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CANADIAN AGRICULTURAL JOURNAL.

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AGRICULTURAL REPORT FOR APRIL.

The month of April has, throughout, been the most favourable we have ever seen in Canada for executing spring work, and as the fall was suitable for ploughing up to the end of November, farmers may have most of their grain sown now with the exception of wheat, which it would be unsafe to sow before the 20th of May, though, we believe, many have sown it already. The grass does not appear to have suffered any injury by frost this spring, notwithstanding that it was deprived of its covering of snow at a more early period than usual. The water produced by the thawing of the snow did not remain long upon the land, or become frozen upon the surface, and this, we believe, preserved the grass from injury. We have not an opportunity of reporting the state of fall-sown wheat, as we did not see any this spring. We would suppose that last winter would have been very favourable for fall-sown wheat, as the snow covered the land to a good depth from the 1st of December to the latter end of March, and from that period we have not had any severe frost to injure young wheat plants. We hope that farmers have availed themselves of the favourable opportunity for sowing their oats, barley, pease, beans, and potatoes, and have only the wheat to sow when the proper time arrives for sowing it. The land was very dry the latter end of April, but the delightful rain we had on the last day of the month produced a most beneficial change in the grass and crops in ground.

It is necessary that great caution should be observed this spring in the selection of potatoes for planting. Potatoes of a moderate size, planted whole, will, we believe, prove to be best for planting; and we would recommend that no fresh manure should be applied. New or grass land will be less liable to produce a diseased crop than land that has been long in tillage. We have seen many attempts to account for the potato disease, but not one that was satisfactory to us. Last year, as we already stated, our potatoes had scarcely any rot, and up to the period of securing them for the winter, (which was about the 1st November) we had not lost six bushels out of three acres. We then placed the whole crop, except about forty bushels kept for winter use, in a long pit, cut into a sand-bank, where we had kept them the previous year perfectly safe. On opening this pit about the 1st

of April, the potatoes were safe, except a very few. We had a few bags taken out of them, and allowed the remainder to remain in the pit, as the safest place to keep them for seed. On examining them again about the 21st of April, we found that nearly the whole had become diseased and useless, not ten bushels being safe. Of those we had kept in the cellar, very few became unsound: all were made use of. The potatoes in the pit appear to have kept safe, until the air was let in upon them when opened. When these potatoes were stored, we never had better, both in appearance and for use, and, notwithstanding, they have now been destroyed by the disease. Our own opinion is, that we have changed the natural qualities of the potatoes by our mode of cultivation of them, and brought a disease upon them in consequence, and that they are now liable to it in every situation, and under every circumstance. The smaller and harder the potato, the less liable they are to the rot. We found that what are known as the cup-potato were less affected than any other, but we cannot say that this is generally the case. Unless it is the will of Providence to remove this plague, it will have a great influence on the food of man, the potato was in so general use. There are substitutes that may be introduced, but we know of none to equal the potato as a vegetable root. Experiments, and further experience, may discover a remedy to check or cure the disease, but nothing likely to be effectual has yet been suggested by any of our learned professors, who have written or lectured on the subject. Indeed, we think it very probable, that potatoes cannot again be successfully cultivated in such vast quantities, but that we shall have to raise a few in gardens, as when they were first introduced from South America. The disease, we are convinced, is the same as that which attacked the seed after planting, which was known as the dry rot, and has now been going on increasing several years; we believe since 1832, the year the cholera first appeared in the British Isles. Carrots, parsnips, turnips, and some other roots may be raised here in perfection, and will, in some degree, be a substitute for potatoes. We would recommend that these roots be cultivated this year by every farmer. The loss of a crop of potatoes is so great to a farmer, that it is not well to risk the loss to any great extent. If we shall not be able to grow them, it will make a considerable

change necessary in our system of agriculture; but as they were an expensive crop, the actual loss to the farmer may not be so severely felt as we might first imagine; and if the working classes are able to obtain a better description of food, it will be a fortunate change for them. We have given several articles respecting the potato disease in this Number, but they show very little more than the existence of the disease, and have, no pretensions to explain the cause, or propose a sure remedy.

We never have seen the country appear more promising the last day of April, than at present. The grass and trees of all species and varieties are in a forward state, and the latter will soon be in full leaf, if not checked by cold or sudden change. The crops coming up look very healthy, and if the season goes on as favourably as it has commenced, we shall have abundant crops. The wheat sowing is not yet accomplished, and we trust the time for this work may be as suitable for it, as this spring, up to the present, has been for putting in other crops. Though we have had some night frosts in April, the fruit trees do not appear to have suffered any injury.

Cote St. Paul, April 30, 1846.

THE POTATO DISEASE.

(From the Gardener's Chronicle.)

During the past week, Lord George Bentinck has been lecturing to the House of Commons on the potato disease. He has discovered that kiln-dried potatoes will not grow, and that either lime or charcoal will make diseased potatoes keep. His lordship might have gained the first piece of erudition from the nearest malster; the latter we should have thought he had picked out of the reports of the Irish Commissioners, if the assertions he has been so obliging as to make respecting these gentlemen did not show that he had never read their recommendations. But, said Lord George, the very worst potatoes, if you spread them out on the floor of a peach-house, and dust them with quick-lime every day until the rotten part is converted into starch (!) (*O magnis poethac inimicis risus!*) will form fine healthy shoots; and all at the small expense of 6d. per sack for the lime. It is a pity that we have not peach-houses all over the country, and that people employed in turning over rotten potatoes, and dusting them until the marvellous conversion of rottenness into starch, is effected, should be so unreasonable as to demand wages for their trouble.

