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THE

CANADIAN AGRICULTURAL JOURNAL.

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The Montreal Newspapers have occupied lately a considerable portion of their columns in discussing the subject of Free Trade, and the English Navigation Laws—and though these subjects may not be the most suitable for the pages of an Agricultural Journal, we think it due to the interests we attempt to advocate to submit some observations upon them also, convinced as we are, that the recent changes in the English Custom House Laws, will have a very great influence, for good or for evil, upon the Agriculture of Canada. The proposition of allowing all to “buy in the cheapest, and sell in the dearest markets” is very plausible and reasonable in theory, and upon paper, but we deny that it can ever be practically and fairly acted upon, until all civilized nations consent to adopt the principles of free-trade in every article bought and sold. We do not now, and never did, object to the principle of free-trade, if generally and honestly acted upon, but we never gave our humble support to any partial measure short of general free-trade in all the productions of the earth, and of men’s industry. We believe that this would be for the general good of mankind, but nothing short of this can be just towards all classes and interests, and how this general free-trade can be adopted in the British Empire, and raise the necessary revenue, is altogether beyond our humble comprehension. So far as regards Canada, we are perfectly convinced that the agricultural population cannot under the existing laws and the further changes contemplated, “buy in the cheapest and sell in the dearest markets”—but that the exact contrary will be their case, that they will have to “sell in the cheapest and buy in the dearest markets” all they may require. This is what we complain of, as being unjust towards the Canadian agriculturists. If all obstructions upon trade and commerce were removed, agriculturists could buy cheap, if they had to sell cheap. There is, in our humble judgment, a very great mistake in supposing it possible, that we could “buy in the cheapest while we could sell in the dearest markets,” until free-trade is established all over the world. A home trade is considered in almost every case, to

be the most profitable and must be much the most extensive in every country—in a home trade, we would ask, how could it be possible to sell dear to those from whom we would buy cheap? If such a thing could be done, it would be simply transferring by degrees the property of the seller to the buyer, until the former would have no more to sell. We can only continue to sell cheap and buy dear, while the property we may have will be able to sustain such a constant diminution. The whole proposition is a false one, and is utterly impracticable, until, as we before observed, free-trade is generally established all over the world. If trade and commerce had a free and unobstructed circulation over all the earth, we might, perhaps, “buy in the cheapest and sell in the dearest markets”—but certainly not otherwise, and we defy all the free traders that ever existed, to prove the contrary, or to prove the practical truth of the proposition which they have so long cherished and pretended to believe possible, namely—“to buy in the cheapest and sell in the dearest markets.” So unequal and unjust a sort of trade must soon produce its own cure, because our means would not afford us to continue very long to sell cheap and buy dear. So far as agriculturists are concerned, we trust they shall never object to sell as well as to buy in free and open markets, and take their chance. They have no desire to sell dear and to buy cheap; they only wish for the establishment of an equitable principle that will give them “a fair field and no favour” in transacting business with other classes. The agriculturists did not desire the recent changes; and those who desire further changes in protective laws, should commence with those that protect their own interests, to do them a way first; they will then be better entitled to call for the abrogation of all other protective laws. As to the English Navigation Laws, there appears an actual necessity for a great change in them so far as regards British America, and we, agriculturists, disclaim all participation in the measures that have produced these necessary changes, and those who forced them upon us must abide all the consequences of what may follow. Notwithstanding all the plausible reasoning to the contrary, we

are perfectly convinced that unless such changes are introduced in the English Navigation Laws as will have the effect of greatly lowering the charges of freight from this country to England, it cannot fail to be most injurious to the interests of Canadian agriculture. This matter is not considered in a proper way. The agricultural produce of Canada and the Lumber have to pay all this high freight, because the persons who sell these articles in the English markets will pay a price here in proportion, deducting the cost of freight, &c. It is not the English consumer that pays this freight, but it is the Canadian producer who has it deducted from the price of what he has to sell.

We would be the last of Her Majesty's subjects who would willingly advocate any measure that would be likely to diminish the power and influence of the British Empire, but we cannot help seeing the injurious consequences to this province of the empire, that we should have a free-trade in foreign agricultural productions, a protected and privileged shipping to carry this foreign produce as well as the products of this country. We may be told to build ships and carry our own products, and it is our own fault if we do not, but there are many circumstances that prevent this, which we will not attempt to explain on the present occasion. We might as well be told that we should be able to keep all foreign agricultural productions out of our markets by underselling them with our products. The farmer of Western Canada will not be able to realize much for his produce after all the expenses of transport to the sea, and across the Atlantic are deducted from it. A few pence in the cost of a bushel of wheat or other articles in proportion, would make a great difference in the farmer's profits, English shipping must find it an advantage to go to other countries in preference to this, and consequently this circumstance will make freight scarce and dear in Canada, when it might be abundant and cheap if open to free competition. We are to be exposed to an unlimited importation, while there will be a limited supply of freight to carry it, and of course this must greatly enhance the charges for the freight we may require to hire and not be able to obtain sufficient freight for our wants. They must be prejudiced indeed, who do not perceive what the consequence would be to the Canadian producer for foreign exportation if there was not sufficient freight to come to Quebec to carry it away. Of course it must raise

freight very much, and in the same proportion diminish the value of our produce and lessen the demand. Will any one pretend to say that it may not be the interest of some parties that matters should be always kept in this state to insure them larger profits? The case is too plain not to be readily comprehended. Hence it is, that if free-trade cannot be general, it must be unjust and injurious to some interests. In fact, it is nothing less than a licence to one portion of the community to levy a tax upon another portion, and apply it to their own benefit. We do not see the justice of taxing a man who may choose to use wine and beer as well as bread and meat, any more than the man who takes cold water with his bread and meat, and hoards up what he might have given for wine and beer. The moderate use of one part of the earth's produce is as lawful as another part, and should be as free. The water drinking portion of the community would willingly raise a revenue from the portion of a community who use wine and beer, and upon what just principle we cannot imagine. Thus it is throughout the whole piece,—one portion of a community wish to accumulate wealth at the expense of the other portion, under the pretence of buying in the cheapest and selling in the dearest markets, and levying taxes and revenue upon some articles and not upon others. Our own firm persuasion is, that the revenue should be raised in due proportion on every article of consumption or by direct taxation according to man's every means of paying, doing away restriction on all trade, commerce and industry of every description. Either of these two methods of making revenue would be the only equitable mode that would be just and equal towards all classes and interests.

It is absurd to charge the agriculturists of Canada with ingratitude for desiring a change in the English Navigation Laws, when this desire is only the consequence of measures forced upon them, contrary to their wish. It appears unreasonable that we should be deprived of all preference and encouragement and be subject to the exorbitant charges for freight by a protected shipping, that we must employ to carry our produce. We desire no other than English Ships to carry our produce, but unless the charge for this freight is greatly reduced, it will be sure to extinguish the trade, and put an end to all chance of our being able to produce for exportation. High wages, and high freights, with an unlimited

competition of foreign agricultural productions raised under a different system and climate, would offer the Canadian farmer no encouragement to produce for exportation, and they will be forced to encourage a home market and adopt a system of barter. We see no alternative but to advocate free-trade in all things, bought sold, or hired, or in none.

PROFESSOR JOHNSTON'S LECTURE.

On Tuesday evening, a meeting of members of the Society and their friends, was held in the Nelson street lecture room, to hear a lecture from Professor Johnston on the chemical principles involved in the preparation of manures, and their action upon crops. The attendance was pretty numerous.

The noble CHAIRMAN said—It is my duty to introduce to your notice Professor Johnston, whose object tonight is to lead you—not to lecture—but to lead you to this discussion, and thus to state to you those observations and facts which he is so well enabled to bring before us, for the purpose of inducing each and all of you, to take part in the discussion. The subject, then, is not a lecture, but a discussion (applause). Now, gentlemen, the way in which I propose that the discussion shall be carried on, is this; as soon as Professor Johnston has made the statement which he has to lay before us, I propose to ask any gentleman to address such observations as he may think applicable with respect to whatever may have arisen (applause). I shall hold in my hand a paper containing the various points to which I should wish to call your attention, the object being to obtain all the information we can from those residing in this locality, and at the same time give in return all the information possessed upon the subject by those who came from the south of England. (applause.)

