators was brought in by Mr. J. Livingstone, formerly a resident of this township, about 1841 or 42. This kind with various improvements has now mostly superseded the use of all other kinds; they are mostly driven by horse-power, a few by water, and now this season, Mr. Alcorn introduced one driven by a travelling steam engine, it has not been sufficiently tested to prove its superiority over horse-power.

Reaping Machines.—The first reaping machine brought into this township (we believe the very first ever brought into the Province) was a Hussey's Reaper, brought for the harvest of 1843, by Mr. Daniel McKeys. It proving successful, a second of the same kind was brought in the following year by Mr. Wade. They both proved good useful machines for that time, but great improvements have been made on them since then. In 1847 several of the McCormick reapers were brought in, but they hardly answered expectations, performing far inferior to Hussey's. The manufacture of reaping machines on a pattern similar to McCormick's was begun by Helm & Son, in Cobourg, about 1848, and their machines were soon spread over the neighbourhood. Since then many different kinds have been tried with more or less success, many of them being made in Port Hope and Newcastle, besides imported ones. The most common here are Hussey's, Manny's, Burrell's, and self-rakers; they have proved a great boon to the farmer, lightening his labour in the most trying season of the year. Mowing-machines were introduced soon after the reapers, numbers having been made both in Cobourg and Port Hope, besides those brought from a distance; of this class there is not so much variety used—Ketchum's patent being the most common though some few other kinds are used.

The revolving Hay-rake was first introduced here about 1849, and proved a very useful labor-saving implement, indeed, we know of none among our various improved implements that saves so much labour at so small a cost, as it; they are now to be found in the hands of almost every farmer, and are used not only for raking stubble, but also to some extent for pulling peas; the kind mostly used is the wooden revolving rake. An iron spring tooth kind was brought in shortly after the wooden ones, but has not been found so useful, and is now seldom used, and if used, only for raking stubble. There is one of "Delano's" Independent Horse rakes used.—

This rake is mounted on wheels, the driver riding on it, and with his foot causing it to drop the hay; it answers very well, but whether it will supersede the revolving horse-rake remains to be seen.

Cultivators of various kinds for using on land that has been ploughed in the Fall, or on summer-fallow, and likewise, drills, cultivators or horse-hoes, for working between the rows of corn and root crops are in general use, many of them being made in the township.

Michigan Sod and Sub soil ploughs.—Sub soil ploughs, Seed-drills, Rollers, and indeed we may say, almost all improved implements are used in the township. In conclusion, we would notice briefly our Agricultural Societies, forming part of the County of Northumberland. The farmers of this township have always taken a prominent part in the management of the County Society. In looking over the transactions of the first Society ever formed in the county, dating as far back as 1828, we find six or seven names from this township on the committee; and in the present County Society, formed in 1837, our farmers have always taken an active part; it was not till 1847 that a township Agricultural Society was formed. In that year they gave premiums for root crops in the field, (a plan that has ever since been followed) their funds not admitting of a general Show. The Provincial Show being held in Cobourg in 1846, all the funds were that year given to it. The first Show of the Township Society was held at the Court House, on the 31st October, 1849; a show has been held every year since, except in 1856 when the Provincial Exhibition was again held in Cobourg.

Our shows have gradually increased in size and interest, until now there are over 800 entries, and a prize list of upwards of \$500. The Society numbers about 200 members, each of them receives a copy of the *Canadian Agriculturist*, published twice a month. In connection with the Agricultural Society, we would notice the Farmers' Club that was kept up for several years in the township. In looking over the pages of the *Newcastle Farmer* (which, by the way, was published in Cobourg, and edited by a farmer of our township, the late Thos. Page, Esq.) we find that the first meeting of the Club was held at the Town Hall, Cobourg, on the first Saturday of July, 1846, when the subject of "the preservation and application of manure," was fully discussed. Mr. J. Wade was Chairman, and Mr. W. Creighton, Secretary, to the meeting, and Messrs. H. Ruttan, M. Jellet, Eyre, and Philips, appear from the Report to have been the chief speakers; though several other meetings of this club were held, we have no further report of their proceedings. After a time this club seems to have fallen through, but it was revived, or rather a new one started, about 1853 principally through the exertions of Messrs. Hume, Page, and Wade, and this was well kept up for several years, its discussions being most

published in the *Cobourg Star*, and frequently copied into the *Canadian Agriculturist* and other papers. Many papers containing a vast amount of valuable information were read before the Club, by Mr. R. Hume, Messrs. Page, J. Wade, P. R. Wright, J. Sutherland, G. Black, and others. We would state that the reports of this club, which were generally acknowledged as correct, were drawn up by a common working farmer,—we mention this for the encouragement of other clubs, who are often deterred from getting out reports of their proceedings from having no reporter.

In observing the various casualties to which our crops are subject, which no knowledge can foresee nor human skill prevent, we are often impressed with the thought, that no class of the community are so daily, so visibly dependent on the hand of God as the cultivators of the soil. A mysterious blight falls upon the potato, the plant withereth; the worm consumes our crops in their early origin; a tiny fly attacks our wheat when just heading out; the rust arrests it when nearly ripe; storms of rain and thunder lay the most promising of our crops low; the promised harvest of our fields droop beneath the corrosive influences of minute agencies; even after the crops are cut, a series of bad weather disappoints the hopes of the year—the just expectations of the farmer. Daily therefore are we conscious of the need of God's superintending care, but while we feel this dependence, still we are encouraged to apply our industry and skill to improve the gifts the beneficence of Providence bestows; and in a most remarkable degree we are enabled to reproduce those gifts—as the promised seed time and harvest never fail—so that as there have ever been, so there will be to the end of time "Seed to sow and bread to eat."

W. R.

Cobourg, June 18th, 1862.

TABLE No. 1.

Premiums awarded to the Township of Hamilton at the Provincial Exhibitions, held at:

		Classes.					Extra.	Total.
		1	2	3	4	5		
Toronto	1846	2	1	2				5
Hamilton	1847	1	2					3
Cobourg	1848	33	30	18	1		2	84
Kingston	1849	16	3	3				22
Niagara	1850	6	6	4				16
Brockville	1851	12	15	7				34
Toronto	1852	7	8	7				22
Hamilton	1853	5	5	2	1			13
London	1854	7	3	2				12
Cobourg	1855	44	36	36	10		10	136
Kingston	1856	14	14	11	2		3	44
Windsor	1857	10	9	3	1			23
Toronto	1858	6	14	10	3		6	39
Kingston	1859	13	13	4	4			34
Hamilton	1860	12	3	7	7	1		30
London	1861	9	3					12
Total.		197	165	116	29	1	22	530

TABLE No. 2.

Agricultural productions of the Township of Hamilton for 1860, from the census returns of 1861.

	No. acres	Total Bush ^l	Average per acre	Estimated value at per bushel.	Total.
Fall Wheat	2107	32,831	15½	\$1 20	\$39,397 00
Spring Wheat	2400	152,658	18½	1.00	152,658 00
Barley	307	7,796	26	0.60	4,677 60
Rye	370	2,165	12½	0.50	1,048 00
Peas	432	55,249	19½	0.55	46,558 95
Oats	3076	101,093	32½	0.25	25,273 13
Buckwheat	62	1,771	21½	0.35	6,019 55
Indian Corn	451	11,766	26	0.51	5,853 00
Potatoes	650	72,105	85	0.20	14,421 00
Turnips	357	146,071	377½	0.12½	12,256 70
Mangoldwurzel	47	25,594	551	0.12½	2,236 60
Carrots		62,874		0.12½	8,609 20
Beans		155		0.75	0,116 25
Grass Seed		219		3.00	0,657 00
Hay	tons	4544		8.00	36,355 00
Hops	lbs.	432		0.25	0,108 00
Flax*	do	14,892			
Wool	do	28,961		0.25	7,240 25
Sugar	do	2,892		0.10	0,289 20
Butter	do	159,182		0.12½	19,258 25
Cheese	do	32,201		0.07	2,254 07
Fulled cloth	yards	1,629		1.00	1,629 00
Fannel	do	5,033		0.50	2,516 50
Linnen	do	17		0.60	0,007 80
Glider	gal	5,255		0.10	0,525 50
Beef	br ^l	492		10.00	9,950 00
Pork	do	2,220		10.00	22,200 00

Produce of Gardens and Orchard at 10 per cent on the value	14,834 00
Estimated value of Horses sold at 10 per cent on the value	12,096 10
Estimated value of Live Stock sold at 10 per cent on the value	26,468 60
	\$478,064 65

*There seems to be some mistake about the Flax, as the Flax and Hemp of the whole County are only 17,868 lbs.—We have not estimated its value.

W. R.

TABLE No. 3.

Horses over 3 year old	14.32, valued at	\$120,096
Total value of Live Stock		264,086
Total value of farm Implements		87,274
Total Pleasure Carriages 55 ² , valued		24,671
Total value of Farms		2,254,929
Total		\$2,751,036

Number of acres under cultivation \$40,891

The Agricultural Census.

From *Toronto Globe*.

A blue-book has been out for some time, giving for Upper Canada the agricultural statistics collected at the taking of the census in January, 1861 Those collected for Lower Canada are still unpublished. A few of that facts, however, ascertained with reference to that section of the Province, were supplied by Mr. Galt in his budget speech of last session. These we shall repeat, before proceeding to the results of the Agricultural census of Upper Canada, in order that as complete a view as possible may be pre-

sented of the progress in agriculture made by the entire Province. The comparison of course is between the years 1860 and 1851, the figures given to the enumerators as to the average under cultivation, the amount of produce raised, &c., being in each case for the year previous to that in which the census was actually taken.

In Lower Canada, then, according to Mr. Galt, the lands held were 10,223,959 acres in 1860, against 8,113,408 acres in 1851—an increase of 2,110,551 acres, equivalent to more than 20,000 lots of one hundred acres each. The acres under cultivation were 4,678,900 in 1860, against 3,605,167 in 1851—somewhat over a million of acres of previously wild lands having been brought under cultivation during the intervening period of nine years. The cash value of farms in Lower Canada in 1860, was \$168,432,546, and of live stock, \$21,572,124. The bushels of wheat raised were 3,073,943 in 1851, and 2,563,114 in 1860—a decrease of 510,829 bushels. Of other grains, (barley, rye, peas, oats, buckwheat, and Indian corn,) the number of bushels raised was 12,147,070 in 1851, and 23,534,903 in 1860—an increase of 11,387,633 bushels. Of flax, the product in 1860 was 976,495 lbs., against 145,755 lbs. in 1851.

The blue-book to which we have referred, enables us to enter more in detail with regard to the agricultural progress which has been made by Upper Canada. The number of occupiers of lands in Upper Canada was 131,983 in 1860, and 99,906 in 1851—an increase of 32,077, or a little over 32 per cent. This was considerably less than the percentage of the increase of the whole population, which was 46 $\frac{3}{4}$. It is a singular circumstance that the number of very small landholders diminished considerably between 1851 and 1860. In the former year there were 12,417 occupiers of 20 acres and under, and to the latter year there were but 7,099 of this class. The number who held between 20 and 50 acres was 19,143 in 1851, and 26,630 in 1860; the number who held from 50 to 100 acres increased from 47,427 to 64,891; the number who held from 100 to 200 acres increased from 17,515 to 28,336; and the number who held above 200 acres increased from 3,404 to 5,027. The whole of the lands held in Upper Canada were 13,354,907 acres in 1860, against 9,825,915 in 1851—an increase of 3,528,992 acres, or nearly double the corresponding increase in Lower Canada. The following are the counties in which the greatest increase in the quantities of land held has taken place. In Kent the increase was from 216,422 acres to 315,222; in Lambton, from 167,969 to 291,803; in Victoria, from 160,190 to 292,765; in Simcoe, from 330,103 to 466,694; in Wellington, from 358,949 to 532,671; in Huron, from 284,037 to 632,324, an increase of 348,287 acres; in Grey, from 217,319 to 585,697, an increase of 368,378 acres; and in Bruce from

35,643 to 477,882, an increase of not less than 442,239 acres. The county in which the smallest quantity of land is held is Russell, which has also the smallest population of any county in Upper Canada—its population being 6,824 and its occupied acreage, 72,715. The county in which the largest quantity of land is held is Huron, which has also the largest population of any county in Upper Canada (excepting York)—its population being 51,954, and its occupied acreage 632,324.