This exhibition in St. Stephen's forces us back to the question of what was the cause of the disease. It may by some be assumed that the unvarying success which has attended our earliest recommendation (August 23 and 30, 1845) of keeping the potato dry, in which manner only do either lime or charred materials appear to act, is a proof of the truth of our original hypothesis (August 23, 1845), that the peculiar atmospheric causes of 1845 produced the mischief. For ourselves, we are wedded to one opinion only in regard to this matter, and that is, that the evil was *not* caused by fungi. Atmospheric conditions seemed to explain the difficulty best, and, in the absence of a more rational solution, we have looked to them; but we are bound to say that circumstances have by degrees come to our knowledge which weaken this hypothesis materially, if they do not entirely destroy its value. So long since as the autumn of last year we were made aware of the singular fact, that potatoes of 1844, in the possession of Sir John Lubbock, upon being placed in dry sand under a shed, where they were guarded from the weather, produced diseased tubers; but their malady was some-

what different in its aspect from that of the open fields, and as the case at that time stood alone, we could not attach much importance to it. At a later period similar intelligence reached us; but not having seen the potatoes alluded to by our informant, that too was not calculated to shake our first opinion. Two other facts have, however, come to our knowledge, which, in connection with those above mentioned, are calculated to give rise to a very different speculation. The British consul at Lisbon states, in his despatch dated December 29; 1845, that the few potatoes diseased near that city, were grown from seed received from England. We have now before us, young potatoes raised in the garden at Bodorgan, from sets ripened in 1844, and kept in reserve till August, 1845, when they were planted in the open ground, a large proportion of which, were very much diseased; and those the most so which were of 'dest. In another column a similar fact is mentioned by Mr. Swan, of Garnston.

This looks as if the murrain was engendered in 1844 and only showed itself in 1845. The facts may, perhaps, be otherwise interpreted, but they seem to point to that conclusion. They are scarcely reconcilable with the action of unfavourable seasons, or of an epidemic, which was first contended for, we believe, by Mr. Moore, of Glasnevin, and has since been recognized by others of undoubted authority, among whom Dr. Greville and Mr. Goodsir, must more especially be mentioned. If, however, they do nothing more, they certainly complicate the question, and render the fate of the succeeding crop more doubtful than ever, for if they lead us to assume that the murrain was engendered in 1844, and only manifested itself in a formidable degree in 1845, we must look out for the worst consequences in 1846, as the experience of the United States indicates, and as the gathering evidence already brought forward by us, seems strongly to point out.

The question for providing, for poor people at least, a sure substitute for the potato crop, becomes then of the highest importance. It will not do for them to try experiments, and fail; such expenses must be incurred by the wealthy, or by speculators. We now, therefore, produce the following table, showing the quantity of produce, of thirteen different crops, that may be obtained in an English acre, under ordinary circumstances. This will enable everybody to judge for himself what is most worth his growing. If it should appear that the produce per acre is in any case taken too low or too high, a little calculation will serve to correct it. No doubt it is generally much too low where high cultivation is employed. If potatoes are averaged at only eight tons an acre, although plenty growers obtain twelve, or even fourteen tons, so also are parsnips taken at only twelve tons instead of twenty, carrots at fifteen tons instead of twenty-five, and so on.

A Table of the average weight per acre of thirteen crops of corn or vegetables; and also of their organic or inorganic constituents, calculated by Edward Solby, Esq., F.R.S.

Average Produce per Acre.	Water.				
	Unzoolical Organic Matter.	Protein Compounds.	Inorganic Matter.		
	lbs.	lbs.	lbs.	lbs.	lbs.
1. Turnips 25 tons, or 50000	51800.0	3309.6	442.4	448.0	
2. Carrots 15 tons, or 33600	29432.6	3123.2	655.2	332.0	
3. Parsnips 12 tons, or 26880	21542.7	4642.2	661.8	389.3	
4. Potatoes 8 tons, or 17920	14228.5	3055.6	433.7	204.2	
5. Barley 35 bsh., or 1800	237.0	1314.2	205.9	42.3	
6. Oats 40 bsh., or 1700	238.0	1215.7	187.8	63.5	
7. Peas 25 bsh., or 1600	137.6	1017.7	399.4	45.3	
8. Beans 27½ bsh., or 1750	183.2	979.0	681.2	61.6	
9. Wheat 23 bsh., or 1630	243.6	1184.4	248.4	33.6	
10. Cabbage, 10000 plants or 80000	73840.0	4181	1456.0	624.0	
11. Jerusalem Artichokes, 600 bsh., or 25000	22176.0	4888.8	599.0	336.0	
12. Beet 75000	65350.0	7312.6	1020.0	817.6	
13. Buckwheat, 30 bsh., or 1300	162.0	94.52	177.6	17.6	

In this table it will be observed that the largest amount of waste is in cabbages, and the smallest in peas. But, to ascertain the real importance of these crops, it is neces-

easy to estimate firstly their relative value, if protein alone, the only nutritive part, is regarded; and this is shown in the following table:—

	lbs.
1. Cabbages	1456.0
2. Beet	1020.0
3. Carrots	655.2
4. Jerusalem Artichokes	599.0
5. Beans	551.2
6. Parsnips	561.8
7. Turnips	442.4
8. Potatoes	433.7
9. Peas	399.4
10. Wheat	218.4
11. Barley	205.9
12. Oats	187.8
13. Buckwheat	177.5

In the next place, we ought to consider what they are worth if the other matters, which, although not literally nutritious, nevertheless render them fit for food, are taken into account. The following table shows their relative value, if organic matters of all kinds is taken:—

	lbs.
1. Beet	8332.5
2. Cabbage	5640.0
3. Jerusalem Artichokes	5487.0
4. Parsnips	5204.0
5. Carrots	3783.4
6. Turnips	3752.0
7. Potatoes	3487.3
8. Beans	1560.2
9. Barley	1520.1
10. Peas	1417.1
11. Oats	1403.5
12. Wheat	1402.8
13. Buckwheat	1120.0

The great value of a cabbage crop is here apparent; for it is evident that if land is planted with drumhead cabbages, two feet apart, and they can be made to weigh 8 lbs. each, a greater amount of food will be obtained than from any crop, except beet, which cabbages beat in nutritive matter, but give place to in absolute quantity. Beet, however, being less palatable and saleable, except for cattle, than cabbages, must rank lower. Then we find what enormous quantities of food may be derived from carrots, parsnips, Jerusalem artichokes, and beans, each of which ranks above potatoes in whatever way they are regarded. As to Jerusalem artichokes, they appear to be far beyond the potato in real value, although, perhaps, not equally palatable; for, in addition to the excellent quality of their roots, to which alone reference is made in these tables, they will grow in the poorest soil, require no storing during winter, and their coarse woody stems make excellent fuel, or may be employed for cattle food whether green or dry.