Professor JOHNSTON upon presenting himself, was loudly cheered. He said—My Lord and gentlemen, the subject which has been selected by your council for the purpose of being made the subject of discussion this evening, is one of so very important and mighty a nature that I could not hope to explain to you the principles which it depends in a single hour which is the very utmost time that I suppose ought to be placed at my disposal. But besides, gentlemen, the observations that I am about to offer you are intended to lead to an after discussion, and therefore, inasmuch as the essential principles do not perhaps, well admit of discussion, in a meeting like, the present, I shall select such points to bring before your notice, as are of a practical nature—points which I hope will suggest to your mind topics upon which I hope you will be able to lay before the meeting observations far more valuable than I can offer you (applause). Gentlemen, the relation of British agriculture to the present condition of this country, involves too great points. In the first place, the production of a larger amount of corn, for the purpose of rendering us independent of foreign supplies, so as to enable us to meet the wants of our large and increasing population; and in the next place, it demands the production of this increase at a cheaper rate; so as to enable us better to contend with foreign competition (applause). The first of these ends—the production of a greater amount of corn—may be obtained in one of two ways—either by bringing more arable land into cultivation, or else by causing the land which is now under culture to produce a greater amount of corn, (applause). In

regard to the first of these means there are, as you are doubtlessly aware, great difficulties in our way which 20 or 30 years ago, did not exist. As you know, there was a large quantity of land, twenty or thirty years ago, which lay waste, but which has since been brought into cultivation, and consequently it cannot be expected that an equal amount of land can be reclaimed during an equal number of years to (applause). On the other hand the present amount of corn may be increased by rendering the land more productive, that is, by causing land which now only yield four quarters an acre, to produce five (applause). Again corn may be rendered cheaper, in two ways. It may be done by lowering rents, or reducing the rate of the agricultural wages; or, secondly by increasing the produce of your land without increasing the expense of production, by causing lands which yield four quarters per acre, to produce five without any increase of expense (applause). Now an interesting question arises in the outset, which I am sure you will like to have your attention directed to. If by making the land more productive we are to raise more corn at a cheaper rate, how much of the land of the kingdom is capable of being so rendered more productive? If you were to ask my own individual opinion upon this point, I should at once state it as being my belief, that nearly nine-tenths of the lands under cultivation in Britain, might be made to produce more corn than at present by the application of improved treatment, (applause). I speak this, gentlemen, as my own individual opinion; but as this is a point of great importance, I have merely thrown out this opinion for your consideration, and I trust that it will call up some gentleman who is better acquainted with the productive qualities of the land in the kingdom than I am, (applause). But suppose, gentlemen, the land is capable of being rendered more productive, you will ask to what extent? Now in regard to this question, I believe it is impossible to give a very decided or absolute answer. But I can examine the land in one part of the kingdom, and ascertain how much corn it is capable of producing; I can examine the nature of that soil, and ascertain its formation. Unfortunately I have not a map with me, as I supposed I had. We will, however, suppose that there is a soil of a different formation and a given geological quality at this end of the room, and that at the other end of the room there is a land of a similar quality; if, then I find the land I have pointed to in the first instance will grow thirty or forty bushels an acre, then I say I am justified in inferring that the other land having a similar or equal soil, will produce an equal quantity (applause). And if I see some land of equal geological quality as the first-named land, then I am entitled to say, that it only requires the exercise of proper skill to bring it within an equal state of productiveness (applause). A short time ago I happened to visit the estate of an old friend of mine, Mr. Achaieson, of Dromore, whom some of you doubtlessly know, and after walking over his farm, he showed me his books, in which he had kept an account of the extent of his land, the produce, and what he sold it for, from the commencement of the present century. In 1820, I found that the produce of 100 acres of that land averaged 50 bushels of oats per acre. In 1832, I found that 120 acres of land sown with wheat produced 40 bushels per acre, whereas this 120 acres afterwards, the season being better for, oats, produced 80 bushels of oats. Now, when I came to examine the nature of the soil, I found that this difference was caused by the application of an improved system of management and a proper system of manuring (applause). This soil, was not of a good quality being upon a coal-sub-soil, and

exposed to the east winds from the Frith of Forth, and yet in that District we find that a farmer has been able to raise the amount of his produce to 85 bushels of oats per acre on the extent of land amounting to 100 acres. (applause). I take this as my stand. You may say that this is the limit to which a man may go. For my part, however, I do not think it is, but that I am entitled to say to you that by the application of similar means to similar land the same results will follow, (applause). And then, again, gentlemen, if from these districts—if from these coal measures—and I allude to these coal measures because you have them in abundance in this neighbourhood—if, I say, in this country, you find this to be the case, I would carry you still further north, and I would assume that some of you know the country of East Ross-shire, and some, I doubt not have skirted the eastern coasts of Sutherlandshire, and beheld the large crops of wheat and turnips to be found there. Now if I had had a geological map, as I intended to have had here, I could have shown you various districts, in different parts of the island, where the geological character of the soils are identical with those of Ross-shire and Sutherlandshire. And if you and, in South Wales, land of a similar character to that which eats up all the dung, and drinks up all the water given to it, and on which equal crops might be grown, to those grown further north, but which in Wales produce much less then, I say, I am entitled to believe that, if equal skill was applied, equal results would follow (applause). But I think, as a scientific man, I am bound to put to myself a further question—I am bound to ask myself whether we may not justly and fairly compare unlike soils to like soils, compare good and natural fertile soils, with soils naturally unfertile; and you are entitled to ask of science whether it is not in the legitimate scope of the agriculturist to bring about such a state of things at least that the naturally unfertile soils shall grow as much as the naturally fertile soils (Hear). Now, without saying it is impossible to do so with this or that peculiar soil, there is one thing which I can justly and fairly assume from the progress of scientific skill, that there has been, and can be, great improvements in poor lands (applause). I am as unwilling as any sceptic unwilling to be sanguine, in my expressions; but I do think that practical men are justified in asking from science whether such an improvement is one which can be ultimately accomplished? (Hear). And I do say, that I cannot see my way to the result that the scientific man is justified in saying that this is an object which the practical man may not justly expect from the scientific man: at the same time I must allow that for such a result we must allow time for the further development of science and knowledge (cheers). I allude to the progress of sound knowledge and practical experience, because I have lately found published, in various periodicals, a relation of various experiments—and experiments are valuable by whomsoever made, but more especially so when made by skillful men. Among those were some made by Mr. Vernon Harcourt in which he had applied, for the growth of turnips, bones and guano to certain soils. By the application of bones he procured 30 tons per acre: by the use of guano, he got 30 tons, and by the use of both together he procured no more than the same quantity; and from this he inferred that he had reached the utmost limits to which human skill could go (Hear, hear). Now these experiments are excellent. They are so for materially contributing to the progress of knowledge; but the conclusion I believe to be hasty; for I am quite sure that the practice of other men would have produced still greater crops (cheers). Suppose, with myself;

that the land will be made to yield larger crops, the question next arises how is this increased production to be brought about? There are two ways in which this increased production can be promoted: the one is by economy; and though I may not always use this word economy, I held that no farmer is bound to undertake improvements which do not pay their own cost, and leave him a profit besides, and the principle pervades my observations whether I make use of his words or not (Hear, and cheers). It is nothing in my eyes that, by the application of chemical mixtures you can grow three or four bushels of corn more than your neighbours, unless the value of that increase very considerably exceeds the value of what you apply to the land; and, therefore, if I leave the word out, I beg you to remember that is my opinion of improvement. There are two means of improving the land, then—draining, subsoiling, the use of any of those beautiful instruments which you have seen to day, or the application of manures. Draining, and the first thing mentioned, will come more particularly under your consideration tomorrow. But the set of means are chemical means, and this includes, among other things, the application of manures (Hear). Many of you perhaps might say—and justly—that your land required no draining, but you would parhous else say that the land can be rendered more productive. If I ask you as I did Mr. Acheson, of Dromore, how that was to be done, you also perhaps will inform me that it was because your land had been highly manured (Hear and cheers). This was the secret of your success. If it were necessary for me to bring before you an illustration of the observation I have witnessed, in the great benefit of this high farming on a large scale, I might draw attention to the neighbourhood of many of our large towns—not, I am sorry to say, in the neighbourhood of Newcastle—and the fertility of these neighbourhoods. I take you particularly to Edingburgh; but I might also take you into Lincolnshire, and ask you how it is the heaths and the woods have been rendered fruitful? I would answer that high manuring was the source of all this success (loud cheers) Now the question which you will naturally ask of me, and which I am called on to answer, is, how that high manuring acts to produce so beneficial a result? This is answered just by telling what those plants require from the soil, and secondly of what manures consist. The first is easily answered. If you burn a piece of wood, it burns away, but all is not consumed. A small quantity remains behind. And that is the case with all the vegetables you produce—the recidium being in some cases more, in others less. In the burning of all vegetable and animal substance you have this portion left behind, and this is called ash or the inorganic portion of plants, whilst the part which disappeared was the organic part. The inorganic parts differed in quantity in various plants. (Mr. J. here referred to the tables placed on the wall to illustrate the difference in the quantity of ashes, and continued.) Now let me draw your attention for a moment to the organic parts which constitute the largest portion of parts. I can best illustrate this to you by taking a quantity of flour, which I will make into dough, I wash this dough, and pour the water with which I washed it into a tumbler, through a piece of muslin, the water will pass through into the glass of a milky colour; in a short time a pure white substance will settle to the bottom—that is starch. But upon the muslin there will be a substance which will not pass through, and which is totally different from the starch and also different from the dough itself—this substance is what is called “gluten.” You must apply what you see here to every other plant and part of plants.