A point of greater importance than the increase in the amount of lands held, is the increase of lands brought under cultivation. In this respect Canada West very far outstripped Canada East. The acres under cultivation in Upper Canada in 1851 amounted to 3,702,788; in 1860, they amounted to 6,051,619—an increase of 2,368,831, or 43 $\frac{1}{2}$ per cent. In Lower Canada the increase of lands under cultivation was below 30 per cent. In 1851 the quantity of cultivated land in Upper Canada exceeded the quantity of cultivated land in Lower Canada by only 97,621 acres; in 1860 the excess in favour of Upper Canada was no less than 1,372,719 acres. It will be observed, too, that the work of bringing land under cultivation went on in Upper Canada in a much more rapid ratio than even the increase of population, the proportion being as 63 $\frac{1}{2}$ to 46 $\frac{3}{4}$ —the natural inference from this being that Upper Canada is a more decidedly agricultural country now, in proportion to its population, than it was ten years ago. More than one-half of the total increase of land brought into cultivation, found in the following thirteen counties, which we have arranged in the order to which they are entitled by the amount of industry in felling the forest that has been put forth within the respective limits. In Huron the acreage under cultivation was 54,976 in 1851 and 215,325 in 1860—an increase of 160,349 acres. In Wellington the acreage under cultivation was 119,081 in 1851 and 232,346 in 1860—an increase of 113,265 acres. In Perth, the acreage under cultivation was 58,116 in 1851 and 166,419 in 1860—an increase of 108,303. In Grey, the acreage under cultivation was 30,499 in 1851 and 133,885 in 1860—an increase of 103,386. In Oxford, the increase was 96,826 acres; Middlesex, 96,725; in Simcoe, 93,120; Bruce, 86,968; in York, 71,577; in Hastings, 69,032; in Ontario, 61,471; in Lanark, 60,364 and in Welland, 60,064. The following are the five counties in which the increase of cultivated lands was smallest. In Prince Edward, the increase was 29,704; in Lincoln, 26,674; Halton, 21,713; in Prescott, 21,014; and Russell, 14,687. In each of the following counties the number of acres under cultivated acreage was 292,213; in Middlesex, 233,672; in Wellington, 232,346; in Oxford, 231,058; in Huron, 215,325; in North-

land, 206,900; in Ontario, 205,353; in
 anham, 205,107; and in Simcoe, 202,312.
 Each of the following nine counties the culti-
 vated acreage was under 100,000. In Glen-
 ary, it was 99,880; in Lambton, 96,092; in
 ree, 89,230; in Renfrew, 85,461; in Stor-
 ent, 80,071; in Essex, 77,105; in Dundas,
 77,000; in Prescott, 53,934; and in Russell,
 51,712.

Of the 6,051,619 acres under cultivation in
 per Canada, 4,101,902 were under crops,
 500,845 under pasturage, and 88,869 in gardens
 d orchards. Of cultivated lands, therefore,
 Upper Canada, the average proportion under
 op was 67 $\frac{3}{4}$ per cent, and that in pasture
 $\frac{1}{4}$ per cent. In 1851, the proportion was
 $\frac{1}{4}$ per cent under crop, and 36 $\frac{3}{4}$ per cent in
 store. In 1860, the proportion of lands under
 p to the whole quantity under cultivation
 highest in the following eight counties: In
 is the proportion was 80 per cent; in Brant
 $\frac{1}{2}$; in Bruce, 76 $\frac{1}{2}$; in Grey, 76; in Sim-
 75 $\frac{1}{2}$; in Peel, 75 $\frac{1}{2}$; in Perth, 74 $\frac{1}{2}$; and
 Welland, 73 $\frac{1}{2}$. The proportion of lands in
 ture to the whole quantity under cultivation
 highest in the following five counties: In
 zgary, it was 41 per cent; in Grenville, 41;
 Lanark, 42 $\frac{1}{2}$; in Elgin, 44 $\frac{1}{2}$; and in Stor-
 47. The following six counties occupied
 first rank, with reference to the attention
 d to gardens and orchards. In Hastings,
 50 acres were occupied in this way; in
 5,004; in Middlesex, 4,741; in Oxford,
 39; in Norfolk, 4,387; and in Welland,
 75. The six counties in which least atten-

was paid to these matters were Bruce,
 ch had 383 acres occupied with gardens and
 bards; Glengary, which had 295; Carleton,
 ch had 285; Prescott, which had 213;
 few, which had 104; and Russell, which
 had 64 acres so occupied. Column 17 of
 abstract gives the quantity of land held by
 eople, not being farmers. This, we sup-
 is in addition to the figures already stated,
 for the whole of Upper Canada, makes a
 of 182,552 acres.

f the whole 13,354,907 acres held in Upper
 ea, upwards of one-half, or 7,303,288
 e, were in 1860 still uncultivated and re-
 ad as "wood and wild lands." An exam-
 ion of the column, showing the location of
 lands, owned by private parties, but not
 cultivated, will give some idea of the locali-
 in which the greatest accessions to the pre-
 population of Upper Canada will be found,
 the next periodical census is taken. The
 counties, in which there are the largest
 ities of granted lands still to be cultivated
 e follows: In Grey there are 451,812 acres
 ch lands; in Huron, 416,999; in Bruce,
 652; in Wellington, 300,325; in Middle-
 281,681; in Renfrew, 275,186; in Lanark,
 191; and in Simcoe, 264,382. The coun-
 which there is now the smallest quantity

of wild lands to be brought under cultivation,
 are as follows: In Wentworth, there are 85,625
 acres; in Welland, 82,428; in Prince Edward,
 77,215; in Brant, 75,517; in Halton, 73,518;
 in Lincoln, 68,451, and in Russell, 52,003.

Steam Cultivation—The three Systems.'

To the Editor of the Mark Lane Express.

SIR,—To all interested in steam cultivation—
 and what farmer is not?—it was a pleasant sight
 at Farningham to see the land smashed to piec-
 es or laid over in deep even furrows without the
 treading of a horses hoof: to see the most per-
 fect cultivation rapidly performed by the sole
 agency of steam. It was most gratifying to
 walk from field to field, admiring the skillful
 adaptations and masterly workmanship display-
 ed by our enterprising English implement
 makers.

Everyone who visited the trial-fields must
 have felt that steam cultivation has assumed a
 much more practical form since last year; and
 also, to some extent, a more perplexing one.
 The question no longer lies merely between
 Fowler's plan and Smith's; other men are in
 the field, and most of these have a variety in
 their several systems: so that it is no easy mat-
 ter, after determining to join the ranks of steam
 cultivators, to make up the mind in which com-
 pany to enlist.

That each system represented at Farningham
 is capable of executing first-rate work will not
 be doubted by any who examined the land
 operated upon; but it should be carefully borne
 in mind, that the character of the work done
 depends on the implement rather than on the
 system. I name this particularly, because the
 natural tendency of a farmer's mind is to judge
 by the results on the land, of which he feels him-
 self perfectly competent to form an opinion.

I consider that the first thing we have to do
 is, to determine which system is best adapted to
 our own farm, and then to decide on the most
 appropriate implements. Let us consider this
 more particularly.

All the systems which have come prominently
 forward may be included under one or other of
 the following heads:

- 1st—Traction System,
- 2nd—Direct System,
- 3rd—Round-about System.

The Traction system, in which the engine tra-
 verses precisely the same ground as the imple-
 ment, was not represented as connected with
 cultivation; it was—where it ought to be—
 working, in exceptional cases, on the hard road.

The Direct System, of which Fowler may be
 regarded as the champion, and in which the en-
 gine and anchor travel along opposite headlands,
 was well represented, and presents many advan-
 tages: in economy of power, diminution of wear-

in rope, and economy of manual labour; and, for tolerably level tracts of large open fields, must, I conceive, at present displace all competitors. But farms consisting entirely of large well-arranged open fields are the exception; and when we consider the irregularities of surface on the majority of farms, the obstacles offered by small enclosures, irregular quality of land, wear and tear in moving machinery, danger of priming, &c., from the frequent variations in the level of the engine boiler, absorption of power in climbing hills, difficulty of traversing soft or boggy land, complexity of the machinery placed in the hands of farm labourers, and last, but not least, the first cost of the apparatus, we shall see that the Direct System, while possessing many advantages, labours in very many farms under insuperable disadvantages. Fowler, in his disc anchor windlass, and ingenious adaptation to the ordinary portable engine, has met some of these objections, by diminishing the cost and the weight. Coleman's mode of working with a pair of implements is included in this system, and exhibits a simple method of avoiding the necessity for a heavy anchorage on the headland opposite to the engine; but the fact of its requiring a duplicate of all implements, employed is no slight objection, and the absence of any arrangement for coiling the rope, the small size of the drums, and the difficulty in the way of efficient portering must add fearfully to one of the most serious items in steam cultivation—viz, the wear of the rope; while the general objections to the Direct System apply to it equally with Fowler's.

The roundabout system, in which a portable engine is stationary and the rope laid round the field, was well represented by Smith, Howard, Fowler, and others, each employing a different kind of windlass, and all, as well as the implements deserving especial attention. For simplicity and general adaption no system can at all compare with this; the entire apparatus being comparatively inexpensive, and so understood by a labourer of ordinary intelligence. The engine employed is similar to that used for thrashing, and there are few fields in which it is not easy to find some spot well adapted for placing an engine and windlass, and conveniently accessible for the water-cart; while in many cases, the expense of water-carting may be avoided, by the formation of a tank or hole to retain or reach the water. The remainder of the apparatus, such as anchors, snatchblocks, &c., is simple, effective, portable, and little liable to get out of order; add to this the small amount of first outlay required, and the advantages of the roundabout system can hardly fail of having great weight with the practical farmer in making his decision; but at the same time he must not lose sight of the fact, that, under it, the manual labour is more, and the length of rope exposed to constant wear greater than under the direct system.

In these remarks I have abstained from noticing many details in the several systems, because it has been my aim to avoid all that might tend to lead the mind away from the first great question: "Which of the three general systems is the best for my own farm?" This being settled we have advanced one most important step, and it only remains to determine which maker we shall go to, and which of that maker's plans we shall adopt, which questions can only be resolved by each individual for himself, with special reference to his lease, his farm, and his purse. My own farm I cultivate with Howard's apparatus, for which I consider it specially adapted, but of this I am convinced—that where no obstacles are presented in the shape of a lag end or a lease annual tenancy, or the incapacity of the farmer, there are, comparatively, few farms in this country, on which one or other of the systems of steam cultivation might not be adopted with very great advantage.

My present object is not so much to consider the novelties in steam cultivation as to urge its general importance, and to rouse farmers from that torpid state in which so many yet remain with reference to it, especially our heavy-land men, whose land, horses, and pockets press so earnestly for the invaluable adjunct of a steam cultivator.

Before concluding, allow me to draw attention to one important feature in the trials, which gives rise to much misconception in the minds of farmers.

Provided the implement does not penetrate into the hitherto uncultivated "pan," we can, by inspection, form a tolerably near guess as to the power required to move it at a given rate, and if it does not penetrate below, we know that each extra inch enormously increases the power required, especially if we have tried our best at subsiding by horse-power. But when we enquire what power is employed, we are often met by the answer, "Oh, a common 8 perhaps 10) horse-power engine;" and if further enquire the pressure, "About 45 lbs;" generally the reply. Perhaps in some cases is about 45 lbs., but how often is it about 80, or 90 lbs., or even more; and I suppose even balance springs and even registers do always like to contradict the assertions of the employers.