Mr. Forsyth, of Alton Towers, speaks thus of the Jerusalem artichoke:—

"I have grown the Jerusalem artichoke so as to produce a greater weight of tubers than the ash-leaved kidney potatoes generally produce; and in addition to this, it yielded of eatable stems a standing crop of 12 feet. It bears frost on the tuber with impunity; it is full of eyes, buds, or sets, more so than potatoes; it requires rich land and plenty of sun and air, as it is notoriously late in forming its tubers. I have cultivated it as food for game; pheasants devour it greedily in winter, and as the frost does not affect it, it requires no further attention than to be scattered in the covers. I have a good deal to say regarding the value of this plant for agriculture, but your columns are too crowded with the potato question to admit of its being entered upon fully—suffice it to say, that it is a wholesome vegetable of the easiest culture, not subject to any disease, although it never gets good usage, and I think there are few gardens of any note that could not supply a good stock of it, if it were locked up from the rubbish, among which its lot is generally cast. In growing it for the tubers, the stems must be topped at 3 feet, and it is only when young, that cattle could eat the stems; it is a sure cropper, and consequently may be relied on,

and can be used, (if butter is not to be had) as food for man; and if it fails in this, it will fatten pigs, and feed milch cows."

Of course we would not have anybody crop his land exclusively with any one of these things; they will be most valuable when made to form the basis of a cottager's husbandry, as, for example, in some such manner as that proposed by Mr. Straton, of Eastington, near Stroud, namely, that a part of the land be immediately planted with hollow-crowned parsnip and carrots, the remainder with early peas, reserving a small portion for the purpose of sowing as soon as possible, some Savoy cabbage, winter greens, &c. &c., so that when the peas are harvested, a portion of the land may be planted with the same, and the remaining part with turnips. The peas, he observes, will be nutritious food during winter; and should there be an objection as to boiling them, that may be overcome by first boiling them in water with a small portion of soda, from which they must be strained before using for soup. But these are matters which all intelligent cultivators can judge of for themselves, and to which we may perhaps direct attention hereafter.

THE POTATO DISEASE.

We wish we could this week say to our readers—there is not so much cause for alarm concerning the next potato crop, and the anticipations of its impending ruin are unfounded. On the contrary, every new fact which comes to light renders the danger more apparent, and we must repeat our warning that there is no certainty that any English or Irish potatoes will be fit for seed. That some will prove good is very probable; we do not in the least doubt that many persons will have again sound crops; but in the present state of our knowledge it is quite impossible to say who, because sound sets cannot be distinguished from unsound ones, and therefore the cultivation of the potato is literally reduced to a game of chance.

Mr. Barnes, of Apley-park, assures a contemporary that he has lost his ash-leaved kidneys, but he found watering with lime-water put a stop to the progress of the disease. Mr. W. Wicker, of Somerhill, near Tonbridge, has sent a young potato, of advanced growth, exhibiting the disease in some intensity. "It was grown in a potato-pit, the bed made of leaves in the usual way, with 10 inches of soil on the top (a compost made three years back for vine-borders.) The seed was saved from potatoes grown in frames last May, and packed securely before disease appeared."

Mr. Robert Fish, gr. to Colonel Sowerby, at Futteridgebury, finds "a sixth of his frame potatoes attacked;" they were once very vigorous and healthy; now the old sets are decaying, and the points of the leaves and stems are dying black. "All the sets had been greened previously to planting."

At Farnham Castle, in Surrey, Mr. Butcher has a pit of potatoes, 16 ft. by 8 ft., all destroyed by the disease of last year. The sets when planted appeared quite sound, and went on very promising till the stems were about one foot high.

Even those who have planted their potatoes in the autumn are, we fear, in no better position than their neighbours, for, although in some places the autumn-planted sets are sound at present, as, for instance, those in heavy London clay, and the "Silverskins," near Taunton, yet we have no guarantee for their producing healthy plants. On the contrary, Mr. Barnes' most recent observations show that near Sidmouth, the new crop in the open ground, all planted in the autumn "from selected sound seed, and one lot in a beautiful pulverised piece of ground where an old plantation had been grubbed up, where a potato has never before been planted," is so entirely attacked that Mr. Barnes failed to discover one sound shoot among hundreds that he examined in the forenoon of March the 2d. Every form of the mischief was showing itself "ten times more than among the forced potatoes." And in the latter from Bicton, many of which have been submitted to our inspection by the order of Lady Rolle, and were exhibited last Tuesday at the meeting of the Horticultural Society in Regent-street, the old sets were

already in so putrid a state that they could not be washed. Now, it is to be remembered that this is a case where the sets were apparently sound, having been prepared and selected with all the precaution which care and great skill could suggest; that the crops did not show a sign of disease till very lately; that many of the plants are still uninjured, although surrounded by dying companions; and that the evil is the same in all sorts of places, and under all circumstances. It rages in the open air, and has carried off its victims from the early peach house, second peach house, first melon pits, second melon pits, and hooped and matted beds. Manuring in various ways, and no manure, offer equally fatal results; and, as Mr. Barnes justly observes, although the decay of the potato may be prevented by skilful storing, yet when restored to the open ground, disease once more makes its appearance in every form that has been written of."

It is in this impossibility of telling whether a crop is or is not to be diseased that the worst feature of the mischief now resides; for if we are to wait till the new crop is a foot or more high before we can tell whether it is safe, we not only lose the crop, but the use of the land for the season.

And now we must entreat our readers not to deceive themselves with the hope that disease has shown itself in Devonshire, only because it is a warm damp county, and that to the northward they will be safe. It must be remembered that it broke out originally in the warmest part of northern Europe, in the countries to the eastward, such as Germany, Holland, Belgium, and northern France; and that its westerly course was to all appearance connected with the state of the crops to be attacked. The appearance of the disease at Bicton, and in forcing-houses, is but a repetition of the phenomenon of last year. Moreover, notwithstanding the unwillingness of some sufferers to admit what is going on, the want of observation in others, and but a small part of this crop having yet been planted—nevertheless, we find proofs gathering around us in all directions. The following places have been already indicated:—

Cumberland...1, open ground.
 Cheshire.....3, in forcing-houses.
 Anglesea.....1, in do
 Ireland.....3, Fermoy, Ballinglass, Portlaw, and report says more.
 Norfolk.....1, in a house in the open ground.
 Hertfordshire 2, in frames.
 Middlesex...2, in do.
 Sussex.....2, in do. and the open ground.
 Devonshire...2, in do do do do
 Shropshire...1, in do.
 Kent.....1, in do.
 Surrey.....1, in do.