It is true that every plant has these kind of matter: one somewhat like starch, and the other nearly similar to gluten. Now this starch—the one portion of organic matter—consists of three elementary substances. In this part of the country (in the north of England) it is hardly necessary for me, for the instructing of the inhabitants of the town, to make them acquainted with these three elementary substances; but I do it at the request of the council, and I shall, therefore, for a moment or two draw your attention to them. Gluten, then, consists of carbon, hydrogen, and oxygen. Of these three substances, the first of them, carbon, is most familiar to you under the name of charcoal. This black charcoal which you see here is carbon, with a very trifling foreign mixture. The next two substances consist of different kinds of air. Now, it is impossible for us, by the senses, to perceive the difference of these two kinds of air—oxygen and hydrogen. But it is very fortunate that we are not bound by our senses, that we possess intellect, which can discover what the senses cannot, and by the application of which the Deity has enabled us to make discoveries which twenty senses would never do. Now, I take this simple instrument, this lighted taper, and place it in the bottle containing hydrogen; the taper is extinguished, and the hydrogen takes fire and burns. If I put the taper into this other vessel containing oxygen, we perceive at once the difference between these two elementary substances, which our senses would not enable us to do. The taper does not refuse to burn; on the contrary, it burns with far more brilliancy than in common air. Now, of these three substances—of these two gases, hydrogen and oxygen, and of carbon—this charcoal, this starch, exists in all the vegetables you reap; in all the vegetable food which is used for the support of our bodies, there exists a large proportion of those substances which consist of those three elements only. But I have told you there exists in all vegetables a substance called gluten. Now this gluten—besides the three things to which I have called your attention—contains a fourth called “nitrogen,” and a very small quantity of sulphur and phosphorus. Now the senses of sight and smell will not tell you that this is anything but common air. The same little instrument which we used before, however enables me to tell you that there is something besides common air, and oxygen, and hydrogen. When I put in the taper, it is extinguished as it was in hydrogen; but you will recollect the hydrogen took fire: this does not. Here, then there is a clear distinction between hydrogen, and oxygen, and nitrogen. Now these four—carbon, hydrogen, oxygen, and nitrogen—with a little sulphur and phosphorous, exist in all plants; and also in all plants, I must beg of you to remember as a point which before I close, will be of great importance, there is a substance called “gluten,” or some substance which resembles it in containing nitrogen. I now come to the inorganic matter or ash. What does this ash consist of? Potash, soda, lime, magnesia, oxide of iron, manganese, phosphoric acid, sulphuric acid, chlorine, and silica. Now it would require a whole lecture to explain the properties of these ingredients of the ash, and I will not, therefore attempt to do so: with most of them you are familiarly acquainted, as the common pearl ash, the soda, and lime; oxide of iron is the rust of iron, and oxide of manganese is very like the oxide of iron; phosphoric acid is the substance called phosphorous, which I hold in my hand, and which commonly ignites when placed against a piece of warm iron; the sulphuric acid is the common oil of vitriol; chlorine and silica are the two remaining ingredients of the ash which I mentioned. Now these

exist in all plants; and having explained that to you, let me tell you further, that every plant you grow obtains a certain portion of its substance from the soil and a part from the air. Now the substance which is got from the air all plants may get, although I do not say that they always do; but the substances out of which is formed gluten are got from the soil. I have now explained what a plant consists of, and where it gets the substance of which it does consist; and allow me to tell you that the plant lives on its food as we do (laughter and applause). It draws its food from the air and the soil, and that which it draws from the soil must contain those things which form gluten. If, gentlemen, the soil contains the whole of these things, then it is naturally productive; if it does not contain them, it is not a naturally productive soil. We must then add those things of which the soil is deficient, and those things which it does not contain at all (applause). This is the way in which I wish you to act. In feeding your stock you give them plenty of that food which you know is good for them, and if you give them plenty of good food you know that they will grow fat and large, if not they are starved and stunted (Hear, hear). Now you must just do the same to your crops (laughter and applause). You must put plenty of suitable food in the soil; previous care being taken to know what is required (loud applause). Now, gentlemen, I come to the other division—to another question which here arises. If these be the ways in which manures act, and if their action is of so great consequence to the crops, you will naturally ask in what way the manuring can be more generally secured throughout the country (Hear, hear). In what way can it be more generally adopted, introduced, and practised? In the first place, many of you are aware, as was remarked by a gentleman who came in the railway with me yesterday, that a great and unnecessary waste takes place in the farm-yard, and in the management of the farm generally (Hear, hear). We find a ready method by which a high manuring can be secured, in the adoption of means for husbanding what is not allowed to run to waste. I know there are persons here who understand this part of the subject much better than I do, and will be better able than I am to direct your attention to it; but if you refer to the table exhibited you will see the composition of the liquid part which runs away in the first place from the byers in which the cattle are kept, and secondly from the manure heap itself. You will see that whilst the liquid manure contains phosphoric acid, and that the liquid that runs away from the dung heap contains phosphoric acid; therefore, there is not only a loss of the liquid, but also of the liquid which is allowed to run from the dung heap and go to waste. This is a point, however, to which I hope some other person will draw your attention. Then there is another method by which high manuring may be secured, and that is by saving the waste of our large towns. You all know what the waste of large towns consists of, and that the waste of large towns such as Newcastle and London can be collected and applied to the land, and you know that a much larger amount of corn would be produced from the land to which that manure is so applied. That is a point to which I will but briefly allude. It is one surrounded by great difficulties. There is, first, the difficulty of collecting this; and then there is another difficulty to which scientific men have not turned their attention, namely, how it is to be disposed of? You must not only collect the substance, but you must find a market for it. You know very well that the manure of London is purchased at the mouth of the Tyne for a shilling a ton; and the waste of Newcastle

may be bought for a shilling a ton. So that there must be a very small demand when so small a price is given for it. In towns like Newcastle and Durham, the revenue from this source by no means pays the expense of collecting it from the streets; but there is no reason why the demand should not be greatly extended, and the revenue from that source be applied to defray the expenses of police. In a large town like this, where extensive manufactories exist, there must be many substances which, if collected and applied to the land, would make it more productive; such as the refuse of gas works, soda manufactories, and soap works: and these could be supplied to the farmers for little or nothing. Another means by which a higher manuring can be secured, is, by the extended use of imported manures. The importation of bones has almost revolutionized agriculture, and the introduction of guano has produced a still further revolution. There are two ways in which these manures act in producing these results. The latter kind is extremely portable; and by carrying it to high places where the ordinary manure could not be conveyed, large crops have been produced where before all was sterile and unproductive. The portability of guano has caused it to be much more generally applied than bones. If we take the town of Berwick, for instance, before guano was introduced, the amount of bones sold in Berwick, was three or four thousand tons in the year, amounting to about 20,000*l.*; last year not more than six or eight hundred tons were sold, amounting to not more than about 4,000*l.* but instead of the 16,000*l.* worth of bones formerly sold, there have been 5,000 tons of guano imported and sold, which, at 6*l.* a ton, amounts to 30,000*l.* taking the place of 16,000*l.* worth of bones. Farmers do not apply manures for the mere sake of applying it, but for the purpose of rendering their land more productive and getting more corn from it; and such has been the result of the application of guano, which being more portable than bones, can be applied where bones cannot; for example, as a top dressing for land. Another means by which a higher manuring can be secured, is, by the preparation and extended use of manufactured manures. I have already explained the composition of plants and the general principles on which we apply manures to land to increase its fertility. Suppose you have a soil composed of sea sand, which the plant can derive none of the substances which go to form its constituent elements. In order to render it productive you must add those substances which the plant requires. And if the soil contains some things which the plant requires and be deficient in others, then you must supply those substances of which the soil is deficient, and which the plant requires, in order to render the soil productive. You must adapt the manure also to the peculiar description of the crop you require to grow—wheat, barley, oats; or, according as the land is deficient, the substance which they require must supply the deficiency, in order to render it capable of yielding a good crop. Of course the practical farmer will take care not to add to soils the things they already naturally possess. Gentlemen, before concluding, I must say that there is one point of very great importance to which all must ultimately come: it is one which, when we have arrived at it, will have created an entirely new era in the practice of agriculture. I believe the time will very soon come when you will no longer purchase manures ready compounded to your hand—when you will no longer buy this man's guano and that man's guano—this man's manufactured substance and that man's manufactured manure—under whatever name it may pass. The time will come,