I have before said that the quality of work done depends on the implement rather than on the system; but the quantity of work done by any given implement must, to a great extent, depend on the system, and what we want to know is—1st. What power really exerted by the engine, not merely nominal horse-power; 2dly, How much that power is absorbed by the intermediate machinery, such as clip-drum, windlass, pulley, tight and slack rope, &c; 3rdly, What effective pull remains for the implement, be it plow.

erator. or any other? This investigation-ably touched upon by your correspondent in the lucid article which appeared in your column last year, and it is very desirable that it should be gone into most fully. Now the want of effective pull and speed attained by the two things of the utmost importance to be retained, and the draught being steady, why attach a sufficiently powerful dynamometer to the rope in front of the implement, and anchor behind? Then let the most convenient implement for the purpose be selected, and tried in succession under each system of haulage;—done, let such various implement be attached in succession to the same rope. Surely a few experiments of this nature, conducted by competent men, would materially assist the agricultural world, and simplify the question of steam traction: they would exhibit to us where the steam was in fault and where the implement, and is just what we want to get at. When we are offered, and judges appointed, makers do not hesitate to submit their machinery to be tried; but individual farmers are not in a position on the trial field to come to a satisfactory conclusion. An engine, whether working at 100 lbs. or 90 lbs., looks very much the same, and the hauling on of eight or ten additional horses to a machine would strike the most untrained eye; but we must never forget that there is a very material difference to the length of life. Steam engines are like horses: moderate food and regular work will enable them, like our farm horses, to do a fair amount, and last a good many years: high feeding and overwork will make them break down the first year, like our London horses. True it often happens better to act on the latter principle, but the farmer must not suffer himself to be deceived by the results achieved by "an ordinary 8 horse steam engine." He will also be wise, in purchasing an engine, to bear in mind the purpose which he intends it, viz., for cultivating as well as for thrashing, &c. Engines well adapted for one latter may be ill adapted for the former; and those well adapted for the former will do it equally well for the latter; hence he should always bear in mind the *substantial* character of his work, and also endeavor to procure the greatest amount of power with the least amount of cost: perhaps he can hardly do better than apply to a first class maker, explain his wants, and let him in his hands to supply them.—I am, Sir, obedient servant,

W. B.

British North American Colonies at the International Exhibition.

(From the *Mark Lane Express*.)

The British North American Colonies have a noble display of their products at the International Exhibition, and have quite thrown

into the shade the United States. Few persons who have not visited our possessions on the other side of the Atlantic could have given them credit for the skill, enterprise, and ingenuity displayed in the various mechanical contrivances and manufactured articles, of which they have sent specimens. But it is not with these that we would deal on the present occasion. We desire rather to call attention to their agricultural products and capabilities, and shall touch upon those of the Lower Provinces, leaving Canada for subsequent notice. It is the first International competition in which the four Colonies of Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland have taken part.

The province of New Brunswick we have not seen on some former occasions. The Commissioners of the Colony have sent home very fine specimens of its cereals, pulse, maize, flour, and meals, with agricultural implements made and used in the Colony—such as mould-board ploughs, horse rakes, and harrows. There is also a good collection of its timber shown rough and manufactured. The amount of land cultivated in New Brunswick does not yet produce anything like a sufficiency of food for the maintenance of the population. This has not been because agriculture has not been remunerative, but because of the apparently greater inducements held out to the mass of the people by other branches of industry. Lumbering and ship-building, however, are giving place yearly in a greater degree to agriculture. The number of farmers is rapidly on the increase, and a determination seems to have taken hold of every branch of society to leave no efforts untried for the development of this most important—this greatest branch of industry.

In each county of the Province there is an agricultural society—in some counties more than one—and there has lately been established a Provincial Board of Agriculture, for the purpose of watching and protecting the interests of the farmers generally. The annual reports of these societies speak in high terms of the increase that is taking place in the number of farmers; the improvements made in the qualities of crops, and the interest that is being manifested amongst the farmers; and there is every reason to hope that hundreds and thousands of persons will be induced in a few years to enter upon the valuable lands now lying waste, and improve them; thereby enriching themselves and benefiting the country.

The farmers of New Brunswick are all, so to speak, in good circumstances. Many of them are rich, and are now enjoying the fruits of their labour of former years. The majority of them are men who commenced life twenty or thirty years ago with literally nothing. They went into the woods; the first clearing they made was a few yards whereon to build a hut;

that done, their clearing has gone on extending year after year (the hut being replaced by a commodious frame house), until now it counts a goodly number of broad acres, whose fertility enables their owners to live in plenty, oblivious of the trials that surrounded his early life, and rejoicing in the prosperity Providence has bestowed upon him through his own exertions.

Although the soils vary, and one kind of land may be better suited for growing the valuable cereals than another, yet everywhere, except on the barrens or in the swamps, fair crops of these may be raised. But no matter where the farmer settles down, if he is careful, industrious, and persevering, he will meet with an ample return for his labour. If the district in which he resides does not produce wheat as abundantly as he may wish, it will yield a good crop of corn; or failing this; buckwheat may be the most remunerative; if neither of these, it will produce potatoes or turnips, or vegetables of some kind in such quantities as will leave him no cause for complaint. In many places crops of all kinds may be raised to great advantage.

With reference to agriculture, there is one thing that, in justice to the soil of North America, or its climate, or both, should not fail to be mentioned. In no matter what part of the country a piece of land may be situated, or how poor it may be, it is capable by a little labour judiciously disposed, of being brought to a high state of agricultural perfection. As an example, the State of New Hampshire may be cited, justly termed the "Granite State," in consequence of the predominance of granite, which seems to cover its entire surface. Here, upon the solid rock, as it were, are farms that in appearance and productiveness can compare admirably with those of more favored climes. The "hanging gardens" of Eastern Canada are not more marvellous than those apparently bare rocks teeming with vegetable life. This productive power, which the most barren soil in America seems to possess, may be due more to the skill of man than either the causes mentioned above. It is certain, however, if it does not really exist in the soil, it is capable of being introduced into it.

The province of Nova Scotia, which makes its first appearance in European competition this year, has spared no expense whatever in bringing its resources and products before the general public. Its court, looking at the extent and resource of the colony, contains one of the finest colonial collections in the Exhibition Building, every article being well displayed and arranged. The fish, the wood, the minerals, the horticultural produce, the animals, are all beautifully shown, and the great moose standing at the entrance is an indication of its whereabouts. Its gold fields have lately brought the colony into more prominent notice; and with regard to expense in exhibiting, the provincial govern-

ment have given Messrs. Baring Brothers, official agents of the colony, *carte blanche*. Nova Scotia is peculiarly adapted for an agricultural country. The best lands are alluvial or "dyked marsh," and "intervale." The former are formed by the deposit left by the rapid flow of the Bay of Fundy, which rises in some places to a height of sixty feet.

The fertility of the "dyked marsh" is believed, quite unparall'd. Some of it, such as Grand Pre (the scene of Longfellow's "Evangeline"), was reclaimed by the Acadian French about two hundred years ago; and there are instances of this species of land having been cultivated a century without any manure. Lands top-dressed with this alluvial deposit can be cultivated for twenty years without any manure. "Intervale" land is formed by the deposit of fresh-water rivers, &c, and is exceedingly productive.

Potatoes in Nova Scotia will yield, on average, about 230 bushels per acre, and have yielded as much as 450 bushels per acre of very superior quality. This crop is not so much affected the potato disease as in other countries. 3,284,864 bushels were raised here in 1854. Twenty-two samples are shown by different exhibitors. Wheat, under very inferior cultivation, will yield from 25 to 30 bushels per acre. Specimens sent weigh 62 to 64 lbs. per bushel. The competitors in this department were few, and the specimens sent are much inferior to those exhibited at the Provincial Exhibition in 1854.

The following is an extract from the official report—

"Every person who has any real knowledge of agriculture, and saw the specimens of grain entered at our exhibition, will readily admit that it was almost all of first-rate quality, scarcely, if at all, inferior to any equal quantity of samples either in the mother country or United States. The *Dumfries Courier* states that 60 lbs. per bushel for wheat, 50 lbs. per bushel for barley, and 40 lbs. per bushel for oats have generally been considered a kind of standard or medium weight between the heaviest and lightest quality; and it mentions, as a specimen of the present crop, that at last week's Edinburgh market samples of new grain were as follows: of the following extraordinary weights: Wheat 65 lbs. per bushel, barley 58½ lbs. per bushel, and oats 48 lbs. per bushel.

"Now the grain at our Exhibition compares very favourably with this statement, as of fifty-four parcels of wheat of various kinds, two were below 60 lbs. per bushel, and to exceed this, 16 parcels were above 64 lbs. per bushel, while two parcels were above 66 lbs. per bushel. In barley they exceed us in one parcel per bushel, our heaviest being only 47 lbs. 14 ounces per bushel; but we equal the white oats, as ours is 49 lbs. as well as it.

and then they admit it to be an extraordinary weight in Haddington, one of the greatest grain markets in the South of Scotland, more especially for oats. Then we have twenty samples of Indian corn, mostly all very excellent, some of them weighing 53½ lbs. per bushel, and twenty-two samples of buckwheat all verging upon, and some of it quite 58 lbs. per bushel."

Barley is a sure and heavy crop; the bald barley will yield about 40 bushels per acre, specimens sent weighing 54 and 56 lbs. per bushel. Indian corn in the western counties prove a most profitable crop, yielding 60 to 65 bushels per acre; specimens sent weighing 60 lbs. per bushel. The climate of Nova Scotia is particularly suited for the growth of buckwheat, specimens sent weighing as much as 56 lbs. per bushel. All kinds of garden and field seeds grow remarkably well in Nova Scotia, producing excellent and profitable returns.

Prince Edward Island shows an interesting collection of its grain, dairy produce, and implements; and these are the most attractive, because, although an agricultural colony of some local notoriety, it is not much heard of here. The climate of the Island is highly favourable to the pursuits of agriculture and the health of the inhabitant. The main difficulty that has stood in the way of its progress and settlement has been the centralization of the land in the hands of absentee proprietors. A short notice of the history of the colonization and the land question difficulties may here be advantageously given.

The allotment of lands in the island was rather haphazard—the plan of settlement by grants in August, 1767, being as follows: The island was divided into sixty-seven townships or parts of townships, with certain reservation to individuals having claims upon the Government, and others upon certain conditions of settlement and the payment of quit rents of 2s., 4s., or 6s. annually per hundred acres, commencing five years after the grant, and only half being required the subsequent ten years. The granters were to settle upon each lot one person for every 200 acres, within ten years. If one third of the land in that proportion was not settled in four years, the land was to be forfeited to the Crown. When the ten years had passed however, no attempt had been made to settle 48 out of the 67 townships. Repeated and complicated difficulties arose. Lands were sold for the quit-rents, unoccupied lands were estreated, a composition of quit-rents was attempted. But difficulties continued to exist, even after the reduction in the price of quit rents to 2s. per hundred acres announced in 1817. About ten years after, public improvements were pushed forward with great vigour; roads were widened and improved all over the country, bridges were built, agriculture was encouraged, improved stock was imported, and, to stimulate others, the Governor became a farmer.

In 1828 the Home Government sent out orders to enforce the arrears of quit rent due for five years, and stated to amount to £10,000. The House of Assembly and the colonists generally petitioned the King to relinquish the arrears, and in reply it was stated that the rents might be commuted for £1,000 a-year.

In August, 1861, the then commissioners appointed by Royal mandate to inquire into and adjudicate upon the subjects of dispute in respect to the tenure of lands on this island, brought their labours to a termination. The parties represented in the Commission were the Crown, certain large proprietors of lands on the island, and the tenantry acting through their Government. The claims of each party were minutely and patiently investigated—the grand design of converting on fair and equitable terms the leaseholds of the whole island into freeholds. The Commissioners recommended for this purpose the borrowing of £100,000 by the Local Government, with the guarantee of interest by the Imperial Government. Twenty year's purchase is the maximum price to be paid; but the land is to be valued by arbitrators.

According to the census of 1861, the population of the island was 80,556. The crops of 1860 yielded 346,125 bushels of wheat, 223,195 of barley, 2,218,578 of oats, 50,127 of buckwheat, 2,972,335 of potatoes, 348,784 of turnips, and 31,100 tons of hay. The live stock owned in the island consisted of 18,765 horses, 60,015 neat cattle, 107,242 sheep, and 71,535 hogs. 711,485 lbs. of butter were made in the year, and 109,233 lbs of cheese.

From Newfoundland much was not to be expected in the shape of agricultural produce—the fisheries being its main stay. But that it is not the bleak and inhospitable country supposed, is shown by the specimens of wheat, barley, and oats sent to the Exhibition by the Hon. L. O'Brian. That this island could greatly benefit agricultural interests by the manufacture of fish manure to take the place of Peruvian guano, which is now again running up in price, specimens of seal and cod manure deodorized are shown. There could be obtained from the refuse of the cod fishing alone, about 25,000 tons of manure in a perfectly dried state, and from the seal fishing, with dogfish and other refuse, two or three times as much."