But, if these facts are in themselves most alarming, how much more so do they become when connected with the evidence collected in the United States! From the first outbreak of the disorder among us, the attention of government was directed to the importance of obtaining information from other countries concerning the disease; and we have now been permitted by Lord Aberdeen to examine the whole of the consular returns relating to this object,

In Maine and New Hampshire it appears to have been first noticed in 1844, and to have become general in 1845. Mr. Peters, her Majesty's consul at Philadelphia, writes, December 30, 1845, that the disease was very general in Pennsylvania in 1843, and continued to prevail in 1844 and 1845, but only partially. Mr. Barclay, at New York, states, January 10, 1846, that the disease existed in that quarter in 1843, 1844, and 1845; and Mr. Grattan, the consul at Boston, reports it began in Massachusetts in 1843, increased in 1844, and became very general in 1845. So that if this murrain is to run its course here as it has in the United States, we have at least two-years more to suffer its visitation; and, considering how fatal it proved last year, how early it appears now, and in how many different quarters, it is impossible not to dread that what is coming is worse than what has passed.

Nor does it appear, from these valuable documents now alluded to, that the Americans, with all their sagacity and scientific knowledge, have been able to discover any means of stopping its ravages. Lime, with them, as with us, has been much employed, and with no certain success.

Under these circumstances it is probable that in Great Britain, where land is too valuable to waste in great experiments, and people too closely packed to be able to bear the destruction of hundreds of acres of food for two successive years, potato cultivation will return to the gardens, and cease to be relied upon as an important source of food. And gardens are where it should have always remained. But while we feel it our duty to recommend that a better kind of crop should be substituted for the potato, we have also endeavoured to procure all possible information respecting the sources from which sound potatoes may be had; and we now produce, by permission of government, the following abstract of such European consular returns as elucidate this question.

An abstract of returns furnished to the Foreign Office by her Majesty's Consul in Europe, showing the state of the potato disease in their several Consulates.

Alicant..... No disease, but potatoes soapy, scarce, and dear.
 Bayonne.... Crop much diseased, unfit for use in many places.
 Barcelona.. No disease. Crop abundant.
 Boulogne... Crop diseased and defective to the extent of one-half or two-thirds.
 Brest..... do do do
 Bilbao..... Crop greatly affected.
 Bordeaux... Early crop sound. Later crop half lost from disease.
 Carthage... No disease: but carriage difficult and dear.
 Cadiz..... No disease: but none to be had.
 Cette..... do do do
 Christiana.. Disease partial, about Skin (Nov. 25.) Exportation prohibited.
 Calais..... Much disease; two-thirds lost.
 Corsica..... No disease. Good crop.
 Charente... Much disease in heavy lands; mostly sound in light sandy soil.
 Genoa..... No disease: none to be had.
 Galicia..... No disease: crop very abundant.
 Granville... Much disease; three-fourths lost.
 Havre..... Disease very general; half lost near Dieppe; nine-tenths near Rouen.
 Leghorn..... No disease: no supplies can be had now.
 Lisbon..... Crop diseased at Figueira and Coimbra. No appearance of it at Lisbon. Very few to be had Nov. 29. In the Figueira district disease so general that few proprietors have enough left for seed. The few potatoes affected in the neighbourhood of Lisbon were grown from seed received from England. Dec. 29.
 Marseilles.. No disease in Provence. Symptoms have manifested themselves in the neighbouring departments.
 Malaga.... No disease: few or none to be had.
 Nantes..... Disease considerable.
 Naples..... No disease; crop abundant and excellent.
 Oporto..... Disease in the districts near the Douro; thought to be contagious. In the Beira-alta, and neighbourhood of Oporto, an abundance; but now (Nov. 15), in many places of the Beira-alta, and Tras os Montes they are beginning to rot.
 Palermo.... No disease; none to be had; will not keep.
 Stockholm. Exportation prohibited.

It must be confessed that the prospects of potato growers are not improved by these important returns; for it is clear that no supply of seed can be expected at this season of the year from Mediterranean ports, where alone, with the single exception of Galicia, the crop is sound. No reliance can be placed on the Portuguese seed; and with the exception of north-west Spain, all the northern districts of Europe are evidently as badly off as ourselves, or worse.

Under these circumstances we must look to this country, and consider whether it will be safe to use any sets that can be procured at home. We have no confidence in any one English, Welsh, or Irish county; and our trust in the goodness of the potatoes from the north of Scotland, or even the Gull of Man, is shaken; some localities, however, offer a chance of good seed, and these are to be found scattered in a most unintelligible manner all over the kingdom. We may add that among the mass of conflicting evidence which overwhelms the potato question, two solitary facts stand alone in their uniformity. The first is, that the Irish Cup potato has, upon the whole, suffered less than any other field sort, both in Great Britain and Canada; the other is, that potatoes on mossy or peaty soil are far less diseased than any others. It may, therefore, be a question whether the Irish Cup, from "moss" or peat land, will not supply sound seed. The misfortune is, that it is impossible to tell before-hand how such an experiment will turn out.

Believing, as we now do, that the wisest course for the peasantry and small farmers, who cannot afford to speculate in so uncertain a crop as potatoes, is to discontinue their cultivation, we must endeavour to ascertain what substitute can be found for so large an article of diet; a most serious consideration for all who value, we do not say the comfort of the poor, but the safety of the country. In allotments and small holdings there is little means of changing crops; and in so many cases the occupiers mainly depend on their garden produce, that the fittest substitute for the potato becomes a most difficult question, the reply to which will admit of small delay. For that reason we venture at once to make some suggestions of our own, and to ask our correspondents to favour us with their views as early as possible in the ensuing week, so that we may be enabled to resume the subject advantageously next Saturday.