I say, when every man will know what his plants require, what his soils contain, and consequently what substances his manure ought to contain; and having this knowledge, no man will buy manure, the analysis of the composition of which has not been published. Not only will he not buy substances with the composition of which he is not acquainted, but the qualities of which he cannot understand, he will be able to prepare his own recipes, and send them to the manufacturer to be prepared. In the north of the island—where I am better acquainted with agriculturists than I am in the more southern parts—I have ventured to predict that this state of things will come round in about five years hence. In five years hence, I say, I believe, the farmers of Scotland will make up their own recipes, and send them to the drysalter to prepare for use. I don't know how soon this may be the case in this part of the island, but I do know that this is the legitimate end to which we, as scientific men, and you as practical men, are bound to look. I think it is one which you ought to regard as deserving of your striving to attain it. But, gentlemen, I am quite sure that you will agree with me in this. If we are to arrive at this point, knowledge must be diffused more widely amongst the agricultural body than it has ever hitherto been (Hear, hear). You will see the importance of diffusing elementary scientific knowledge more generally among the agricultural body—of enabling them to know what potash and soda, lime and magnesia, and all similar substances are. He cannot know the value of them on his farm unless he knows what the things are themselves. Therefore you will see how important it is that the knowledge should be generally diffused throughout the community. It is important to the country at large because the consumption of the country is continually increasing. And further, you will see how important it is to attain this knowledge when every class is vying with every other class in the attainment of knowledge, and when it is particularly desirable that the agricultural community should not lag behind their countrymen. The manufacturers of corn ought not to allow their intellect to be less developed than the intellect of the manufacturers of cotton (Applause). Not only is it desirable that he should be elevated in the standard among his fellow-citizens, but how important it is that you should enable your sons to obtain this knowledge! Because it is quite certain that the next generation of farmers must know more than the present and past generations have done (Applause). If, gentlemen, your sons—who shall live when you and I are gone—do not attain this knowledge; if they are not better instructed than their grandfathers were, your sons will vanish from the land. They will not occupy their father's places, but will give way to other men. It is, a consideration of very great consequence and one that ought to have much weight with you, that Birmingham large towns—in Liverpool, Manchester, all they ham, Edinburgh, Glasgow, and Dundee—in every large town, in fact, the heads of manufacturing establishments are bringing up one or more of their sons to farming (Hear, hear). And how are these manufacturers to bring up their sons to be farmers? Not merely by sending them to work and drudge with this or that practical farmer, but by sending them to the fountains of knowledge, and giving them the best kinds of information, thus arming them to the utmost of their power, and enabling them to overcome and vanquish the stubbornness of the soil, and other disadvantages which they may have to encounter (Applause). Manufacturers' sons, then, are learning to take the place of farmers' sons. Hitherto the tide has set the other way. From the country to the towns

has been the order of things until now: but by and by the tide will begin to turn, and the sons of the manufacturers will begin to turn your sons from the cultivation of the land. There are many curious facts which, I can tell you, do not speak very well for the agricultural body. It is said very often that the agricultural body does not want knowledge. For example, I have been told that, in the college at Cirencester, among forty men entered, there were only six or eight who were the sons of farmers (A voice—"That is not true"). Nobody is more anxious than I am for truth, and I am happy to be informed that this statement is untrue. I have seen too much of farmers to believe that they are averse to the acquisition of knowledge, and have mixed with a majority, I may say, of the farmers on the other side of the Tweed, and I know that no men are more anxious for knowledge than they are. No men are more anxious that their sons should be made intelligent than they they are. But such things as I have stated to you (though the particular statement, I hope, is not true) do seem to imply that the agricultural body are not so alive to the acquisition of knowledge as they ought to be. I believe that if you only put this knowledge within the reach of farmers—show them what they ought to learn, and how they may learn it—the agricultural body of England, like every other body of the community, will make such intellectual advances as will enable them to compete with all the world, as the manufacturers have already done (Applause).

EARL TALBOT'S PLAN OF STALL-FEEDING SHEEP.

Our columns have frequently contained evidences of the great anxiety of Earl Talbot, the highly-esteemed Lord Lieutenant of this country, to promote to his utmost, both by precept and example, the improvement of agriculture in all its departments. His lordship's Ingestre estate presents a most beautiful specimen of land brought into the highest state of culture; but perhaps a greater triumph of the combination of science, capital, and skill, is exhibited in the wonderful change which has been effected on his lordship's Birchwood Park Farm, which a few years ago was comparatively valueless, though it is now producing every year large and luxuriant crops. This estate is in the parish of Leigh, about six miles beyond Ingestre, not far distant from Fradswell Heath, and before his lordship commenced his improvements in 1841, corresponded very much in regard to sterility with the adjoining common. The soil is naturally a cold, wet clay; but by adopting a complete system of drainage, and by the application of suitable manures, its capabilities have been so greatly improved, that last year fifty acres of turnips, of great size, and which turned out perfectly sound, were grown upon it; and a rickyard, containing about seventy stacks of wheat and other grain, attest how successfully Lord Talbot's intentions have been carried out by his intelligent and indefatigable resident bailiff, Mr. Craven. Improvements on this estate are yet in progress, and Lord Talbot himself bestows a great deal of personal attention upon them. The land is still too cold and moist to allow sheep to be fed out of doors upon turnips; and this circumstance induced Lord Talbot to despatch Mr. Craven to the Rev. Mr. Huxtable's farm in Essex (if we remember rightly), and to Sir Richard Simeon's in the Isle of Wight, to make some inquiries into a plan of operation on those farms for feeding sheep within doors. Mr. Craven, profited by his observations, returned to Birchwood Park, and improving upon the practice of Mr. Huxtable and Sir

R. Simeon, though borrowing important parts of the plan of each, has adopted a system of stall-feeding for sheep, which promises to be attended with most satisfactory results. The building which has been erected for the purpose at Birchwood Park is a parallelogram, sixty feet long by fifty wide. The sheds are fifteen feet in width. On each side are the stalls, which are two feet wide, three feet long, and are separated from each other by a wooden partition two-and-a-half feet high. Each stall is supplied with a feeding trough or manger; a light chain, nine inches long is attached by a ring to a staple about the same length, which allows the chain to move up and down; and to the other end is affixed the strap, which is buckled the neck of the sheep. The stalls are not wide enough to allow the sheep to turn round in them. A tank or gutter, two feet wide and two feet deep, built of brick, grouted with barrow lime, runs down each side of the shed, immediately behind the sheep; it is covered with a wooden grating, the spars, which are two inches in width being only three-quarters of an inch apart, and therefore allow the sheep to stand upon them with their hind feet without being entangled. The use of this tank is to receive the droppings from the sheep. A passage down the middle of each shed, three feet six inches wide, paved with stone flags, has a very neat appearance. The sheds are entirely closed on the outer side to the roof; but on the inner side the wall is only breast high, the space to the roof being left open to admit air and light. The roof is formed of a framework of wood, covered with the patent asphaltic felt, and has a light and suitable appearance. The building altogether is admirably adapted for its purpose, and is by no means of an expensive style. It is calculated for the feeding of 150 sheep. The sheep, which at the present time are fed upon sliced turnips, are served with their food three times a day; and a little sawdust strewn behind them, and swept with the manure into the tanks, serves to keep the sheds perfectly clean. The tanks are emptied when occasion requires, the wooden grating, in lengths of only about six or seven feet, being easily removed for the purpose. When this operation is in progress, the sheep can be removed to the yard or area between the sheds, which is also intended to receive them when it is necessary they should occasionally feel the use of their legs and feet. This system of stall feeding sheep, it is believed, will serve many valuable purposes. As in the case of Lord Talbot's Birchwood Park Farm, where these useful animals cannot be fed on turnips out of doors, though the land grows the food in abundance, they can be fattened in these sheds. The economy of food will be great, as none will be wasted, and a smaller quantity will suffice for animals kept in a state of quietude. It is also expected that the sheep will fatten in a much shorter time. They will not be liable to foot-rot, a disease so detrimental to sheep, and so common on wet farms. The manure collected in the tanks will be exceedingly valuable. When dropped in the fields its strength is wasted by evaporation; here it will retain its virtues, and form a highly concentrated and pungent manure, equal in point of utility, it is thought to the richest guano. Perhaps a point of greater importance than any to which we have alluded is that the mountain sheep, which are found so difficult to feed on account of their rambling propensities, will become quiet feeders, and thrive in an extraordinary manner. Welsh sheep can scarcely be induced to feed upon turnips out of doors; but at Birchwood Park they may be seen in the stalls, and Cheviot likewise, enjoying their meal of turnips, and submitting to discipline with as much gravity as our English

Southdowns and Leicesters. It is quite surprising to observe how fully reconciled the sheep become to this new mode of life. Timid as they proverbially are they do not seem alarmed by the approach of strangers; and when the attendant uses his besom close at their heels, they remain undisturbed. After feeding they lie quietly down; and this state of repose has unquestionably a tendency to encourage their rapid fattening. We had the opportunity a few days ago, of seeing this new system in operation at Birchwood Park, and have given the result of our observation for the information of our agricultural friends; and we have no doubt that any of them, desiring more fully to inform themselves on a subject of so much importance, and to witness this novel and interesting sight, will be treated with the same civility and attention which were shown to us on the occasion of our visit.—*Staffordshire Advertiser.*

The Canadian Agricultural Journal.

MONTREAL, OCTOBER 1, 1846.