Our Forests—Their Importance.

The preservation of timber in the United States is becoming a subject of vast importance as affecting climate, agricultural products and the mechanic arts. In some portions of the Eastern States, which were originally covered with dense forests of valuable trees, timber is already quite scarce, and every year becoming more so. It is still abundant in the North-western States; but there, the same management

is rapidly producing the same result: the unsparing ax is busily engaged in its work of destruction, settlers seeming eager to get rid of the wood as soon as possible, and valuing their farms in proportion to the number of acres cleared. Consequently the same result may be expected as at the East, and the next generation will probably witness the same scarcity of timber and the same baneful effects from its absence that are now felt in other portions of the country.

As for the vast region stretching from the Mississippi, or even the Wabash, to the Rocky Mountains, it is well known that immense tracts are entirely destitute of trees, and it is perhaps safe to say that less than one tenth of the whole district is timbered land.

Aside from the intrinsic value of wood and timber for the purposes of domestic economy, some interesting considerations arise from this improvident destruction of the treasure lavished upon the eastern portion of the continent by the hand of Nature.

It will hardly be denied that sterility, or at least a great depreciation of the soil, has followed the total destruction of timber wherever it has occurred on a large scale, in connection with tillage, particularly of those countries situated south of the 40th parallel of latitude—S. r a, Persia, the North Coast of Africa, Spain, once fertile countries, according to history—might be adduced as instances.

A little reflection will convince us that a total destruction of woods and forests could hardly lead to any other result: water is an element that is absolutely indispensable to vegetable life. It is always within the power of man, by proper drainage and deep cultivation, to correct the effects of superabundant moisture; but rarely can he supply the want of it by artificial irrigation, except in a very unequal manner, far inferior to that afforded by the clouds, those great natural reservoirs, or by watering; a very laborious process, necessarily confined to small patches of ground.

Now it is well known that woods have the property of attracting electricity and of making clouds discharge their contents, particularly where they exist on elevated lands. Trees, by their shade and the leaves they deposit on the soil, prevent the action of the sun from drying the soil too rapidly, and the moisture is retained to be given slowly and beneficially to the adjoining lands. But this is only a part of the valuable agency of trees in agriculture; they act as natural wind-breakers, moderating its violence to a surprising degree, and preventing its carrying off the moisture of the earth.

In those parts of our country—Fond du Lac—which are timbered, winter wheat is an almost certain crop; not from the superiority of the soil over that of the prairies—for the latter are equally fertile—but simply from the protection afforded against the wind by the surround n

woods; the snow remaining a long time on the ground to protect the plants, and the soil retaining sufficient moisture to bring them forward till the berry matures, even in the drier seasons; whereas, on the prairie, no such protection exists: the snow that falls upon the ground is partly drifted to the woods, and the remainder rapidly disappears under the combined action of the sun and of winds that meet with no obstacle, and consequently sweep over the land with unchecked violence, drying up the soil and withering the plant. For this reason, it may be said that the cultivation of winter grains is entirely abandoned on the prairie, in this section at least, as experience has proved it to be unprofitable.

The same effect is produced, although in a more subdued degree with regard to spring crops; a dry season invariably affecting the open grounds of the prairie more injuriously than the timbered or the "cak openings;" for the obvious reason that on very open lands the winds carry off the moisture much more rapidly than on those places which are comparatively sheltered.

In mountainous or even hilly countries, the total destruction of timber is attended with the most lamentable results. Mountains receive far more water and snow from the clouds than the lowlands, and when their flanks are entirely denuded of the forests, which a beneficent Nature almost invariably plants there, the torrents produced by showers and melting snow meeting no longer with the powerful obstacles presented by the roots of trees, tear the sides of the mountains; deep ravines and landslides occur; and the floods, instead of depositing enriching alluvial matter in the valleys, roll upon them masses of gravel and sand which destroy their fertility; thus causing a two-fold mischief, viz; washing the mountain-side down to its primitive formation, where only a stunted vegetation can afterward subsist, and covering the rich lowlands of the valley with barren soil, besides filling the navigable channels of rivers with sand-bars.

The wonderful adaptation of the works of nature to the wants of man is strongly exhibited with regard to the vast prairies of Illinois, Wisconsin, Missouri, Iowa, which are so destitute of fencing and building timber; and yet, by their climate and the fertility of their soil, are capable of maintaining a dense population. The Upper Mississippi, and many of its tributaries, by which those states are watered, mostly take their source in Minnesota and Northern Wisconsin, in a country covered with dense forests of pine which are pronounced by most of those who have visited them, to be inexhaustable; so that everything is ready for the benefit of man: the easily tilled prairies to supply the lumberman with food, the lumber to supply the prairie farmers with building and fencing materials, and

the navigable streams to transport the needed commodities both ways.

Would it not, however, be prudent to take care not to exhaust this apparently inexhaustible supply of the products of pine forests? Is not past experience demonstrated that they are and probably will be exhausted, and that too, more speedily than most people would suppose possible? Few persons, unless in the north-west, are fully aware of the magnitude which this lambe trade has acquired, and of the rapidity at which it is constantly increasing; and probably fifty years hence little of those valuable forests will remain.

I have thus adverted to a few of the evils threatened to the agricultural interests by the wholesale and indiscriminate destruction of timber now going on in most parts of the United States. I will not enter upon the discussion of many other interesting considerations which the question suggests, such as leaving the whole country bare of shade and foliage and unattractive to the eye, as well as the certain future scarcity of wood for fuel and timber, for fencing, ship and house building, and the many purposes for which it is indispensable in the mechanic arts. The subject is certainly important, in a national as well as an economical point of view. Certain it is that should the present wholesale destruction of timber go on increasing, as it bids fair to, with the increase of population, without the adoption of some plan to renovate those valuable forests, posterity will have little reason to thank us. No large extent of country, however fertile, can be very desirable as an abode to man without a fair proportion of timbered land. Wood is almost as necessary to civilized man as the bread he eats.—G. DE NEVEU, in *Cincinnati*.

More Light Underground.

Science is intended to give us a shield against the ills of life. A people that sits still, and views their calamities as simple "visitations," must have fallen back upon the savage life. An Italian priest, called upon to bless a plot of land, where a few blades of corn were contending with the enemies which usually beset them on ill-managed soil, gave the applicant a sensible rebuke. "It is of no use for me to bless your land," said the priest; "what you want is measure." At one time the people of this country were accustomed to resign themselves piously to flood and draught. In these days of progress such *visitations* are regarded only as the proper punishment of indolence and slovenly management, since they have been disarmed by the drainer's tool and the two inch pipe. Science has taught us to catch the lightning and conduct it innocuous to the ground. We shall probably at some future date control storms of wind and rain, and until we have found out the

secret necessary for this feat, we continue to insure ourselves against their effects, so that their fury, instead of being discharged with crushing force upon the shield of one individual, is received harmlessly upon the united shields of the many. We are continually finding out that we are not the sport of unseen powers to the extent we once held to be the case, or in the manner the peasants of Norway and Sweden believe themselves to be. We have learned that we need not propitiate the wind or the rain, the lightning or the frost, the fever or the fire. The Almighty has surrounded us by certain conditions, subversive of life, not that we should be victimized, but that, having the will, we should rise superior to them, and that in the act of battling with circumstances, we should undergo that discipline which is necessary to the full development of our manhood. We are superior to the elements around us. At one age or another man has regarded himself as the creature of circumstances, but experience has taught in so many cases that he is the master of circumstances, that he may well arrive at the conclusion that he is the master of all circumstances. As to "inevitable laws," there are very few such straight lines to constrain us, save our duty to the Great Maker, and for the rest laws are finite, and retain their supremacy only so long as human experience retains its present scope; to-morrow may change all, and either give us a new view which may result in a new law, and the abrogation of an old one, or such a view as shall change the application of the old law.

The farmer who, next to the sailor, seemed to be the most helpless and exposed of human creatures, has of late years gained considerably in this sense of mastership. While he has been busy in producing food, his friend the chemist has been unremitting in his attention to certain influences which for ever were opposing his efforts. These which were represented as antagonisms, and so impersonated, were discovered rather to be negative than positive influences: influences arising rather out of the indolence of man than such as specially aroused themselves to counteract his inactivity. Sir Humphry Davy, Liebig, Lawes, and Gilbert, have each shown that nothing is wanted to save farmers from the losses to which they have been exposed, but such a knowledge of the agencies around them as shall enable them to work *with* them, to subject them to their will, and to use them for the production of desired results.

Perhaps no chemist has given the farmers more assistance in this respect than M. Boussingault. From the laboratory of that most persevering of experimentalists they have from time to time received highly valuable contributions to scientific discovery. Never has he given a record of experiments there conducted of greater interest than those recently published under the title *Agronomie, Chemie Agricole et Physiologie*. He has been directing his attention to

the composition of the air contained in the soil, to the absorptive properties of arable land, to an estimation of what amount, separately of ammonia and nitric acid is to be found in water, rain, snow, dew, and mist. The immense importance of such inquiries upon the future of agriculture, as tending to correct the present imperfect theories of manuring, must be apparent to any one whose mind is alive to the present state of the question.

It is usual to insist upon the presence of ammonia as food for the growing crop; but little is known as to the circumstances under which it is presented most advantageously.

If it be allowed—and this will not now be disputed—that plants grow only by addition of cells, and that these cells, consisting of two parts, owe their outer part or protection to the union of carbon and water, or its elements, and their inner part to ammonia, or its elements, nitrogen and hydrogen, it is obviously important to discover the manure in which nature works to supply this highly vitalized internal membrane, that we may learn how best to assist her. Although the elements of Ammonia are plentiful in the air, hydrogen by the decomposition of water to unite with nitrogen, M. Boussingault's experiments have brought him to the conclusion that the cell is not supplied with it directly from the atmosphere. Ammonia must be accounted for from elsewhere. In the course of his researches he says, that he found the seed to be a perfect storehouse of nitrogen and phosphorus, and of all the characteristic materials of the vegetable species whose seed it is. In virtue of the existence in it the seed grew in a chemically pure air and barren soil, and although fed only with pure water, developed into a perfect plant, which flowered and ripened seed, with no more nitrogen than was in the seed to begin with. It is well to remember that there is usually from five to six per cent. of nitrogen in the seed, while in the entire plant there is one per cent.

The experiments he made upon fertile soils abound with practical suggestions. As with the atmosphere so with the soil: although four-fifths of its bulk is nitrogen, plants can appropriate nothing from the atmosphere save a few stray particles of ammonia floating in it. In a fertile soil, similarly, there may be 96-100ths of nitrogen, "locked up from the plant in organic compounds, which the plant cannot decompose." Boussingault very justly says, on this evidence, that analyses of soils and manures, detailing the quantity of this constituent or of that, afford information really of little value to the farmer, who must seek to know the *conditions* in which they are found there, whether free or in bondage. He comes to the conclusion that the only sources of nitrogen, and those from whence the vegetable cell is composed, are ammoniacal salts and nitrates. Phosphates, he insists are indispensable in every case, and nitrogenous matter is also needful as a companion

to the nitrate. "A nitrate is preferable to ammoniacal salt, inasmuch as nitrogen appears to be fully assimilable by plants, and being more fixed is less likely to be lost than ammoniacal salts, all of which are more or less volatile."

We are scarcely aware how much depends upon carbon, and how important it is for a sufficient quantity to remain free to combine with and fix the ammoniacal salts and nitrates in the tissues of the growing plants. Unless it is at liberty to perform this good office, such elements as these may exist to repletion in the soil without benefit to the plant. Carbon, however, serves a more important purpose still. As food for plants, to whose existence it is essential, it can only become assimilated and combined with oxygen, that is as carbonic acid. Boussingault then details some interesting experiments suggested by this fact, to find the quantity of carbonic acid which exists in the air of the soil. One set of experiments he devised to prove the *quantity* of air held by soils of various kinds; another to ascertain the *quality* of that air. His evidence and substance with regard to the first set is as follows: The average for fair soils may be stated at 400 cubic yards per acre, taken at a depth of 14 inches; the entire volume of the acre taken to this depth is equal to 1,750 cubic yards; so that in such a soil the contained air is about a quarter of the density which it is in the superincumbent atmosphere. Soils very rich in humus and recently manured gave the largest quantity of unfixed air, sands and clays the least. With respect to quality, the experimenter found more carbonic acid in the air of the soil than in the atmosphere. In the latter it is usual to allow 4 parts carbonic acid in 10,000 atmospheric air; but a soil rich in humus contained 974 in 10,000, the soil of a meadow contained 179, and no soil, according to his experience, run short of 100 parts. Striking an average, the air contained in one acre of arable land, 14 inches deep, equaled 1,750 cubic yards; soil manured a year previously contained as much carbonic acid as is found in 9,446 cubic yards of the atmosphere; so that the acre of soil lately manured contains as much as there may be estimated in 60 acres of the atmosphere 14 inches deep.