The main point in this inquiry is to secure a certain crop, of good quality; the quantity of it, however important, is quite secondary. In this point of view it will probably be admitted that oats offer the best resource. An acre of oats will average, say 40 bushels, or 1,800 lbs. of clean corn, exclusive of straw; of this 1,316 lbs. will conduce to human sustenance; or if we merely calculate the nitrogenous materials, 260 lbs. In these respects it is doubtless inferior to potatoes, an acre of which yielding 5 tons, will furnish 2,613 lbs. of nutritive matter of all kinds, or 400 lbs. of nitrogenous compounds. But the first is certain, and in allotments will yield a larger produce; the latter is worse than precarious.

Another crop of great value is the hollow-crowned parsnip. If we assume an acre of this root to yield on an average 12 tons (Colonel Le Couteur speaks of 27 tons in Jersey); we shall have 3,216 lbs. of nutritive matter, of which 1,200 lbs. (?) are nitrogenous. Altringham carrots are also of much excellence; 15 tons of carrots will yield 4,032 lbs. of nutritive matter, of which 500 lbs. (?) are nitrogenous; and if the white Belgian variety is sown, the produce is far higher; Colonel Le Couteur mentions, we think, as much as 38 tons having been obtained. The main objection to carrots and parsnips seem to be that they are subject to the rot. It is certain that in the past year both roots have been partially affected by a disease analogous to, if not identical with the potato murrain. Indeed; a case of the kind in some long red carrots from Lord Lansdowne's, at Bowood, was produced last Tuesday by Mr. Spencer, at the meeting of the Horticultural Society. We are not aware, however, that this disease has appeared to any more serious extent than that in turnips. The carrot and parsnip are, indeed, so perfectly hardy, that we can scarcely anticipate a serious risk in growing them.

Very large weights of such cabbages as the drumhead and large green savoy may be readily obtained; and although we cannot just now lay our hands upon any satisfactory analysis of them, it is well known that they are very nutritious; in one pl. we see that they are asserted to yield 800 lbs. of nitrogenous matter per acre, Scotch kale is another hardy and most useful plant of the cabbage race.

Our narrow limits, however, compel us to break off without pursuing this inquiry any further for the present. We shall next week endeavour to suggest some experiments which may be worth trying in the ensuing season, and also to make some more definite proposals for the benefit of small growers who may wish to find a substitute for potatoes.—*Gardeners' Chronicle*.

LECTURE ON THE APPLICATION OF CHEMISTRY TO AGRICULTURE.

BY J. C. NESBIT, ESQ.

In commencing a course of agricultural chemistry I shall endeavour in this, the preliminary lecture, to give you a short and condensed view of the nature of the science, and the advantages which may be derived by agriculturists from the application of the truths of chemistry to the cultivation of the soil. Many of you are aware that within the last few years the application of chemistry to agriculture has much increased; and it is satisfactory to behold, on every side, farmers paying more attention to that important aid than they used to do. I shall now, without further introduction, enter upon the subject of the lecture.

You are made aware of the facts of chemical science by studying nature; asking questions, as it were, of her, and receiving answers. And it is by collecting these answers, and adding to them by putting other enquiries, that the whole results of chemical science are brought within view. We ask a question when we make an experiment, and the result is the answer; and by varying the interrogations, and putting them first in one shape and then in another, we have the truth fairly brought out.

By experiments repeated thousands of times, and in a vast variety of forms, chemists have discovered that the world we inhabit, and all the vegetables and animals it contains, are made up of from fifty-six to sixty elementary principles of matter which differ from one another in their properties. Of these the greater portion consists of metals, such as iron, silver, and gold, and also such substances as sulphur and phosphorus, and many others. These substances are all elementary, differing essentially from each other; and they make up the whole of the mineral, vegetable, and animal kingdoms. But many of them are exceedingly scarce, being found only in very rare localities; some only in places where vast volcanic heat has been in operation; some in other localities where circumstances have caused them to be brought up from the extreme recesses of the earth. The great bulk of the earth is composed of from twelve to fourteen of these elements, which are found in large abundance all over the world, in the water, air, and the earth; and it is with these substances, few in number, and with properties easily learned, that the farmer particularly has to do.

We find the earth is composed chiefly of a substance called oxygen. This body constitutes nearly half the weight of all earthy matter, nearly eight-ninths the weight of water, and one-fifth the bulk of air. It is found in all vegetables and animals; and it is, therefore, evident, that a knowledge of such a substance must be very useful to agriculturists; and the same remark applies to other substances which are found to exist in vegetables.

It is my intention, in the lectures which I shall have the honour of delivering before you, to proceed, one by one, to the consideration of all those bodies which are found in vegetables—to present to your notice, time after time, a variety of substances, together with their properties, which are most useful to the farmer.

The substances which are found in every soil capable of bearing crops, and which seem essential to that object, may be shortly enumerated. We find, invariably, alumina, which is the base of clay; lime which is the oxide of calcium; magnesia, which is the oxide of magnesium; potash, which is the oxide of potassium; soda, which is the oxide of sodium; manganese, iron, silica, which is pure sand; phosphoric acid, which is the acid of bones; sulphuric acid, which is a union of brimstone and oxygen; and chlorine, which is the base of spirits of salt. These substances are to be found in greater or less proportions in

all soils; and upon the presence, in sufficient quantities of five or six of them, depends the power of the land to produce crops. If we examine any vegetable, we find that it generally contains the whole of these substances, with the exception of alumina and manganese. There is a little dispute at present as to whether alumina is taken up by plants, because it is detected in the ashes in such minute quantities as to induce chemists to suppose that it proceeds from that portion of the soil which adheres to the plant which is examined. But manganese does certainly enter into some vegetables, but it does not seem to be essential to their growth.

If we take a vegetable substance, such as wood, and make it red hot, and we see it diminish in bulk; and if flame be continued, and air admitted, it will continue to diminish in bulk until a white ash varying according to the kind of wood ignited. The parts which have burned away are called organic parts; whilst those which are left are termed inorganic.

Organic matter is that which forms part of an organ, or performs a function in the animal or vegetable kingdom; and in this view the earthy salts are organic, because they form parts of organs. But, by general consent, the term organic is now confined to those substances which burn away at a red heat, and inorganic to those which are left; we will, therefore, adopt the signification and use the terms as thus defined.