In our last number we stated that the disproportion in the price of butchers' meat, dairy produce and the other productions of agriculture, was greater than it ought to be, under a judicious system of management. We refer particularly to the state of our markets, lately in Canada, that meat, cheese, and butter were unusually high in price, and other productions of land at a low price. No doubt a given portion of land will produce much more nutriment, in the shape of bread and vegetables, than it would in butchers' meat, but certainly it is unprofitable farming, when hay and inferior grain is at a very low price, and meat, cheese and butter at a very high price, because one could be readily manufactured into the other. We shall endeavour to submit what we conceive to be the production of land in several ways that it may be employed. Our views may not be perfectly correct, but from our own experience, we believe they approximate to it as nearly as necessary for enabling a farmer to apply his lands and produce to the most profitable uses for himself and for the community. In estimating the comparative production of land employed in raising and feeding neat cattle and sheep, and in arable culture, producing crops, supposing the land in both cases good, and of equal quality, we shall first calculate the cost of raising a heifer or steer, intended for beef, to the age of three years. For the first year one acre of land would be required to give the calf milk, grass or hay, up to the time of becoming one year old. This would be the lowest estimate possible, but we believe it would be sufficient

because a cow might give milk for two calves for three months, and they need not get milk longer, and she might pay for her keep by her milk for the remainder of the year. We think, therefore, that one acre of land should provide all that was necessary for a calf the first year. The second year, it would require one acre and half to give it grass and hay. The third year, two acres would be necessary, and to fatten the animal the last half year, from May to November, one acre and a half would be required. This would make six acres for the three years and a half, or up to the period that the animal would be fat on grass and ready for the butcher, or fit to be put up to be stall-fed for the winter. We shall compute the value of the animal fattened on grass when three years and a half old, in the ordinary way, without any extra food but what the land we have assigned for its use might produce, allowing manure to pay for attendance. An animal raised in this way we could not estimate to weigh over eight hundred pounds, beef, hide, and tallow. If it should weigh more, the extra average would not be too much to allow for the risk of disease or death of animals. We shall not pretend to follow up our estimate further than to show that it requires six acres of land to produce an animal that, at three and half years old, will give 800 lbs of beef, hide, and tallow. Animals may be brought to a much greater weight, but the cost of doing so will be considerable. We have not included in this estimate any charge for the calf when born, but we shall allow this item to make up any overcharge we may have made, though perhaps were we to add half an acre more of land; making the cost of an animal at three years and a half old, six and a half acres, it will be found nearer the real expense. A heifer raised for the dairy would cost about the same as an ox, annually, up to the time of her first calf. This may be at two years old, but we should think it might be as well when three years old, and make very little difference in the profits, as the animal would be so much improved by remaining in the heifer state until three years old, that she would pay the additional expense of a year's keep. We would estimate the value of a heifer when having her first calf at two or three years old as fully equal to an ox or steer when half a year older, and from this circumstance raising neat cattle of the heifer kind would be more profitable than raising the male animals. We have thus submitted our opinion of the cost

of raising neat cattle to a certain age. It now remains for us to show what the same quantity of land might produce, applied to the breeding of sheep. We do not in this estimate include the cost of any food, except hay and grass, which we conceive the land assigned to each species of stock would be able to give. There might be something extra for cows in spring. First year one acre of land might be sufficient to support two sheep at one year old, which would give two fleeces of wool, and perhaps two lambs. The second year these two sheep might be kept, and one of the lambs sold in the fall. They might give two fleeces of wool, and three lambs, selling one of the latter before the end of the second year. The third year there might be five sheep and five lambs, yielding three fleeces of wool. Hence at the end of three years, four acres and a half of land would have maintained the above number of sheep, increasing the stock from two one year old ewes, to five full grown ewes, and five lambs, and also giving seven fleeces of wool and two lambs sold off. We do not estimate for casualties, but we think sheep are not subject to many, if properly kept. The value of this increase of stock and of wool, we think, would bring the profit of sheep to be equal, if not to exceed, that of neat cattle. In all this estimate, we have not attempted to do more than show the quantity of land required to keep animals for a given period. We shall now endeavour to show what an equal quantity of land would produce under arable culture. We must take the produce of the land for three years in one case, and for four crops in another. For three years we shall estimate for one acre and a half of land of good quality. 1st year, ploughed up and sown with oats or peas—yielding 40 bushels of the first or 20 of the last. 2nd year, cleaned and manured, if after peas, for potatoes, and if after oats for beans—or perhaps from the uncertainty of potatoes, beans might be substituted in either case for the present. Twenty large cart loads or more of manure would be required for this crop, and two ploughings and two harrowings, besides the planting and after cultivation, which would be about equal for either crop. The seed for potatoes would, however, be about four times as expensive as the seed of beans, according to the present rate of each. The produce of potatoes we could not estimate now at more than 150 bushels to the acre while subject to disease in the seed and crop—beans at about 20 to 30 bushels to the acre, and we think the latter might easily be obtained, as Canada is most favourable for them. The comparative value of these crops to the farmer, we believe, would be found nearly the same, as the expenses of potatoes are much more than of beans, in seed, in harvesting and in selling. The 3rd year, the land to be in wheat, estimated at 24 bushels to the acre—in this case we shall estimate at the rate of six acres and four crops, as would be necessary should the animal be fattened and kept to the fall of the fourth year; the land would produce a crop of hay as the fourth crop, suppose, 200 bundles to the acre. The following will be the result of the produce of the land in each case:—6½ acres of land will produce a fat ox 3½ years old, estimated to weigh 800 lbs. beef, hide and tallow. 5 acres would produce a cow 3 years old fit for the dairy and estimated to be of equal value as the fat ox. 1½ acre of land kept in crop, allowing half an acre for waste to make up 5 acres in the 3 years, would produce the first year in oats or peas (estimated at equal value) 40 bushels of the first or 20 bushels of the last, to the acre, that would be 60 bushels of oats or 30 of peas. Second year, the same land in potatoes or beans (considered of equal actual value to the farmer) in potatoes at 150 bushels to the acre, 225 bushels, or in beans at 30 bushels to the acre, 45. Third year, in wheat at 24 bushels to the acre, 36. Fourth year, to make up 6½ acres, 200 bundles of hay to the acre would make 300 bundles. The gain on sheep kept on five acres as above at the end of 3 years would be three sheep, seven lambs and seven fleeces of wool. The cost of tillage, manure, seed, harvesting, thrashing, &c., over the return of straw, we could not estimate at less than from thirty to forty dollars, not including the extra expense of potatoes, as we only value a crop of potatoes to be equal to that of a crop of beans to the farmer, after they are disposed of, and all expenses paid. This estimate may assist to show the comparative produce of land applied to raise animals and grain and green crops. It might be desirable to continue the estimate with regard to dairy produce, but this produce varies so much in value according to the situation where it is made, that it would be impossible to be very accurate. Where butter only is made, the profit cannot be so great as where cheese also is made. In any situation, a suitable cow for the dairy for which we would appropriate from 3 to 4 acres of good land to provide her with grass and hay.

for the year, should yield a return; when butter only is made and the calf fattened as veal, of from twenty to twenty-five dollars, and if cheese is made, thirty dollars. Of course, this would depend upon judicious management of the cows and the dairy, and would have to be charged with the expenses of the dairy, but the manure might pay for other attention to the cattle. We should be glad that our dairy farming would be increased as it would be furnishing a produce that would be constantly required for home consumption and for export. We trust our subscribers will make allowance for any inaccuracies they may discover in this article. It may induce others to take the subject into consideration and correct all the errors in our estimate. There is no doubt that butchers' meat and dairy produce is much more expensive in its production than flour of wheat or any food that is raised by arable culture. What the proportionate cost may be, this article may assist in ascertaining. We are convinced at all events that our estimate of the expenses of raising animals is not too high. We thought it best not to set any value on the several products, with the exception of that of the dairy, the value is so changable.

The Editor of the *Mark Lane Express* has for several years past kindly forwarded us that first of English agricultural journals, and we have obtained more practical information from it than from any agricultural treatise we have ever seen. There is not a number of this valuable journal that does not contain information of great interest, to commercial men as well as to agriculturists. We acknowledge that the best selections that have ever appeared in our Journal have been copied from the *Mark Lane Express*. In fact we depend upon that Journal to furnish us with the most useful matter that appears in our Journal. We can make no return to the talented Editor, except by exchanging our own and other Canadian Newspapers in order to make him acquainted with the manner of our proceeding in this portion of the British Empire. We should wish to follow the example of our English fellow subjects as nearly as circumstances will admit, and we shall be exceedingly obliged to them to give us the aid of their practical knowledge to direct and encourage us. We are in a new country, possessing many advantages certainly, over the old, but still having also many disadvantages that our friends in the Mother Country

cannot perfectly understand without coming to reside with us for a season.

We have received from John Skinner, Esq., of New York, a copy of *The Farmers' Library and Monthly Journal of Agriculture*, for the months of July and August last, for which we beg to offer him our best acknowledgments. The work is exceedingly well got up; the paper, and printing are of the best quality, and the engravings very well executed indeed. We can recommend the work to all agriculturists as worthy their support. The price is five dollars a year. Each number contains about 100 pages. There is not an article in the two numbers we have seen that is not exceedingly well written, and most interesting to agriculturists. We have not seen an agricultural work any thing like it published on this Continent during our long residence here, for usefulness, and so well executed in every part. We wish it all possible success—and we are convinced it will obtain it. We shall refer to this work again in our next.

We have been favoured with several monthly copies of the *Farmers' Herald*, published in Chester, England—for which we beg to thank the publisher, Mr. Evans. We have already taken the liberty of selecting and copying several articles from this excellent publication, and we hope Mr. Evans will continue to exchange with us. We cannot afford him the same amount of valuable information that he can give us; but as fellow subjects, we would hope that he will have no objection to assist us in endeavouring to promote agricultural improvement in Canada, by forwarding us his journal.