Before referring to the conclusion deduced from such premises, there yet remains one point of special interest elucidated by these investigations. In comparing the oxygen of the air confined in the soil with that in the atmosphere, it was found that the latter is always deficient in this busy-body constituent by nearly the same quantity as goes to combine with carbon to produce carbonic acid. It is also not irrational to suppose that oxygen, beyond burning the carbon of the organic remains in the soil, unites also with the free hydrogen to be found there, and thus ministers to the wants of the rootlets in the matter of water as well as of carbonic acid. This service is more important than at first it appears

le; since were carbon and oxygen to combine in the presence of the nascent hydrogen—this is to say, were there not sufficient members of the oxygen family to ally with those of the carbon family on the one hand, and the hydrogen family on the other—the unallied members of the hydrogen family, in their single life, might be productive of considerable damage. If that hydrogen can be utilized as water, all is well; if left alone, it becomes the victim of other spirits, and produces such combinations as nitric acid, humic acid, and acetic acid, which are destructive of life.

For the agriculturist, there is but one practical conclusion for all this. He will readily infer that the soil, in order to fertility, must contain a notable quantity of organic matter, which the atmosphere, by a process of slow combustion, transfers into carbonic acid and water, and ultimately into nitrates and ammoniacal salts. Organic matters, when submitted to the united presence of air, moisture, and a suitable temperature, give rise to carbonic acid and water; and nitrogenous, to ammonia. When buried in a sufficiently open, their combustion is so obstructed, that, in warm climates, it may happen at the end of some years that a clean soil, rich in gases, becomes so poor as to be unable to give support without the application of manure. Thus soil, humus, and all the last terms of the production of vegetable substances, are so many sources which emit carbonic acid; and it is beyond doubt that an important part of the efficacy of organic origin ought to be attributed to this emission, whether it be that the acid gas absorbed by the roots runs the course of the organism of the plant, or that, turned into the surrounding atmosphere, the light decomposes it for the influence of the leaves which assimilate the carbon." It is very easy to regard, therefore, every particle of humus in the soil as a focus from whence carbonic acid gas is continually emanating" to modify that atmosphere which descends from above, and fit it for its mission to the roots which pervade the seed-bed in search of support for the wondrous development of woody fibre, green leaf, tender blossom, and selected seed. F. R. S.—*Express*.

Advantages Derived from Shading the Soil with Green Crops.

We have frequently contended—and the actual experience which every year brings with further confirmation to the fact—that the exhaustion of even our very best soils is done so much to constant cropping as to the crops which play so prominent a part in the system of agriculture. It is true that corn and tobacco draw largely upon our soils, and especially upon the phosphates and the potash they contain. It is true, also, "that shallow and careless cultivation has done much to

assist in exhausting lands which were regarded at one time as of almost in exhausting lands which were regarded at one time as of almost inexhaustible fertility," and statistics likewise show that whilst the area of cultivation has been extended year after year, the average product per acre has diminished.

One of the primary reasons why these crops have proved so deleterious to the soil, is the fact that the system of cultivation required to bring them to perfection, keeps the intervals between the growing plants utterly bare during the hottest months of the year. The action of the sun upon these exposed surfaces, together with the constant stirring of the soil for the purpose of keeping it loose and light and friable, whilst it promotes the solubility of its plant-food, yet at the same time exposes the organic and inorganic substances which constitute in their several proportions the elements of fertility to great loss, both by evaporation and by washing rains. As an illustration of this process of exhaustion by the simple exposure of bare soil to the action of the sun and the rain in summer time, we may cite the following facts. A piece of land kept constantly ploughed, without any crop whatever being grown upon it, if not suffered to grow up in weeds, will gradually lapse from a state of fertility into one of comparative barrenness. It has been losing year after year, by evaporation and by leaching rains, the greater portion of its plant-food, its vegetable and mineral wealth, "if we may be permitted to so term it. As a signal proof of this we have in our mind's eye a peach orchard which twenty years ago was planted upon as fine a piece of soil as is to be found anywhere within ten miles of Baltimore. It was a light, loose chocolate soil, and the quality when the orchard was originally planted, was that of the best tobacco land. That orchard was ploughed regularly every season to promote the growth of the peach trees, and to facilitate the ripening of the fruit. It is the usual custom with the best peach-growers. In twelve years, or by the time the peach trees began to show signs of decay, those fifty acres bore every evidence of a soil that had been utterly exhausted. Yet with the exception of the peach trees themselves, not a single crop of any kind had been taken from the land. Now, this rapid exhaustion could not be charged to the demands made upon the soil by the peach trees alone, but to the fact that the soil was kept perfectly bare throughout the summer.

Again—take the converse of the proposition. So long as lands are kept shaded they continue to increase in fertility. Does any one doubt this? Let him turn out an old field, and after a while a new growth of wood and brush will spring up, except when the land is worn into gullies, and with the growth of this wood, the

droppings of the leaves and the shade of the foliage, a portion of the lost fertility will be restored. Yet the trees have been drawing nutriment from the soil all through these years. Take another instance—leave a bed of corn-stalks, or a pile of brush, upon a field that the previous season had been planted to corn, and is consequently bare of herbage or weeds: or build a fodder stack in the field and fence it off from the cattle. When the land comes into crop again the next season, the place from which that pile of stalks, or brush, or fodder stack, will show a rarer growth than any other part of the field. What was the reason of this difference?—nothing more than that the ground was kept shaded, evaporation was prevented, the soluble salts were retained, and the land got the benefit of them.

Instances of this kind are constantly coming up before the eyes of the observant farmer and from them he may draw the following conclusions, for they are susceptible of none other:—

First—That the exposure of the soil to the sun, heat and rain of our semi-tropical summers rapidly exhausts it of its fertilizing elements.

Second—The covering or shading the soil preserves those elements.

Third—That green crops, such as clover, should take the place of hoed crops more frequently in our system of husbandry, and that the less frequently the surface of the soil is exposed to the wasting influences of the sun, wind and rain, the longer it will retain its original condition of fertility.—*Baltimore Rural Register.*

Grazing.

The art of grazing embraces the practical solution of two important problems, viz, 1st, how to obtain the greatest amount and best quality of herbage from any given pasture; and 2nd, how to consume this herbage by live stock, so as to make the most of it. The grazier has ever to keep in view what is best for his land and what is best for his stock; and must take his measures throughout the entire season with an eye to both these objects. As regards the first of them, experience yields the following maxims for his guidance:—

Never to stock his pastures in spring until genial weather is fairly established.

Never allow the grasses to run to seed, nor parts of a field to be eaten bare, and others to get rank and coarse.

Duly to spread about the droppings of the cattle; to remove stagnant water, and to extirpate tall weeds.

Some time about midsummer to make a point of having the pasture eaten so close that no dead herbage or "foggage" shall be left on any part of it.

In what more immediately concerns the wel-

fare of the live stock he is in like manner to be in stocking his pastures.

To adapt the stock as regards breed, condition, and numbers to the actual capability of the pasturage:—

To secure the stock at all times a full bite clean, fresh grown, succulent herbage.

In moving stock from field to field take care that it be a change to better fare—not worse.

Pasturage consists either of natural herbage or of "seeds." In the south-eastern corner of Scotland there is little good old grass: the really fertile soils being employed in arable husbandry, with the exception of small portions around the mansions of land owners. The pasturage consists, therefore, for the most part, of the cultivated clovers and the grasses. Comparatively few cattle are there fattened on green pastures, the object graziers being rather to stock pastures with young and growing animals, to get them into forward condition for beef afterwards fattened upon turnips. The grass season is there also much shorter than in England, old grass seldom affording a full bite a well conditioned bullock before the middle of May, or later than the middle of September. It is quite otherwise in England, various parts which abound with old grass lands of the richest description, on which oxen of the best class can be fattened rapidly. These, in most cases, admit of being stocked towards the end of April, and under judicious management continue to yield excellent pasturage for half a year. When stocked with cattle, in fresh condition, two sets or "runs" are not unfrequently fattened, in such pastures, in the same season. These grass-fed cattle begin to come to market early in July, and for four or five months thereafter constitute the chief supplies of beef in markets.

Cattle already well fleshed are alone suited for turning into these rich old pastures. When this is attended to, and care taken not to overstock the pastures until they yield a full bite, progress of the oxen will usually be very rapid. It is now customary to hasten this progress by giving about 1lb. of oil-cake to each beast daily. The dust and crumbs being sifted out, the cake are strewn upon the green sward, from whence they are quickly and carefully gleaned by the cattle. This is usually a profitable practice. It brings the beasts forward rapidly, improves their appearance and handling, and besides enriching the land, admits of about 10 per cent. more numbers being fed upon a given acreage. These choice old pastures are usually occupied in combination with others of inferior quality. The most forward lot of cattle have been fattened and sold off from the former, and are ready to receive a fresh stock. If it is contemplated to get them also fattened before the expiry of the season, they are not put on the best land instantly on the first lot being sold.

crowd of sheep or store beasts being turned out for a few days, the existing herbage is cut off, and the pasture (*Anglic*) "laid in" (*Scottic*) "hained," until a fresh, clean sward fits it for receiving a suitable number of best cattle from the other pastures. It is not prudent to graze sheep promiscuously with cattle on these best lands, as they pick out the best of the herbage, and so retard the fattening of the oxen. Neither do we approve of putting horses among such cattle; not so much for their interfering with their pasturage, as for the disturbance which they usually cause by kicking about. This does not apply to the light horses of the farm, which are usually tired and hungry when turned out from the field to mind anything but feed and rest; but to the better thrift to soil them; and frolicsome, vicious colts are unsuitable companions for the steady, portly oxen. In favourable seasons, overstocking of cattle can consume it, in which case they select the best places and allow the rest to lie on some parts to get rank and coarse; these rank places are neglected until the herbage gets dry and withered, the finer plants die, and the coarser growing grasses usurp the place, and the pasturage is injured for future years. To check this evil in time, these neglected places should be mowed, and the grass either brought to the homestead for soiling, or to dry where it grew, in which state the sheep will eat up most of it, and be the better for it especially if their bowels are unduly relaxed by the succulence of the growing herbage. The same rules now made apply equally to all old pastures employed for the fattening of cattle, although not of the first quality. All that is required is to observe due proportion betwixt the capabilities of the pasturage and the breed and size of the cattle. A pasture that will fatten a five-stone ox may be quite inadequate for a pair of seventy, and the hardy Galloway or West Highland will thrive apace where the heavier, fainter short-horn could barely subsist.

With the exception of the best class of rich pastures, grass is usually consumed to great profit by a mixed stock of sheep and store cattle than by one kind of animals only. This is true both as regards the natural herbage pastures or water meadows, and cultivated pastures, clovers, or sainfoin. When old pastures are sown "seeds" are grazed chiefly by sheep, and the same rules apply that have already been mentioned in connection with cattle. The herbage should, if possible, be fully established in a growth, and so far advanced as to afford a full crop before the pasture is stocked in spring. If sheep are turned into it prematurely their nibbling hinders the plants from ever getting into a state of rapid growth and productiveness, and the stock of roaming over the whole field, and keeping long afoot before they can

glance enough to appease their appetite, is prejudicial alike to them and to their pasture.