As I told you, the ash which remains after burning is inorganic; and it must have been derived from the land which produced it, being earthy in its own nature. And when we come to examine it by analysis, we find that the ash contains exactly the same substances which we have mentioned as existing in the land, viz., lime, magnesia, iron, potash, soda, silica, phosphoric acid, &c.

That these substances have very great influence over the growth of plants, and are necessary for such growth, may be proved by a few considerations arising out of the nature of vegetables in general. If we examine those bodies which can grow on what is called barren soils, we shall find that they take out a very small portion of the substances of the land; and in proportion as you come to the plants on which the greater amount of culture is bestowed, you come to those that require an increased amount of the inorganic substances which make up the soil. You are all aware that the pine or fir will grow on a sandy plain, on a barren heath, on the top of a mountain, or in the fissure of a rock; where a scanty nourishment may be procured. But the wood of the fir will not yield more than one-half per cent. of ash; that is to say, if you burn 100 lbs. weight of the wood, you will not get more than from 5 to 7 ounces of ash. Take, on the other hand, the oak; it will not grow on a sandy soil, but delights in a clay soil. Those who are acquainted with the geology of the south-east of England will remember the slip of clay land called the "Gault," which lies immediately under the chalk hills of Kent and Surrey. The line of this gault clay may be observed for miles by the number of oak trees which grow on it with great luxuriance. It may be observed very well in going by the South Eastern Railway, just as we have passed through the last tunnel between London and Ryegate. In the weald clays of Kent and Sussex, these trees grow in great abundance. Now, if we take the wood of the oak, the per centage of ash is much greater than in the case of the fir; out of 100 lbs. of wood burned, more than 2 lbs. of ash may be obtained. Taking next, wheat, we find that the straw of this plant, upon which the farmer is obliged to bestow great pains, takes $7\frac{1}{2}$ per cent. out of the land, and the ear $2\frac{1}{4}$ per cent. If we go farther and turn to another description of crop, which some farmers are in the habit of cultivating with a great deal of pains, and expending upon it more trouble and capital than upon any thing else—the hop—we find another singular thing, namely, that the proportion of inorganic matter taken from the land is much increased. In an analysis of the Farnham hops, I found they afforded as much as 10 per cent. of ash; and your fellow pupils, Messrs. Allen and Greenhill, who have just completed an analysis of some hops from Mr. Kipping, of Hadlow, Kent, find them to contain the enormous amount of 15 per cent. of ash.

I wish to point out to you the vast importance of this inorganic matter. If you look to nature in the widest view, you will see that these inorganic substances, which some persons declare to be of no use, are most serviceable, in fact invaluable; and that without their presence in sufficient quantity, certain plants cannot grow. The reason why the oak will not grow where the fir prospers, is, that there is not a sufficient number of substances in the soil, rendered soluble by the rains, to supply each year the inorganic matter to the oak, though there may be enough for the fir; and to furnish the inorganic matters for wheat, hops, and other crops, requires the aid and assistance of man. You must remember that the plant absorbs the matter in a state of solution, and not mechanically. With respect to the organic parts of the plants, they are derived from the air.

(To be continued.)

DEEP DRAINING IN STIFF CLAYS.

TIPTREE-HALL FARM.

As there still exists amongst agriculturists a strong doubt whether water will percolate through cold putty-like clays, I will, for the benefit of the community at large, communicate the results of my draining operations during the past year. I have drained thirty-three acres of some land I rent adjoining my own. The draining cost me £3 per acre, including pipes, and filling in, 6d. per rod of $5\frac{1}{2}$ yards; cost of pipes, of 1 inch bore and 15 inches long, 15s. per 1,000.

The drains are placed 33 feet asunder. We begin to cut as low as the ditch or outfall will permit, and work into the rising ground until we reach five feet in depth from the surface; the pipes are butted against each other—no stones or bushes placed over them—nothing but the clay is returned into the drain. I have several times examined these drains after rains during the last three months and find they run admirably, like so many tea-pots—leaving the surface dry enough for us to plough, trench, plough or subsoil, which we have been doing the last five weeks, in preparation for beans. The soil is a very strong brown brick earth, varying occasionally to a yellow colour, with much iron in it. I should strongly recommend those who are doubtful about the best and cheapest mode of draining strong clays, to inspect the drains on my Tiptree Hall Farm, which they are quite welcome to do at any time, and so satisfy their minds. The question of getting the water through dense soils is a vital one to the interests of agriculture. The difference in the wheat crop this year, between the drained and undrained land on my farm, is fully one quarter of wheat per acre and one load of straw, being more than the whole cost of drainings.

It is amusing to hear the doubts, arguments, and disbeliefs of the majority of agriculturists, when they see a small pipe the size of one's thumb placed at so great a depth as five feet in such a soil, whilst others cannot imagine that an inch pipe is large enough to carry the water. I have never yet, however, seen them run more than half full, although possibly when in the course of years, the soil becomes, as it will, more friable, water must have a freer access to them. We have the authority of Mr. Josiah Parkers, whose calculations cannot be controverted, that one inch pipes at 33 feet apart, and four feet deep, will carry off all the water that does fall from the heavens on a given space in a given time. I consider the disbelief as to the possibility of draining heavy lands, a great misfortune and curse to our country. If there are 24 millions of acres cropped annually with corn, and 12 millions of that land require draining, I am quite sure the increased quantity of corn in a cold wet season would be 12 million quarters (I mean of wheat, beans, oats, and barley), and on grass lands in proportion.

There is something very absurd in the assumption that clays are impervious to water; such opinions will not bear the test of reason. How often one hears "O! but water can't get through my soil;" well, then, if water cannot get in, how does it get wet? Perhaps the same person will tell you that he has built a wall or shed of clay lumps well dried, and that it requires all his ingenuity to keep the water from getting into it, by thatching, tarring,

and a brick foundation. It is true clay already saturated with water will hold water on the surface like a basin, for a very good reason, that it is already full of water and cannot take in any more; but once provide the means of escape under clay, with alternate dry and wet lays, and it would puzzle a conjuror to keep the water from sinking through it. If any man doubts it, let him dig an underground cellar in clay, and see if he can keep the water from coming in, even though well bricked.