We copy the following from the *Mark Lane Express*, in order to show at what rate beer and porter can be sold in England, estimating barley at four shillings the bushel, which is a ninth part smaller than the Canadian minot. It may be seen from this article what should be a fair proportion in Canada between the price of barley, and of beer, and porter. We should very much wish to see good beer and porter come into more use here, in place of ardent spirits. There is considerable nutriment for a working man in beer and porter well made from malt and hops only, and if sold at a fair moderate price, the consumption would greatly increase. Barley and hops should not be produced, if it is not lawful and

proper that they should be converted into good beer and porter, for our use. It is, not because one man is such a beast as to get drunk, that all men should forego the use of wine, beer and porter, given to man for their use and sustenance.

"From this quantity of malt the London brewers manufacture a certain quantity of good common porter or beer, of the same quality, which they can sell to the publican at £1 13s. per bbl., and the publican retail at 4d. per quart.

"Let us compare this with the price which may be expected when the duty is repealed:—

Barley per qr.....	£1 12 0
Malster's profit at 10 per cent.....	0 3 0

£1 15 0

"From this quarter of malt the same brewers could manufacture porter and beer as follows, viz:—Porter and beer of the same quality as before mentioned, at £1 4s. per barrel; the publican could retail ditto at 3d. per quart.

"These beers are stronger than people in general like to drink at their meals; but an article quite as strong as the highest of the middle classes would desire for this purpose might be sold by the brewer to publicans at 18s. per barrel, and retailed to the public at 2d. per quart.

"A good wholesome table-beer, such as the great majority of people would take at dinner, might be sold by brewers at 12s. per barrel, which is only 4d. per gallon.

"A still smaller but not unpalatable beverage, calculated for the poorer classes of all, might be brewed by brewers at 8s. per barrel, to be purchased for home consumption at 2s. per firkin of nine gallons, costing him less than 3d. per gallon.

AGRICULTURAL REPORT FOR SEPTEMBER.

The present month was as favourable for harvesting the crops as the month of August, and there has been a full opportunity for farmers to secure all the grain crops in the best condition. It was most fortunate that the weather was fine, or much loss would have been sustained in consequence of the scarcity of labourers, and high wages. We find that it is reported that the late sown wheat has ripened prematurely, and that the grain is consequently very small. We believe this to be the case, the weather was so exceedingly dry, and warm, almost the whole time, from the period of the wheat earing—and we observed that the straw became very suddenly ripe while the ear was quite green, thus preventing any further nutriment ascending to perfect the filling of the grain. There is, however, one favourable circumstance that we know, the grain is hard and dry, not swelled by moisture as in other seasons, and we hope, though the quantity per acre may be short, the yield of flour will be equal to that obtained in other years from larger grain. It will also be in a fine state for shipping and not be so liable to injury on the voyage as in a more moist harvest. We had an opportunity of seeing a fine looking crop of wheat, that has been lately

thrashed out, and on enquiring were informed by the owner that he did not expect it to produce more than twenty bushels to the acre, though the same farmer said he had over thirty bushels to the acre last year. This is undoubtedly, a great deficiency—unless compensated for by a higher value. The general character of the season in Canada this year has been very similar to that of the British Isles, and productive of the same effects upon the crops. By the last mail, it is reported that the barley crop has been damaged in some places, by an insect that burrows into the stem, and cuts it—very similar to the effect produced in America by the Hessian fly. The ear while perfectly green, thus deprived of all nutriment, turns white, and is completely useless and destroyed. We have not seen any damage of this nature done to the barley crop in Canada, though we believe the grain is smaller than usual. It is however, sound, and perfectly uninjured by sprouting, which would be a great drawback in its value to the brewer. The barley, this year, will not measure profitably for the producer, but will be sure to measure largely in proportion for the brewer, in a malted state, as there is no water in the grain, until it gets it in the brewers' steep. This should encourage a higher price for this grain, and particularly as it is reported that the barley crop is very short this year, in the British Isles. The oat crop will prove of inferior quality generally in Canada, and from the cause we stated in our last Report, namely, excessive dry and warm weather, that prevented the early crops filling well, and destroyed altogether the late sown, by rust and blight. The same causes are said to have had the same effects on the oat crops in England. Peas have not turned out so good a crop as was expected in the early period of the season, but as there has been a most favourable harvest to save them they are sound and hard, though small. The grain must be much more valuable in this state, for exportation, than if of larger size, from containing abundant moisture. We believe peas should bring a high price for exportation as they appear to have been nearly a failure in England this year. We are sorry that beans are not more extensively grown in this country, as they would pay well for exportation, the crop being very bad in the Old Country this season. We shall have to cultivate this grain more extensively in consequence of the failure of potatoes, and we believe that it will pay as well as a crop of potatoes. We should also cultivate tares

or vetches as a preparing crop for wheat or barley. We shall have weeds vastly increased if we do not observe a proper rotation of crops. To grow grain crops in succession upon the same soil, will fill the land with weeds, and diminish their useful produce. The only circumstance that has saved a large proportion of the cultivated lands of Canada from utter barrenness, was the system of taking only one crop in two years off the same soil, and allowing it to repose in pasture the intervening year. This could not be profitable farming certainly, but it was the best that could be adopted to save the land, under such a system of farming. Potatoes are not so extensively injured by the disease as was expected a month ago. The dry weather, and the almost total stoppage of growth for the last six weeks, has checked the disease, and is a sure proof that the more abundant and luxuriant the crop the more liable they are to this most extraordinary disease, which we conceive to be brought on by our mistaken cultivation of this once valuable root, in stimulating their growth by the application of too much manure. The last accounts from the British Isles give a deplorable picture of the diseased state of the potatoe crop. In fact, it is expected that nearly the whole crop will be useful for food.

We were amused at the description given of Indian Corn meal as food for the Irish. It was stated that one meal of this kind of food was found sufficient for a working man during the twenty-four hours, and equal to three meals of the ordinary food of the Irishman. We have never made use of Indian Corn meal, since oatmeal became plentiful in Canada, but when we did prepare it for farm labourers they complained that there was no sustenance in it, and they required more food a very short time after eating it. Our own experience, therefore, of the value of Indian corn, as human food, is very different, indeed, from what is reported of it as food for the Irish people, and we have always considered it, unmixed, as very much below the value of oatmeal, as food of man. Of course, if mixed up with other ingredients, it may be made palatable food. But alone it is not equal to oatmeal. This season would have been exceedingly favorable for Indian Corn in Canada, but farmers are unwilling to venture to sow much of it as the crop is very uncertain, unless in a dry warm summer. In a favorable season, and on a suitable soil, the crop would be a useful and profitable

one for a farmer, affording a large quantity of food, if not for man, for horses, cattle, and hogs, and leaving the soil which produced it in a clean state. If it found so good for food in the British Isles it would be a further encouragement to cultivate largely for exportation. We cannot say much for the turnip crop, but we believe the season too dry and warm to admit the probability of their being good, as they can only be in perfection when there is sufficient moisture to advance their growth. The moist climate of Ireland is the most favorable in Europe for the production of turnips, and almost all other root crops. Carrots may be produced abundantly here on well prepared soils, notwithstanding the dry and hot climate, and we regret they are not more extensively cultivated. The pasturers have recovered considerably in some sections of the country where sufficient rain has fallen, but we understand the rain has not been general. The land is generally too dry and hard to allow ploughing to be executed properly, and we require much more rain before this work can be proceeded with advantageously. Hay is very low in the market, scarcely bringing a price to pay expenses of cutting, saving and taking to market, allowing the farmer nothing for his land. We hope farmers who have a large quantity will apply a part of it to the feeding of cattle for beef in winter, while as yet they have some little protection. The meat market, is lower than it was, though the prices are still above what they have been at this period of the year; but they are not higher than they should be to allow a reasonable remuneration to the farmer. Dairy produce is selling at a fair price, but not over that, as the farmer obtains far less for some of his produce, than it is subsequently retailed for to consume, and this difference amounts in some cases to nearly one half.

Apples are not generally a plentiful crop, and this complaint is not confined to Canada, but appears to be general in North America, and in Europe, though other fruits are abundant. The scarcity of harvest labourers has been felt in England as well as here. It has been accounted for in the former country, by the circumstance that very few Irish labourers went to England this year, as they were accustomed to do; in consequence of the Government supply of food given to the Irish poor. The many public works going on in Ireland is another cause to keep the people at home. Had the harvest been showry or

wet the want of sufficient labourers would have been a great public loss both here and in England, as much of the crop must have been injured and lost. It would be in vain that land produced good crops if we were not further favoured by fine weather, and help and strength to save them. Upon the whole, we have here great cause for thankfulness to the Giver of all good, for giving us an abundant crop, genial and delightful weather to save them all and though some of them may not have succeeded as well as we could wish, chiefly from our own mismanagement, in not sowing at the proper period, and other causes the whole produce of our land and labour, so far as regards quantity and excellence, should be satisfactory to us. Any future disappointment that may occur in respect to the disposal of our produce, will arise from man's interference with the regular circulation of the products of land and labour.

Cote St. Paul, 30th September, 1846.

In the present number we copy a letter which appeared in the Mark Lane Express recommending the use of charcoal as a preventative of the potato disease and we have not the smallest doubt that mixing charcoal with potatoes when storing will be found the best remedy to prevent the potatoes rotting when stored. We would strongly recommend the trial to be made by farmers. The charcoal absorbs the moisture and is every way calculated by its properties to check decay and decomposition.