The prudent grazier endeavours to avoid these evils by having his stores of swedes or mangels to last until the full time at which he may reckon on having good pasturage. In distributing the flocks to different fields, the best pasturage is allotted to those that are in most forward condition. It is advantageous to have the pasture so subdivided that one portion may be double stocked while another is rested. By frequently removing the stock from the one portion to the other the herbage of each by turns gets time to grow and freshen, and is more relished by the sheep than when the whole is tainted by their uninterrupted occupation of it. In the case of clover, trefoil, sainfoin, and water meadows, this principle is yet more fully carried out by folding the flock and giving them a fresh piece daily. The crop is thus eaten close off at once in daily portions, and the plants being immediately thereafter left undisturbed, and receiving over the whole area their due share of the excrements of the flock, grow again more rapidly than when subjected to constant browsing under a system of promiscuous grazing. This plan of folding sheep upon such crops has the same advantages to recommend it as soiling, only that it is cheaper to shift the fold daily than to mow and cart home the forage and carry back the manure. In the case of water meadows it is the practice to irrigate them afresh as each crop of grass is fed off. This is attended with considerable risk of the sheep getting tainted with rot, which must be guarded against as much as possible. In the first place, it is well to give them a daily allowance of bran, beans, or cake, and salt; and besides this to put on this land only such sheep as are nearly ready for the butcher. They will thus fatten very rapidly, and be slaughtered before there is any harm to ensue.

The modes of grazing which we have now described are appropriate for sheep in forward condition. The poorer pastures are usually stocked with nursing ewes and lean sheep bought in from higher grazings. Lambs both before and after weaning, require clean pastures, and of course, frequent changes. If kept on tainted pastures they are certain to become subject to diarrhoea, or to be stunted in their growth, and to have their constitution so weakened that many of them will die when afterwards put upon turnips. To avoid these evils they must be frequently moved from field to field. A sufficient number of store cattle must be grazed along with them to eat up the tall herbage and rank places avoided by the sheep. After the lambs are weaned, the ewes require to fare rather poorly for a time, and thus can be made use of to eat up the worst pasturage and the leavings of the young and fattening sheep. When the latter, with the approach of autumn, are put upon aftermath, clover stubbles, rape, cabages or

turnips, their previous pastures should in succession be thickly stocked by the ewes and other store stock, so as to be eaten bare, and then get leave to freshen and get ready for ewes by raiting time, when they require better food. In depasturing sheep on poor soils it is usually highly advantageous to give them a daily allowance of grain or cake in troughs, which must be shifted daily, so as to distribute the manure regularly over the land. By means of this auxiliary food sheep can be fattened on land the herbage of which would not alone suffice to do this. It admits also of a larger number of sheep being kept per acre, and of the pasturage being fed off more closely than could otherwise be done. The produce of poor silicious soils, both in grass and after crops, is much increased by the additional manuring and treading which the consumption of such extraneous food upon them occasions.

It is always advantageous to have pastures provided with a shed under which the stock can find shelter from sudden storms, or from the stacks of insects, and the scorching rays of the summer's sun. When such sheds are regularly trowed with dried peat or burnt clay, much valuable compost for top-dressing the pastures can be obtained. The dung of the cattle thus secured and applied benefits the pastures more than that which is dropped upon it by the animals. Such clots require to be spread about from time to time.

To carry out successfully the various details now referred to, which constitute the art of grazing, there is required much foresight, accurate observation, sound judgment, and constant superintendence. Without all this it is impossible to make the most of any given amount of live stock and pasturage, and hence the extraordinary disparity in the results obtained by different graziers from similar materials.

The temperate climate of Britain is so peculiarly favorable to the growth of the grasses and other pasture plants, and to the keeping of live stock with safety in the open fields for the large part of the year, that the practice of consuming these crops by depasturing, as already described, has hitherto been decidedly preferred to soiling. One consequence of this is, that forage crops have been comparatively neglected. There is now, however, a growing conviction among agriculturalists that it is more convenient to keep neat cattle and horses during summer in yards or loose boxes, and to feed them with succulent forage mown and brought to them daily as it is needed, than to turn them adrift to browse in the fields. The pasturing plan is preferred by many because it involves the least labour, and is alleged to be more healthful to the animals. In behalf of the soiling plan, it is urged that a given space of ground under green crops keeps nearly twice as much stock when its produce is mown and consumed elsewhere than when it is constantly nibbled and trodden upon; that

housed cattle being exempted from the vicitudes of hot weather, the attacks of intestinal disturbance, and the labour of gathering their food, eat less and yet fatten more rapidly than they do at pasture; that more good is ten of their excrements when mixed with food and trodden down under cover than when deposited about in the open fields; and that land which a green crop has been mown, and ploughed up is freer of weeds and (other things being equal) bears a better crop than that which has been pastured. It is a further recommendation to the soiling plan that it admits of oil or meal being administered along with green food with a precision and economy that is attainable in the pasture fields.

There being so many and such cogent reasons in favor of the practice of soiling, we may confidently anticipate that it will in future be more generally adopted. It is proper, however, to notice that the success of this system is absolutely dependant on the following conditions. The green food must be mown and brought home at least twice a-day, owing to the rapidity with which it ferments when put together must be given to the stock not less than three times daily, and only in such quantity as they can eat clean up in the interval between the twixt meals; they must have constant and ample supplies of pure water and fresh litter; and in particular, matters must be so arranged that there shall be an unfailing supply of green food of the best quality through the entire season. This is accomplished either by successive sowings of one kind of crop from the same ground—as of irrigated meadow or Italian ray-grass—by a combination of such crops as naturally come to maturity in succession, or are made to do so by a sequence of sowings. From what has been said, it is obvious that soiling cannot be carried out successfully with a moderate good soil and climate, a liberal use of manure and skill and foresight on the part of the farmer. With these, however, its results will usually be highly satisfactory. It is peculiarly adapted to clay soils, on which the culture of root crops is attended with much difficulty, and where there is, therefore, abundance of litter for use in summer, and much need for the soiling system to be converted into good manure.—*Willson's British Farming.*

How to Calculate the Value of Manure.

FROM PROFESSORS HODGE'S FIRST STEPS TO CHEMISTRY.

The following are the prices per ton at which the chief ingredients of manures in a state of purity may be estimated. These prices, if they be recollected, will be influenced by the fluctuations in the rates to which the commands upon which the calculation of their value is based.

They, however, may readily be compared, and will enable farmers to obtain a close estimation to the money value of manures.

PER TON OF THE INGREDIENTS SHOWN BY ANALYSIS TO EXIST IN GUANO AND ARTIFICIAL MANURES.*

.. .. .	£0 0 0
acid ammoniacal nitrogenized	} Dependent upon the amount of ammonia which they are capable of yielding.
.. .. .	
.. matters destitute of nitrogen, and capable of yielding ammonia by their	£0 10 0
.. .. .	56 0 0
.. .. .	7 0 0
.. .. .	25 0 0
.. salts, when chiefly soda compounds,	1 0 0
.. .. .	20 0 0
.. sulphate of lime, (gypsum unburnt),	1 0 0

To assimilate the prices given in the table with the increased value of bones, guano, and all fertilizing matter, it will be necessary to add one-sixth to the value per of the manure.

ILLUSTRATION OF THE METHOD OF VALUATION DESCRIBED.

A compound lately exposed for sale in the north of Ireland, and described as a Peruvian manure of superior quality, was founded on examination, to consist of the following ingredients—

Water	9.94
Organic matter and ammoniacal salts,	22.16*
Alkaline sulphates and chlorides,	5.05
Phosphates of lime and magnesia,	16.03
Carbonate of lime,	9.23
Earthy matters,	39.64
	100.00

* Capable of yielding 3.5 parts Ammonia.

The valuation of the sample, according to the method described, will show how far it falls below the value of the Peruvian guano, worth from £11 to £12 per ton:—

.. .. .	9.84	x	£0 0	£0 0
.. matters,	22.16	x	6 10	11 0
.. sulphates and chlorides,	3.95	x	1 0	3 0
.. .. .				
.. .. .	16.08	x	7 0	112 0
.. .. .	9.23	x	0 5	0 0
.. matters (red loam),	39.65	x	0 0	0 0
.. .. .	3.5	x	56 0	196 0
				100)322 0
				20
				4.40

Thus taking the proportions of the several ingredients, shown by analysis to be contained in the manure, to the farmer, are worth £22, so that the actual value of the manure is only £4, or at present prices £3 1s. 8d. per ton.

Analyses of linseed according to Dr. Voelcker:

Water.....	7.50
Oil.....	34.00
Flesh-forming matter.....	24.44
Heat-giving constituents.....	30.73
Inorganic matters (ash).....	3.33

One plant of the wild carrot (*Daucus carota*), bearing 600 flowers, and 2 seeds to each flower, contains 1,200 seeds.

Agricultural Intelligence.

Agricultural Exhibitions this Autumn.

PROVINCIAL AND STATE.

- Upper Canada, at Toronto, September 22nd —26th.
- Lower Canada, at Sherbrooke, September 17th, 18th, 19th.
- New Y. State, at Rochester, September 30 to October 3.
- Illinois State, at Peoria, Sept. 30 to Oct. 4.
- Ohio, at Cleveland, Sept. 16 to 19.
- Vermont, at Rutland, Sept. 9 to 12.

COUNTIES.

- Stormont, at Cornwall, Oct. 8th and 9th.
- North Simcoe, at Barrie, Oct. 1st.
- Brockville, at Brockville, Sept. 18th and 19th.
- South Simcoe, at Bradford, Oct. 2nd.
- Durham West, at Bowmanville, Oct. 9 and 10.
- North Lanark, at Almonte, Sept. 16th.
- Russell, at Osborne, Sept. 30.
- Peel, at Brampton, Sept. 17th and 18th.
- North Leeds & Grenville, at Frankville, Oct. 1.
- North Ontario, at Prince Albert, Oct. 7th.
- East York, at Markham Village, Oct. 9th.
- South Wellington, at Guelph, Oct. 10.
- North Wellington, at Fergus, Oct. 14.
- South Grenville, at Prescott, Oct. 8th and 9th.

TOWNSHIPS.

- Puslinch, at Aberfoyle, Oct. 8th.
- Hamilton Township, at Baltimore, Oct. 9.
- Barton and Glanford, at Ryckman's Corners, Oct. 2nd.

The Great Sale of Southdowns at Babraham.

On Wednesday, the 18th inst., a goodly company—though not so numerous as that which met about the same time last year—was gathered at Babraham, to witness the last of those sales which for nearly 40 years have been conducted at that place, and during which time Mr. Jonas Webb has carved out for himself, as a breeder of Southdowns, a name which will last as long any records exist of the history of British agriculture.

Among the company there was a large number of distinguished foreigners, some of whom came not merely to see what had been accomplished by the skill, energy, and perseverance of Mr. Webb, but to secure for themselves some of the beautiful and matchless animals that were to be disposed of. Among these we distinguish by way of pre-eminence, the Marquis Perailas, a Spanish nobleman, who fills the post of chairman of the agricultural jury at the International Exhibition, and whose purchases for the Spanish Government amounted to £570, and M. Fischer of Magdenburgh, who purchased to the extent of £676.

Although this was the last of Mr. Jonas Webb's public sales, and he therefore had no

interest in discarding the few comparatively imperfect sheep that will arise in a large flock, there was not one out of the 148 that passed the "ordeal hammer" that would not do credit, independent of the pure blood that flowed in its veins, to any man's stock of store sheep. This we mention, in connection with the fact of these sheep being all yearlings, to account for the somewhat smaller average prices realized as compared with those of last year. Tenant farmers came to bid against lords of title and landlords by profession, and if the former did not feel that they could outbid the latter in one or two instances, they were probably pleased with the beautiful and excellent sheep they secured at very high prices.

At the appointed hour business commenced, but as the space at our command is very limited, we must confine our record of the sales effected to those which reached such a figure as to deserve special notice. We may just mention, however, that lot 63, being the highest priced ram, was secured by Sir T. Lennard for 140 guineas. It will be remembered that at the sale last year Sir Thomas gave the highest price for a pen of ewes. His name, therefore, will ever occupy a distinguished position in connection with the Babraham flock.