Tapping the land when full of water is, after all, like tapping a cask—the liquor runs out at the bottom and the cask dries at the top. The deeper the drain or tap, the greater the pressure from above. As the liquor flows the air must follow. If you doubt it, consider that no liquor can flow out of a cask if you keep in the vent peg and prevent the air entering. Independent of the capillary reasons why deep drains act best (as explained in my 18th letter), we must consider that the deeper the drain the more steep the incline; and we all know that water will rush quicker down a steep hill than a gentle slope. Those who consider one inch pipes too small would find how soon such a pipe running constantly would empty a large pond. Of course where springs are to be drained, the size of the pipe must be regulated by the quantity of water. It is well known in sewerage, that small drains, if not too small, will keep themselves clear better than large ones; and as to expense, why, it must be bad policy to use large pipes and large cuttings, where small ones will answer better—no rats or vermin can enter one inch pipes. It is lamentably painful to contemplate the condition of our heavy undrained lands during a wet winter. Look at them now, filled with water to the surface, consequently unable to receive or appropriate that best of manures, the heavenly rain. Every hasty or continuous shower scours the surface, driving down the furrows in turbid and wasteful streams, the very essence of the soil—those finely comminuted, disintegrated, and valuable particles, which the farmer has, with so much perseverance and costly labour, exposed to the vivifying and advantageous action of atmospheric alterations. But let us carry our perspective to the months of March, April, and May. Is the prospect less dismal and distressing? No! the blessed sunshine on the sodden and saturated soil; but it is dead and impervious to its invigorating rays. The imprisoned water having no escape downwards, can only be released as steam by evaporation, carrying with it the heat which should warm the soil, and leaving behind a death-like coldness, which is well attested by the sickly and yellow plants. Poor things, many die, leaving their hardier companions to struggle on in hopes that a parching summer may do that naturally by gaping cracks, which man is too poor, too niggardly, too ignorant, or too prejudiced, to effect by cheap drainage.—*J. Mechi.*

The Canadian Agricultural Journal.

MONTREAL, MAY 1, 1846.

We regret, for the sake of the country, how little interest is manifested by the Montreal community for the improvement of the agriculture of this Province. A Meeting, called in the beginning of April, to petition the legislature to abrogate the act so lately passed for the protection and encouragement of agriculture, was most numerously attended, though the act in question has not been in force a sufficient time to allow it anything like a fair trial, or, in fact, any trial whatever, because not less than three or four years would be necessary to allow farmers to introduce the improvements and stock required for a fair experiment under the Protection Act. Had a meeting been called to institute an inquiry into the state of Canadian

agriculture, and the best means to be adopted for encouraging its improvement, we will not say there would not one individual attend who was not an agriculturist, but we may say there would be few, indeed, of any other class. We deplore this state of things, as it is the best educated and wealthy classes we would expect to take some interest in the real improvement of this naturally fine Province. It has been stated, that the large amount expended upon the improvement of the St. Lawrence Canal, the water communication connected with it, and with the great Lakes of Western Canada, will be thrown away and wasted, unless there is free admission of the agricultural products of the United States. For our own part, we have constantly advocated the expediency of this grand improvement of water communication in progress towards completion, and, as we often said, and now repeat, we would not deserve to possess this noble country, if we did not commence and complete these improvements independent of any prospect there might be of transporting the productions of the United States by these water communications. The Province of Canada extends along the line of the St. Lawrence and great Lakes about fifteen hundred miles, and northward to the Pole, and contains more than double as many acres of excellent land, in the immediate vicinity of this line of water, as the whole of the British Isles. This vast quantity of cultivatable land is all situated within the 48° of north latitude. Surely the expenditure upon the improvements referred to, should not be considered a waste, though solely expended for the benefit of our own territory. If we refer to the British Isles, we shall find one hundred times the amount expended on their internal means of communication, though they are surrounded with the sea, and with the best sea-ports in the world in all directions. We would exceedingly regret the expenditure upon our canals and waters, if this expenditure was made only with a view of carrying the productions of a foreign country. We have no objection to the carrying of foreign productions, but we object to the neglect of the improvement of our own great means of production, while we are so anxious for the comparatively trifling gain to be derived by the carrying of foreign productions. The general interests of Canada depend upon the quantity and value of her own productions, not on those of another country; and they alone can be the true friends of Canadian prosperity, who will use their influence to improve the country and increase its productions, and those who will not act thus, should at least abstain from any act that would be calculated to discourage the improvement and lessen the productions of their own country.

Perhaps it may be thought that we might occupy the pages of this Journal more usefully than in the discussion of this subject. Convinced, however, that it is fruitless to suggest

improvements and expenditure, unless there is a prospect of selling the products at remunerating prices, we think the first thing necessary to encourage improvements, is, assurance that it will be profitable. Without this, it is folly to recommend expenditure of labour or capital upon it, further than may be required for the farmer's own necessities. If it is desirable to raise a surplus to exchange for importations of British manufactures, we must have a prospect of doing so on terms that will refund the expenditure, or there will be no surplus, and we will have to learn to be content with our own productions, and convert a part of them, by domestic manufacture, into articles suitable for our use, or that must answer that purpose, when we have no means of procuring any other. This is our object in discussing the subject of protection. There is not the shadow of doubt that the backward state of Canadian agriculture is as much to be attributed to the want of remunerating prices to the farmer, as to the total neglect of his instruction in the art of agriculture. It is no matter that the farmers of the United States may be cited as an example to us, that they should be able to compete with us, and that we should not dread their competition: but however this may be, or from whatever cause, we cannot compete successfully with them so long as they can send a supply here, that is as uncertain as it may be unlimited. It is not, as in England, that a large foreign supply is not felt, where the population of London, and other cities and towns, may be reckoned by millions, but with our trifling population a large foreign supply will glut our markets, and reduce the prices to any rate the purchasers may think proper to pay. The uncertainty of this foreign supply is one of the worst features of it. In looking over the Reports of the London Markets, it will be found that the variation in the number of animals exhibited for sale each market day, is very trifling. The sales are generally effected by a sales-master, and they, perhaps, will not have more cattle than is likely to be required, exposed for sale at any one time. In Montreal, a thousand animals may come to market, or there may not be twenty; and hence it is that the fluctuation in prices, caused by the unequal and irregular supply, is sufficient to ruin farmers. The foreign cattle are not consigned to a sales-master, who might have the judgment to bring them forward as they might be required, but they are generally brought to market by the owners, or by jobbers, who must sell them when there, no matter whether they are immediately required or not. This state of affairs does not make meat cheaper to the consumer, because the butcher will not bring more to market than is required to meet the demand, however great the supply of animals may be which is brought alive to market. There are no large farmers here as in England, who would purchase stock in a glutted