For the Canadian Agricultural Journal.

REPORT OF THE CROP-VIEWERS FOR THE COUNTY OF TWO MOUNTAINS AGRICULTURAL SOCIETY.

NO. 1.

Wheat in the western section of the County is an excellent crop, with the exception of some early sown, that the fly has considerably injured. That which has so well succeeded was put in the ground about the tenth of May, which has not only escaped the fly, but the ears are generally larger than that sown at a later period; the preference should be given to the Black Sea Wheat, which has neither rusted nor smutted, whereas the bald wheat appears to have suffered from both.

Oats which was early sown are a heavy crop; the heads are large, and the grains well filled.

Peas are a very good crop, especially the small white Pea, which does not run so much to haulm;

it ripens more equally than the larger kind, and is much better covered with pods. A larger spread of this crop is recommended.

Maslin looks well, but in most fields there is not a proper mixture; that is not a sufficient quantity of oats sown.

Barley is a good crop; in general, the quantity sown; is small, a much more extensive spread of this crop is recommended, as it is not subject to the vicissitudes of fly, rust, &c.

Rye is a midling crop, but is not extensively sown.

Indian Corn has not been largely cultivated, but what is planted as the appearance of a productive crop, we think as profitable a one as a farmer could raise, could he be guaranteed against early frost.

Grass is a heavy crop on new sown meadows, and also on old meadows, especially where plaster of paris has been used, the use of this article is strongly recommended on old meadows, as well as on the new meadows.

Potatoes will be an inferior crop; there are few planted, and almost every field is stricken with the rust; some very late planted are looking well, but there is no knowing what they may become as they advance towards maturity.

Turnips look very well, and those who cultivate them affirm that they are the most profitable crop they grow on their farms; every farmer should try their cultivation. The Swedish is an excellent succedum for Potatoes for fattening pigs, when boiled, and both the swedes and the Norfolk are the very best food for cattle; nor is the expense of their cultivation nearly so great as that of the potatoes.

Carrots are but of limited cultivation, but should be more attended to as they are applicable to every use; besides the thinning out of the crop will enable farmers to keep up their pigs, the roaming of those animals about the farm is attended with great damage to the crops.

Farms generally are looking beautiful, and in a high state of cultivation, most of them being well fenced, especially those that are cultivated by the proprietors; but there are many fine farms lying in one common field, without any fence except that of the pasture, the proprietors refusing to allow any thing for improvements, and the tenants having no interest but for their present living, care nothing for improving property not their own.

(Signed)

JAMES GALLAWAY.
PETER MC. MARTIN.
JOHN D OUGLAS.

THE POTATOE CROP.

TO THE EDITOR OF THE MARK LAKE EXPRESS.

SIR,—As public attention seems to be directed to the disease now prevailing in the potatoe plant, and as the district in which I farm is one of the principal for the growth for this valuable esculent for the metropolitan and west country markets, a report as to the prospects of the present crop will, I trust, be considered worthy of notice in the columns of your widely circulated journal.

The quantity of wet that fell from the latter end of March until the middle of April, retarded the planting season fully three or four weeks. The long continuance of dry weather that succeeded operated very materially against the working of the land, and the vegetation of the plant, which presented a most unpromising appearance up to the third week in June. Since that period we have experienced alternate wet and sun, and the crops progressed rapidly, promising in some measure to make up the deficiency which, in the opinion of the growers, previously existed: but no sooner was this idea formed than it was blighted; hundreds of acres which last year presented all the luxuriance the eye could wish are now nothing but a mass of blackened tops, emitting pestilential vapours.

I shall not enter into detail upon its first appearance or its progress, or whether it is to be ascribed to humidity, filth, or any of the hundred causes assigned by your various correspondents; but of this I will assure you, that from the late period of planting and the early stage of attack, the total want of plants in strong soils, and the diminished area under cultivation (owing to the losses sustained by disease last season), the crop of Good Marshland may be considered nearly a total failure.

Having given my opinion of the crop, it may not, under the present crisis, be trespassing too much, if I lay before you a brief sketch of the cultivation of the potato plant since this district became a considerable exporting one. I find, from those who have cultivated the plant for the last fifty years, that the first potatoes grown which took the lead is the London market were the kidneys, better known by the name of the red-nosed or red-nobbed kidney. It was the practice of the growers to import from Berwick-upon-Tweed as many as enabled them to command a sufficient quantity for plants for the succeeding year, the growth of the produce of the Berwick plant being much superior both in quantity and quality to the first crop; in the course of a few years the plant was evidently degenerating; for if the produce of the imported potatoes was planted, the result was the whole crop curled; to obviate which, the grower had to be at the expense of importing the whole of his seed: ultimately the Berwick potatoes totally failed. A similar description of potato was then introduced from Aberdeenshire, which for a few years answered well, but, like its predecessor, degenerated. This was succeeded by the old Perth red, which in its turn gave way to the Fraserbro' red, the potato now principally cultivated upon the best soils for the London Market. In the year 1845, upwards of three thousand tons of this description were imported into this district for seed alone. Having seen two or three varieties rise and fall, which at each alternate change caused a heavy loss to the cultivator, it is natural to suppose that every possible means to preserve and increase so valuable a production would be adopted; and I can confidently state that, during the last fifteen years, no expense has been spared by the farmers in this neighbourhood to enable them to effect that object: and had the parties to whom they

resorted for seed, and who always acknowledged them to be their best customers been equally particular, I do not doubt they would have been amply repaid for their labour, and many of the grievous losses sustained here avoided; but, unlike every other crop which is now sown or planted, strange as it may appear, they imported no fresh seed; they parted with their best produce, and they planted their refuse.

It is likewise worthy of note, that the middle of May used to be considered the best season for planting; it was the practice of the growers to pulverise the land to the fineness of meal, and no ploughing, harrowing, and rolling was considered too great to effect this object; the plants are cut at convenience, perhaps three or four weeks prior to planting; and the land in as dry a state as it was possible to get it. But since the year 1832, if the very reverse had not been adopted, if the potatoes were not planted in April, and the land in a moist state, if the plants were cut longer than a day prior to their being wanted, and if the land was ploughed more than twice, what was termed the dry rot invariably followed.

Thus failed a system that had been successfully pursued in the same district for upwards of thirty years; the opposite extreme in every respect proving to be the antidote.

Six years ago, we observed the dry rot in the produce after being lifted and pitted; this gradually increased towards the spring months, when the potatoes were vegetating: and last year, when all the continental states, and many parts of the adjacent neighbourhood, were visited by the prevailing epidemic, hundreds of acres never exhibited any symptoms of it during vegetation; but after being stored decomposed in a most rapid and extraordinary manner.

I have potatoes this season growing on land that never during the memory of man was potatoed. I cultivate them upon fallow clover, wheat and potato stubbles, with fold yard manure, London tillage, and guano. I got part of the plants from the north of Scotland, some from the south, and others from adjacent districts. I have different varieties, the old scotch kidney, the Fraserbro red, the prince regent, the Kent kidney, the early ash top, but the whole are similarly affected.

Who, then, after a careful consideration of these facts, and an examination of the root, can possibly doubt that the disease is not in the plant: and who can wonder this disease should take place, when, for years, the very plants we have been purchasing at so high a rate are merely the produce of the refuse? Does the farmer sow his refuse wheat, beans, or barley? Who so particular about his turnip seed? Is there in fact, any crop that he cultivates that he is not, nor has not, been attentive to in the selection of the seed save the important one under our notice?

Much was said last season of the escape of the potatoes grown in the north of Scotland, and I was induced to spend some weeks in the neighbourhoods of Perthshire and Aberdeenshire to obtain, if possible, potatoes perfectly clear of disease; but although they did not decompose in the pits in a similar manner to our own produce they all exhibited undoubted signs of it in a preliminary stage. Yet, I sincerely hope that that providence which provided a remedy for the smut in wheat, will be equally beneficent under our present calamity, and preserve to our use this, next to corn, stable food for man: for we must bear in mind that hitherto we have propagated the plant, from the root, throwing away, as useless, the apple, which would not have been given to us if not intended for some good result.

We are progressing rapidly with harvest operations.

The wheat crop cuts up thin in straw, but the ears are large and well filled; and I cannot find cause for complaint by blight, &c., which in some parts I notice has occurred. This district may safely be taken as an average crop for wheat, and of fine quality. Oats below the average. Beans nearly a failure. This is not a barley or turnip county.

I am, Sir, your obedient servant,
Goold Aug, 14. JOHN WELLS.

PEAT CHARCOAL AN ANTIDOTE TO THE DISEASE OF THE POTATO.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—My attention having been drawn to a paragraph in the recent number of your publication, which states that "Professor Liebig has discovered that soot is a perfect antidote to the potato disease," I conceive it but right, under the existing circumstances of the evil, which, permit me to say, I pointed out the *certainty* of the government of this country in September last, to state that several months since I laid before the leading authorities, both government and otherwise, of this country and England, facts incontrovertible, showing the properties and action of charcoal or carbon upon the disease of the potato, both as a preservative in pit or store, and as a manure for the healthful reproduction of the tuber. My papers written upon the subject were the result of many years' experience and practice, as regards the potato, both in its production, storage &c., and they pointed out in the fullest manner the fact which Professor Liebig now publicly verifies, namely, that CARBON is the only antidote to the disease!