Lot 66 made 70 gs., and was bought for the Duke of Richmond; lot 64 was bought for 40 gs., by Mr. Samuel Jonas; lot 67 for 25 gs., by Mr. Cain, Sussex; lot 20 for 91 gs., by Herr Zeoppritz; lot 21 for 72 gs., by H. D. Mildred, Esq., banker, Dorsetshire; lot 25 was bought at 50 gs., for the Duke of Bedford; lot 26, for 40 gs., by Mr. Henry Webb; lot 27, for 30 gs., by Mr. Marris, for Lord Yarmouth; lot 28 (high figures came thick here) for 86 gs., by Professor Nathhorst; lot 33 was bought at 27 gs., by Mr. Hart; lot 39, at 54 gs., by Mr. Rigden (Sussex); lot 40, at 40 gs., by Earl Winchelsea; lot 45, at 26 gs., for the Duke of Beaufort; lot 46, at 67 gs., by Herr Fischer; lot 53, at 20 gs., for Lord Chesham; lot 60, at 36 gs., by Mr. Walton; lot 61, at 35 gs., by Monsieur Bonneau; and the last ram before luncheon, lot 62, at 94 gs., by G. S. Foljambe, Esq.; lot 68 went at 31 gs., to Herr Fischer; lot 47, at 17 gs., to Mr. Riddell (Playford); lot 80, at 15 gs., to Mr. John Clayden; lot 90, at 25 gs., to Mr. Turner; lot 91, at 25 gs., to Professor Nathhorst; lot 92, at 28 gs., to Mr. Samuel Jonas; lot 102, at 55 gs., to Lord Walsingham; lot 103, at 21 gs., to Mr. Manbury; lot 104, at 23 gs., to the Duke of Beaufort; lot 105, at 15 gs., to Mr. James Everett; lot 106, at 15 gs., to Lord Braybrooke; lot 107, at 20 gs., to Lord Walsingham; lot 114, at 21 gs., to Mr. J. C. Taylor (America); lot 126, at 21 gs., to Mr. S. Jonas.

The yearling ewes were very beautiful, and the lots of five, as they were sold, were nicely matched as to color and size; and they excited

quite a smart fire of biddings among the eigners. The first lot of five offered were at 15½ gs., per head, to Herr Fischer; lot 15 gs., per head, to Mr. Corneille; lot 3, at gs., ditto, to Professor Nathhorst; lot 4, at gs., per head, to Count Chauce; lot 5, at gs., to Marquis Perallas; lot 6 (only four, having died), at 15 gs., to Herr Fischer; lot 7 at 10½ gs., to M. Belleras; lot 8, at 14½ gs. Marquis Perallas; lot 9, at 20½ gs., to Herr Fischer (the highest price given); and lot 14 gs., to Lord Braybrooke. Only 11 or 20 lots sold before luncheon were bought for country, the remaining 19 being for France, Germany, America, and Sweden.

The Marquis Perallas, of Spain, was a buyer, especially of the ewes.

The following is a summary of the sale:—

148 yearling rams averaged ..	£19 0 0	=	£2811
250 yearling ewes averaged ..	10 1 3	=	2393
437 yearling sheep averaged ..	13 1 20	=	£3720

The summary of last year's sale may be given for comparison sake:—

109 yearling rams averaged ..	£24 17 6	=	£2711
199 yearling ewes averaged ..	11 2 0	=	222
305 yearling sheep averaged ..	15 19 6	=	490
650 (add) older sheep do ..	9 2 0	=	645
967 sheep (1861) averaged ..	11 6 0	=	10916
437 sheep (1862) average ..	13 1 10	=	572
1404 sheep averaged ..	11 17 3	=	£16,616

A: the close of the sale hearty cheers were given for Mr. Webb and his family, and the regret was universal that a period has at length been put to the princely hospitalities at Babraham.—*Bell's Messenger*.

Horticultural.

Criterion of Fine Vegetables.

The Garden is the most important appendage to the many of the substantial comforts, some of the most refined luxuries of human tenance. Its cultivation furnishes a source of health, pleasure and economy, which may be enjoyed by every industrious owner of a few rods of ground, who can devote a little time between his hours of business or labour to this delightful employment. If his occupation and extent of his enclosure will allow him to indulge himself for fruits and flowers, he may take much pleasure and derive great profit from the management of the vegetable garden alone.

For the purpose of selecting an assortment of the purest vegetables, best suited to the use which they are grown, we have fixed upon certain qualities which we seek amongst the different kinds:

In the Blood Beet we always look for a colour, smooth handsome form, small top,

tender flesh. In the Orange Carrot, top, smooth root, and deep orange colour. The Cabbage, short stump, large compact head, with but few loose leaves. In the Cucumbers, straight, handsome form, and dark green skin. In the Lettuce, large close head, pleasing flavour, with the quality of standing the heat, but soon running to seed. In Sweet Corn, ears, very shrivelled kernels filled over the top of the cob. In the Cantaloup Melon, rough rind, thick, firm flesh, and high flavour. In the Water Melon, thin rind, abundant and well flavoured juice, and bright red core. In the Onion, round shape, small neck, deep colour, mild flavour, and good keeping quality. In the Parsnip, small top, long smooth root, rich flavour. In the Pea, low growth, full pods, large and tender peas, rich flavour. In the Scarlet Radish, bright colour, small top, clear root, and quick growth. In the Squash, medium size, dry, grained, deep coloured flesh. In the Turnip, handsome form, small tops and tap root, and crisp flesh.

Persons who have never seen better sorts than these possess, suppose they are of the first quality, and they may be very inferior, or almost worthless, when compared with the finest varieties.—*Gardener's Almanac.*

Moral Effects of a Taste for Flowers.

A correspondent sends us the following extract from an address delivered before the British Association, "on some practical reports derivable from the study of botany:"

Mr. Ward proceeded to urge the importance of cultivating a taste for legitimate horticultural pursuits among the members of the labouring class, as it was a well established fact that, wherever a pink or a carnation or a rose was cultivated outside a cottage, there was a potato or a hedge for the pot within; that if there was happiness, there was the nearest approach to it in this world, content:

Yes in a poor man's garden grow
Far more than herbs or flowers—
And thoughts, contentment, peace of mind,
And joy for weary hours."

In a recent communication from the bishop of Ripon was to this effect: "The parish of Skipton, near Skipton, in Yorkshire, situated in a very wild part of the country, and inhabited by a wild and lawless tenantry, had been for many years without a resident clergyman, the incumbent being a very poor one—not above £30 a year. The present incumbent, the Rev. Mr. [name], determined, however, to set himself down to the task, and to use his utmost exertions in ameliorating their wretched condition. To this end he surrounded his house with a fine garden stocked with lovely flowers, and induced his tenantry—but with great reluctance—to come by one to see and admire his flowers, and

to take them home and cultivate them. Now, for the first time, they had light in their dwellings; ultimately, through the kind and constant personal care which was bestowed upon them, they have become the most contented and happy set of villagers in all Yorkshire."—*Church of England Magazine.*"

Domestic.

Receipts for Making Various Articles of Food of Indian Corn Meal.

Corn Meal Pudding.—Scald four quarts of milk, stir into it one quart of sifted meal, one cup molasses, a teaspoonful of salt, a little spice of any kind you like; bake it three or four hours in a pretty hot oven.

Baked Pudding.—To two quarts of milk, add one quart of meal, a little salt, and a cup of sugar. Prepared by heating the milk over the fire, stirring it occasionally to prevent its burning; when it scarcely boils, remove it, put in the salt and sugar, and scatter in the meal, stirring rapidly to prevent it collecting into lumps; put in the nutmeg and turn it in a deep pan. Bake immediately, or otherwise as may be convenient, in a hot oven, three hours. When it has baked an hour or more, pour over the pudding one gill or one half pint of milk; this will soften the crust, and give it a delicious whey.

Boiled Pudding.—Into two quarts of meal stir three pints of boiling water, some salt, and a gill of molasses or treacle; spice or not, as you choose. Tie up in a strong cloth or pudding boiler, put into boiling water, and cook over a steady fire for three hours.

Superior Boiled Pudding.—To one quart of Indian meal, add three pints of hot milk, half a pint of molasses or treacle, a dessert spoonful of salt, an ounce or more of beef suet shred fine. Stir the materials well together, tie them in a cloth, allow room for the pudding to swell one-eighth larger, and boil it six or eight hours. The longer it boils the better. It may be made without suet.

Indian Dumplings.—Into one quart of meal, stir one pint of boiling water, and make them into smooth balls, two or three inches in diameter. Immerse into boiling water, and cook over a slow fire twenty or thirty minutes. If you choose, put a few berries, a peach, or a part of an apple, in the centre of each Dumpling.

Superior Dumpling.—To one pint of sour milk with carbonate of soda, add one quart of meal and a large spoonful of flour; roll out with flour and put in an apple, and cook as before.

Green Corn Pudding.—Take eighteen ears of green corn; split the kernels lengthwise of the ear with a sharp knife, then with a case

knife scrape the corn from the cob, leaving the hulls on the cob; mix it with three or four quarts of rich sweet milk; add four eggs well beaten; two tablespoonfuls of sugar; salt to the taste; bake it three hours. To be eaten hot with butter.

Homony.—This article is considered a great delicacy throughout the Southern States, and is seen on almost every breakfast table. It is prepared thus:—The corn must be ground not quite into meal. Let the broken grains be about the size of a pin's head. Then sift the flour from it through a fine hair sieve. Next shake the grains in the sieve, so as to make the hulls or bran rise to the top, when it can be removed by the hand. The grains must then be washed in several waters, and the light particles, which rise to the surface, pour off with the water through the fingers, so as to prevent the escape of the grains. Have a pot or boiler ready on the fire with water in it; add the grains at the rate of one pint to two pints of the water. Boil it briskly about twenty minutes, take off the scum, and occasionally stirring it. When the homony has thoroughly soaked up the water, take the boiler off the fire, cover it, and place it near, or on a less heated part of the fire, and allow it to soak there about ten minutes. It may be eaten with milk, butter, treacle, or sugar. The flour or meal sifted out can be used to make bread or cakes.

Buck-wheat Cakes.—This cheap article of food is considered a luxury throughout the American States from the first of October to the first of April. During this period it is found almost everywhere, at breakfast, on the most frugal and the most sumptuous tables. When eaten warm, with butter, sugar, molasses, or treacle, it possesses a flavour that cannot be equalled by the griddle cake whatever. The buck-wheat flour, put up in small casks in Philadelphia, is the best that can be procured in America.

Recipe.—Mix the flour with cold water; put in a cup of yeast, and a little salt; set in a warm place over night. If it should be sour in the morning, put in a little carbonate of soda; fry them the same as any griddle cakes. Leave enough of the batter to leaven the next mess. To be eaten with butter, molasses, or sugar.

ELIHU BURRIT.

The Poultry Yard.

Fattening Poultry.

From an elaborate and excellent article in the last number of the Scottish Journal of Agriculture, we extract the following:—

“There may be said to be three principal modes of fattening, one of which is natural, allowing the fowls a greater or less degree of

liberty, and supplying as much nourishing food as may satisfy their appetite. This method is generally preferred among us, and many experienced poulterers affirm that they can obtain as good fowls in this way, as by any description of forced feeding. In France the prevailing process is different. The two other methods are artificial; one of them consisting of the total intermission at certain hours, of paste composed of farinaceous substances; the third, causing the fowls to swallow by means of a funnel inserted into the mouth, farinaceous substances in a liquid state. This latter method named *entonnage*, is so simple and rapid it is thought likely to be generally adopted in preference to any other. The filler or funnel made of white iron, should be of sufficient strength to hold one meal, having a ring below the externally, for receiving the forefinger thumb, and the orifice of the lower extremity cut aslant, the edges surrounded with a coating of India rubber, to prevent injury to the walls of the throat. The beverage which this means is to be introduced, consists of barley meal, (not bruised barley) mixed up with knots in equal parts of milk and water. When all is ready, the fowl is seized by the wings, the shoulder, the head held forward between the knees, and grasped by the left hand; while the right hand holds the funnel, opens the beak, introduces the instrument into the gullet, and the proper quantity of the mixture is poured in. The quantity of the litter should be about the equivalent of a litre, but only half that quantity given during the first three days. This must be given regularly three times in the day and twenty hours, at intervals of eight hours. The boxes or frames containing the fowls should be placed in a stable or other temperate place, protected from the currents of air, they should be littered with straw, the litter frequently renewed, and every impurity removed. The duration of this treatment is from fifteen to twenty days; if it fails to be successful within that time, the subject should be withdrawn and otherwise disposed of.

“There is one important purpose which appears to us attainable more readily by forced feeding than in any other way, and which does not receive the attention which it seems to merit. The great defect of the flesh of poultry as food, is its comparative want of flavour—somewhat insipid and tasteless. This defect we at once acknowledge, and endeavour to remedy by eating along with it ham or tallow. Much therefore would be gained if we could impart to the flesh, otherwise so tender and nutritious, a greater degree of raciness and firmness. Artificial feeding seems to present us with a means of accomplishing this; not only in the way of giving it savor, but even the very degree of flavor which may happen to be preferred. We might thus make game of our chickens, in the ludicrous, but literal sense of the expression.

We might give them the game flavor; impart to them to piquancy of flesh found in various kinds of wild birds; and even possibly render it so odorous and fragrant as to surpass them all. The effect that the nature of the flesh has on the quality of the flesh of animals, is well known. That of the caper-caille has a scent of the fir-shoots on which the bird feeds; those inhabiting low wooded regions, have less near than such as live on mountains. Domestic rabbits are always insipid when compared with wild ones. Birds feeding on certain berries—for example, of the juniper—acquire the name of their principal food. Such instances might easily be multiplied. They are sufficient to countenance the idea that, by mingling aromatic substances with the farinaceous aliment which forms the basis of their food, we could impart to it the flavor of our poultry, when subjected to forced feeding. Substances for this purpose might be derived either from the mineral or vegetable kingdom; from the former more extensively. Flavored berries, such as the juniper, the aromatic buds of trees, the tops of late plants, such as thyme, lavender, odoriferous barks, &c., would form materials to work upon. They would not require to be used but towards the close of the period of fattening, as a short treatment would be sufficient to perfume, or to give to the whole flesh of the animal. In this way the value of our most common fowls might be equally increased, and they might be brought to equal, and even surpass many kinds of game."

Veterinary Department.

(Conducted by A. Smith, V. S.)

Hunters, their Riders, and Breeders.

The majority of our hunting men of the present day will ride (with saddle and bridle) not more than fourteen stone; they are mostly strong, athletic, skillful horsemen, who must and will be carried wherever the hounds go. Need we wonder then, that they have considerable trouble in feeding, and have to pay enormous prices for horses that can go and galloping freely, and carrying with such a burden on their backs, field after field, through a strongly enclosed country. We pay as much or more attention to condition than ever we did. Our hounds are now run with more speed than formerly. Foxes are frequently rattled into and worried in less than twenty minutes. Our hunters have plenty of speed and blood, but many of them lack that essential quality in horses, "substance." They will know that the faster the pace in the field the greater will be the danger of accidents, when riding a horse under great exertion. But if he must keep pace with the field, he must select a horse with some blood in his

veins; I may almost say that racing blood of the purest kind is essential in these days when fast runs are all the fashion. But where is the class of horse now bred which combines racing speed with substance sufficient to carry a fourteen or fifteen stone man, with perfect safety over a rasping country. The refuse of the racing studs are certainly not the class of animal adapted for a service of this kind; they have been bred solely for their own single quality of speed, they were never intended to carry a man—only *baby jockies*. The useful farmer's nag bred in some countries is strong enough to carry an elephant at his own pace, but that pace is not half fast enough for our modern breed of foxhounds and style of riding up to them. We want pure blood combined with great substance, to carry men of average weight with safety and credit. There are many such horses bred, and are to be procured, but the demand for them far exceeds the supply, and it is no uncommon thing for gentlemen to give from two to three hundred guineas for such an animal. Is it not, then, desirable for farmers to turn their attention to the production of such animals. Ours is the best horse breeding country in the world. We have, I am sure, both sires and dams sufficient, with every requisite quality, to form the nucleus of many more breeding studs.

If men can be found to select them, and capital to pay for them, and with judgment and energy to enter into the business with a will and determination to carry it out liberally, I doubt not that a princely fortune would be the result. We have many intelligent and scientific farmers, men who make but few mistakes in breeding cattle and sheep; why do not they pay more attention to the breeding of horses, which would sell as readily, and at more remunerative prices than any other kind of stock. It is as easy to produce a valuable horse as a weedy screw, by paying proper attention to the breed and quality of the progenitors. But many of our farmers breed from worn out mares, and any travelling stallion that happens to pass by the farm, irrespective of all combinations of make, shape, or quality; in many instances both sire and dam may be weak in the lions, touched in the wind, unsound in the hocks, or otherwise afflicted with disease common to most aged horses, and the produce, as may be expected, turns out weak, weedy, undersized foal, with long, bad-shaped legs and feet, like its sire, coarse in its head and general appearance like its dam, without the speed of the former, or the strength of the latter, but almost sure to be afflicted with more or less of the bad qualities of both. This most prevalent error is the cause of farmers paying more attention to the breeding and fattening of cattle, sheep, or pigs, than to the breeding of valuable horses; because after keeping their colts to the age of two, three, or four years, about twenty pounds is considered a fair value for the mongrel bred brutes.

Of all the mistakes and errors committed by small breeding farmers, there is none so prevalent or so fatal as to put a worn-out, half-bred mare to a second-rate, stilty racing stallion, with nothing to recommend him but the empty and worthless consideration of pedigree.

I have seen fine promising-looking colts thrown by old thorough-bred mares when nearly twenty years old, but this is only in the large breeding establishments, where, with rest and great care, the mare has been stronger at twenty years old than at five; this is a far different animal than one who has been worked till she can work no longer, until she is full of diseases and deformities, and then made use of for the reproduction of her species. Like begets its like, and we need not wonder when the breeders who pursue this line of policy are disappointed when the produce is sent to market, and that he gives up the idea of horse breeding in disgust.

Hunters should be bred from mares in the prime of life, while their functions are at their utmost vigour. They should be selected for their power, speed, endurance, and courage, perfectly free from defects, diseases, or deformity; and should be put to short-legged stallions, with deep ribs, powerful quarters, strong loins and shoulders, with sound, well-to-med feet, and a smart, intelligent-looking head, well set on. If both the sire and dam be thorough-bred, so much the better; but thorough-bred horses with substance are becoming scarcer every year; indeed, how can they be otherwise when mares and yearlings are forced like a hot house gardener forces his grapes and pine-apples—his owner may get the size and outward semblance, but none of the substance or quality of the fruit when grown in a natural state, and allowed its own time to ripen.

There was a time when children were worked (in the cotton factories of Manchester and its districts) until it was a rarity to see one grown to maturity in the same form that God made him; the result was the notorious transmission of their infirmities to their progeny. Then it was that the legislature interfered, and effectually prevented factory owners from working children until they were qualified to stand the fatigue, without the risk of deformity. I am no advocate for government interference with private enterprise; but I think the time will come when it will be forced, in self-defence, to interfere more seriously in the matter of horse-breeding than it has hitherto done. We have too much of the present quality of racing blood running through the veins of our troopers, which renders them constitutionally weak, and unfit to stand the rigour of a winter at the picket post, especially when existing upon the uncertain supply of forage which is incidental to all armies on a campaign in a strange and perhaps hostile country. The infusion of the racing blood of the present day into the veins of troop horses

also makes them too light for the purpose they are required; a light dragoon will, with his k ride an average weight of eighteen stone. It is clear, then, that he requires a horse with substance, but it is also essential that trooper should be well-bred; and this class of horse commonly called the seven-eights bred one, can not be produced at the price given by government, indeed they cannot be produced at all except through the medium of worn-out racing stallions and mongrel-bred mares. But if government could procure a number of brood mares and stallions of the class above recommended to form the nucleus of a breeding establishment and by these means produce a number of horses and mares with good blood and substance, keeping them solely for breeding purposes, they might then without difficulty produce, by the aid of a cross with a lower, but stronger breed of horses, the finest cavalry horses that ever look through a bridle.

I cannot but think that a national stake of a heavy amount, say four or five thousand pounds, would have a most beneficial effect, no horse to start under five years old, to carry twelve or thirteen stone, a distance of four miles. We know that notwithstanding the unnatural treatment to which the race horse is now subjected that he sometimes attains very fine proportions at six or seven years old. When sent to stud he thickens, lets down his belly, and as far as regards looks, is quite a different animal what he appeared during his racing career, &c. we may have some idea what a magnificent sight would be afforded by a field of such animals, if they were kept and prepared from their very foalhood for this one great event. What to prevent such a race being established? I am convinced that it only wants starting in the most influential quarters, and the object would be gained; it would give a great impetus to horse-breeding by drawing the attention of capitalists to the subject, and awakening the understanding of those who up to this period bred nothing but weedy mongrels, not worth the shelter they lie upon. The money would soon be subscribed by masters of hounds, members of bunts, and the plucky horse-proud gentlemen of our own tight little island, and the sister country, from whence I opine many of the candidates would come.

This great event might be run off at Ascot—say in six years from the first of January, 1862—it should be open to all nations, and no allowance as to height, weight, or breed, should be made, but no horse should be allowed to start that has ever run in a race previously.

There would be one advantage to the breeding of horses for this event; that, if bred with judgment, the losers, of which there would be a great number, would find a ready market for them at remunerative prices, as animals bred with a view to win such an event would be worth

at cost price and a profit, for stud or general purposes; while the refuse of our present breeding stock is good for no purpose but to perpetuate their infirmities and constitutional weakness to our mixed breed of horses. Horses bred and reared for such an event as the one recommended are the class we most require for hunters and chargers; for which, I repeat, the demand is far greater than the supply.

In this enterprising country, where capital, soil, climate, and everything tends to encourage horse-breeders, this should not be. People hunt for pleasure; and there can be no pleasure in a fifteen or sixteen stone man riding a weedy animal only qualified to carry twelve—which we often see in the hunting-field. We have horses sufficient to carry slim undergraduates or dashing cornets; these can be bought in plenty, and at a moderate price; but hunting men of middle age require a dash of pure blood and great substance in their horses before they can "hunt for pleasure." Let us yet hope to see the supply of such horses equal to the demand; but I need not say that this state of things can only be attained by the attention of farmers and breeders being more directed to the first and most essential principles of generation and reproduction, and in our conviction that the production of good horses will pay them much better in a pecuniary sense than a mongrel-bred screw.—*Bullinastoc, the Land.*

GREAT CATALOGUE AUCTION SALE!

OF

Fruit and Ornamental Trees, &c., at Windsor Nurseries.

WILL be sold by Auction without reserve, on TUESDAY, 30th September next, at 10 o'clock, a. m., on the premises, The whole of the immense stock of WINDSOR NURSERIES, consisting of nearly everything in the Nursery line—including the finest stock of Dwarf Pear Trees, Dwarf and Standard Apple Trees, Roses, &c., at the West.

As the Proprietor is discontinuing the business, this will be found a rare chance for Nurserymen, Tree Agents, and Fruit Growers to lay in their stock at unprecedentedly low prices, as everything must be sold at whatever it may bring.

Catalogues will be ready ten days before the Sale, and will be sent with further particulars, on application to the subscriber.

Terms Cash.

JAMES DOUGALL.

Windsor, C. W., 18th Aug., 1862.

FOR SALE.

LOT of thorough bred improved Berkshire A Pigs of various ages.

R. L. DENISON,
Dover Court.

Toronto, Aug., 1861.

THOROUGH-BRED STOCK FOR SALE.

THE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$00; 20 Shearling Rams, weighing from 230 to 235 lbs. each—price from \$50 to \$100 each.

JOHN SNELL,

Edmonton P.O., C. W.

Four miles from Brampton Station G. P. R.

EAST RIDING YORK

Agricultural Society Fall Show,
AT WELLINGTON HOTEL GROUNDS,
MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the 8th, or to be peremptorily excluded.

A. BARKER,
Secretary.

THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female, Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION OF UPPER CANADA,

WILL be held at the City of Toronto on the 23rd, 24th, 25th, and 26th September next.

Persons intending to exhibit will please take notice that the entries of articles in the respective classes must be made on or before the undermentioned dates:—

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 16th.

Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, Manufactures generally, Saturday, August 30th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 13th.

Prize Lists and Blank Forms for making the entries upon may be had of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,

Secretary Board of Agriculture.

Toronto, August 1, 1862.

VETERINARY SURGEON.

ANDREW SMITH, Licentiate of the Edinburgh Veterinary College, and by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces that he has obtained those stables and part of the premises heretofore occupied by John Worthington, Esq., situated corner of Bay and Temperance streets, and which are being fitted up as a *Veterinary Infirmary*.

Medicines for Horses and Cattle always on hand. Horses examined as to soundness, &c.

Veterinary Establishment, Corner of Bay and Temperance Sts.

Toronto, January 22nd, 1862.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES, FOR UPPER CANADA,

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