I cannot but feel proud that I am thus upheld by an authority so truly eminent; but I have to regret that so long a period has been allowed to elapse without the promulgation of facts such as this, so deeply affecting all classes of the community.

Under existing circumstances, I do not feel it right to enter into the minutæ set out in my papers alluded to, detailing the causes and effect of the action of charcoal on the disease of the potato. But I should be culpable indeed if I held back one moment longer the two following facts; for they deeply concern some millions of the poor; and, without hesitation, I challenge proof to the reverse of what I state.

The diseased potato may be almost entirely preserved from the effect of decomposition, by using pulverized peat or wood charcoal; abundantly interposing it between the layers and in the interstices, in pitting or storing, the pit or store being, of course, properly ventilated.

The action is thus; the charcoal absorbs the over-abundant moisture, the attendant of the disease, and instantly corrects the putrescent matter which it largely contains; therefore effectually protecting the whole from infection or contagion, or the evil action of heated moisture.

As a manure for the potato the action of charcoal when properly applied is as follows:—It absorbs from the seed (which, under existing circumstances, must be more or less diseased, no matter how attended to or where procured in Europe) that over-moisture already named; and instantly correcting all putrescence, it leaves the soil around uncontaminated to act with purity upon the growth, yielding to the plant abundantly that of which the disease has robbed it—CARBON, and thus supplying a nutriment which constitutional weakness (its real malady) essentially requires.

These are the main causes and effects of charcoal upon the potato disease; and knowing them to be in-

contestible, I should feel unjustified in longer withholding their publicity, the more particularly as Professor Liebig has now, it appears, stamped the facts with his high authority, which so long since, have been proved by so humble an individual as myself.

It is but right to add that *peat charcoal* can be had to any extent from the bogs of Ireland, at a cost of no consideration; and that its value as a manure generally will be found of the highest consideration.

I have the honour to be, sir,
Your obedient servant,
JASPER W. ROGERS, C.E.
Nottingham St., Dublin, July 28, 1846.

AN AMERICAN IN ENGLAND.—"You do not know, sir, with what feeling an American looks upon your isle, coming from our vast mountains, our vast prairies, our primitive forests, our mighty rivers, our rude uncultivated country, your little isle, the second time I have visited it, seems to me a perfect gem (*hear hear*)—physically and aesthetically it appears a perfect gem. I see Britain itself cultivated in every part; London is increasing in beauty and stateliness; its dark alleys and corners are being exposed to the sun. Go on, fatherland! go on, and may God bless you! (*Cheers.*) War between you and us! Not yet, not yet (*immense applause*); there are to many praying people on both sides to admit that. The rainbow goes up; its arch reaches the mercy seat; its two extremities here and there. No, no; go on, Britain. We have no cannon to beat down your noble edifices; we have no soldiers to spill British blood—I think not—and we have none of our own to spare (*great cheering*). I repeat sir, that Britain is physically a gem. I believe that society in Great Britain is carried to a pitch of advancement which is not known anywhere else: the social refinement of Britain is altogether unparalleled; and British Protestantism, not her Oxfordism, or Romanism, is admired by the different nations. But one thing is lacking in Great Britain, and that is the bringing of Britain's splendour and misery side by side. This is the thing to change the aspect of society; this is the corrective of the evil: this is God's appointed way; and happy am I to stand here, with a stranger's eye and a brother's heart, to encourage you in this work (*cheers*). British Christians ought to strive to cultivate mind as the British nation is endeavouring to cultivate matter. Why, you are going to improve British land to such a degree that every inch of land will be worth an acre of land in America (*laughter*). Cultivate the soul as you are cultivating the soil."—*Speech of the Rev. Mr. Hick at the Home Missionary Society.*

CURE FOR THE CATERPILLAR.—A gentleman at Galasheils has discovered that exhausted bark spread on the surface round the roots of gooseberry bushes, is an effectual remedy for caterpillars. His garden used to be much infested by these destructive insects, which he had tried various modes of rooting out with success, until a lucky chance led him to try the effect of refuse bark from the tanyard. Two years ago he spread a considerable quantity of it round the roots of all the bushes in his garden, except one or two. Those missed were seriously injured by the caterpillar; the others were perfectly saved. The next year he neglected to renew the bark, and every bush in the garden was affected with the disease. This year he has again resorted to it, and not a single caterpillar is to be seen. A more simple and cheap remedy could scarcely be wished for. A cart load of the bark which costs about sixpence, is amply sufficient for the largest garden.

THE POWER OF MUSIC.

BY MRS. NORTON.

Oh! magic spell, that rulest o'er the hearts
Of old and young—of ignorant and wise—
Spirit that liest hidden in the chords,
From which no winged form is seen to rise—

Whence art thou? Wherefore canst thou soothe or rouse,
Enchant to rapture, or subdue to grief?
Whence the faint pining for vague melodies,
To give the sad and burning soul relief?

The old man heareth suddenly by chance
Some air familiar in his vanished years—
Dim falls the shadow 'neath his drooping lids,
And all his melting soul dissolves in tears!

The Switzer serving in a foreign land,
Under the milder glow of southern skies—
The mountain music of his childhood hears,
And straightway sickens, pines away and dies.

Quick grows the beating of the lover's heart—
A woman's pulse sinks fainting in the throng:
The one has heard a ballad that he knows—
The other listens to a cradle song!

The one beholds a visionary face
Uplifted to his own for loving praise—
The other sees a curly head, upreared
Low buried, long ago, in hopeful days.

And many a heart, though firmly nerved to bear,
Will open to that key of magic sound;
When tones that never more can thrill with life,
Come with pale ghosts of memory crowding round,

When, while the unknown echoes wander by,
Which strangers, in our own sad breast appear
We look on things around with vacant eye,
Dreaming of those who dwell in silent rest.

A LADY'S OPINION OF THE QUALITIES OF A HORSE
—Juliana Berners, sister of Richard Lord Berners and prioress of the Nunery of Stopwell, about the year 1481, wrote three treatises on Hunting, Hawking, and Armory or Heraldry, which soon afterwards were first printed in the neighbouring monastery of St. Alban's, in which she maintained "that a good horse should always have XV good propyrtes and condicions. That is to whyte, thre of a Man, thre of a woman, thre of a Fox, thre of a Hare, and thre of an Asse. Of a Man, bolde, pryde, and hardye. Of a woman fayrebreasted, fair of heere, and easy to move. Of a Fox, a fayre taylle, short eeres, with a good trotte. Of an Hare, a grete eye, a dry heed, and well rennyng. Of an Asse, a big chynn, a flat legge, and a good hove" (hoof.)

VIRTUOUS PEACE.—If men did but know what felicity dwells in the cottage of a virtuous poor man—how sound he sleeps, how quiet his breast, how composed his mind, how free from care, how easy his provision, how healthy his morning, how sober his night, how moist his mouth, how joyful his heart—they would never admire the noises, the diseases, the throng of passions, and the violence of unnatural appetites, that fill the houses of the luxurious and the hearts of the ambitious.—*Jeremy Taylor.*

LONGEVITY EXTRAORDINARY.—There is now residing in the parish of Beguildy, adjoining to the borough of Knucklas, Radnorshire, a person of the name of William Matthews, whose lengthened age seldom finds a parallel. He is now in his 113th year, and retains the full power of his natural faculties, being competent to recount with the most scrupulous exactness transactions which otherwise the long space of a century would have buried in oblivion. His bodily strength, considering his many years, is almost incredible. He walks at the rate of three miles an hour, and commonly performs a journey of 20 miles in the day. He is strongly tinctured with the enthusiasm and folly of his junior days—a strong and prejudiced belief in wizardism and witchcraft.—*Hereford Journal.*

COBBETT.—On the occasion of one of my visits, the celebrated radical, Cobbett, happened to speak. I looked at him with great interest, of course. He was a tall, well-built, portly man, with a good-humoured face, a keen gray eye, and white hair. He was dressed in nankeen trousers, and had on a coat and waistcoat of some light material. On the bench, beside him, was his famous white hat. He spoke unaffectedly, and to the point, using no effort, and without any apparent attempt at display. No one, who was unacquainted with him, would have supposed him to be the bitter and vigorous political writer; and I believe it is generally acknowledged that he failed as a Parliamentary speaker.—*Sketches of Poets, Painters, and Politicians.*

THE ENGLISH MOB.—Whatever may be said of English mobs and English demagogues, I never met a people more open to reason, more considerate in their tempers, more tractable by argument, in their roughest times, than the English. They are by nature and habit methodical and orderly: and they feel the value of all that is regular and respectable.—*Washington Irving.*

CHIMNEYS.—Instead of plastering the inside of chimneys in the usual way, take mortar made with one peck of salt to each bushel of lime, adding as much sand and loam as will render it fit to work, and then lay on a thick coat. If the chimney has no offsets for the soot to lodge on, it will continue perfectly clean, and free from all danger of taking fire. A trial of three years warrants this assertion.

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