and cheap market, and keep them over for a better opportunity. The only purchasers in these cases are the butchers, and, of course, there is no chance that the evil we complain of is likely to be remedied, should foreign cattle be imported free of duty; and the same objections with regard to a glut in the market, applies to other foreign agricultural productions, as well as to cattle and sheep; the Canadian farmer has the value of what he has to dispose of reduced to a very low price, while the actual consumer is very little benefited.

FREE TRADE.

Notwithstanding all that has been said and written lately on the subject of free trade, our own opinion respecting it remains unchanged, and we feel persuaded that the first who will have cause to regret the change now about to take place, will be those who so urgently recommended the introduction of free trade. We do not now, nor never did, object to the principle, provided civilised nations, by general consent, resolved to carry out the principle fully and fairly; but believing this to be impossible, we are convinced that the changes proposed will not be just towards all classes, nor produce the good that is anticipated from it by its supporters. So far as England has yet made the experiment, it has only caused other nations to raise their tariffs, instead of lowering them. And what effect are the changes now about to be introduced likely to have on other nations? It will naturally produce only suspicion and jealousy of the true motives of England, who has hitherto protected, and fostered her agriculture, trade, and commerce; they will think she now changes altogether her policy, because she has brought her manufactures to that degree of perfection, that she may compete with foreign nations in their own markets, and they will not meet her views, or respond to her invitation of adopting the free trade principle, but will be more likely to adopt the protective system, which we are now about to abandon, after having cherished it for centuries. It may be desired by many that England should become the vast workshop for the world, sacrifice her long-prized agriculture, and make farmers of the population of all other countries. If this could be accomplished, no one would regret it more sincerely than we should, and we hope that the dark, dull, smoky, and unhealthy manufactories shall never make waste the beautifully cultivated fields of the British Isles, the admiration of all who have ever seen them. We envy not the feelings of those who from a desire to become rich, would allow to go waste the beautiful fields of their own country, and shut up human beings in manufacturing prison houses, to waste their lives in an atmosphere unhealthy for body and soul. And what is all this agitation and excitement about free trade but the insatiable thirst of gain and riches? As to the pretence of its making the necessities

of life more easily attainable by the labouring classes, we think it is a most fatal mistake, and time will prove it so. We believe it is a well established fact, that with all the vast amount of manufacturing and commercial wealth now in Britain, the condition of the working classes is not much improved. Large accumulations of wealth in the hands of individuals is seldom found to produce much advantage to the poor, particularly when these accumulations are made from the labour of the poor. It appears an absurdity in the advocates of free trade, who may have acquired great wealth in displacing labour by the introduction of machinery in manufactures, &c., to attribute the privations of the labouring classes to agricultural protective laws, when the actual cause of these privations is the want of employment, or when employed, the vast disproportion between the wages of labour and the profits of the manufacturer or merchant. Ireland is a practical example in the proof of our proposition. The condition of the labouring classes in that country is almost constantly deplorable, though the land abounds in all the necessaries of life. She exports the best of her agricultural productions, that would give ample food and clothing to all her vast population, if they could only be employed at a fair rate of wages, that would enable them to keep this produce for their own use. Notwithstanding the failure in potatoes, she would not require the Indian corn of the far west to keep her poor in existence, if they could only have the means of retaining for their own use the produce of their own country. What, we would ask, has agricultural protection to do with the privation and suffering of the Irish poor? Provisions are seldom dear in that country, because they are generally in greater abundance than money to purchase them in the hands of those who may require them. Free trade advocates may pretend that when England can have provisions from foreign countries, she will not require the Irish provisions. But if this were so, would absentee landowners forego the rents of their Irish properties, or how would they be paid? This would be the difficulty; and, therefore, trade however free, will not be likely to make the necessaries of life more accessible to the Irish poor, unless their labour can find constant employment at remunerating wages, that will enable them to purchase what they may require, or keep what they may raise. We do not offer these observations from any objection to the principle of free trade, but we wish to prove that agricultural protection has not been the cause of privation and suffering to the labouring classes, particularly not to those who suffer most, the Irish poor. We have constantly advocated the expediency of augmenting the quantity and value of the productions of our own land, convinced, as we are, that those productions are the only permanent basis of wealth for every country, and that all other dependence is uncertain and transitory. If the contemplated changes will not have the effect of

couraging our own productions, we hesitate not to say, that they cannot benefit Canada generally. It may be possible that some interests may benefit, but unless every species of protective duties are done away, the change cannot fail to injure the prospects of agriculture. By the abrogation of all protective duties, we might gain as much perhaps, on one side, as we would lose on the other.

The great evil from which humanity suffers most in civilized communities, is, the want of constant employment at a fairly remunerating rate of wages, for all those who are dependent upon the wages of labour. We know that high prices may be consistent with comfort and abundance to all classes; and that those in a state of destitution and starvation may be surrounded by plenty and cheapness; and that these two states are solely produced by full employment and the want of it. A manufacturer introduces a steam engine, that will execute the work of thousands in his manufactory, and which will make no complaints for the want of sufficient food or clothing,—he discharges his labourers,—telling them how rejoiced he is to save human labour; because that, according to political economy, any machinery that will execute the labour of man, should be considered a blessing to the human race. He congratulates them on not being obliged to work; and tells them there is nothing further required to secure them in idleness and abundance, but an abrogation of the corn laws,—that corn and provisions grow without much labour in other countries, and all that these other countries require is a free permission to send them for their use. That if they should be disappointed in obtaining a free supply without labour or money, there are poor houses for them, where they will be provided for, and where they will not be troubled with a family, or any increase of it during their stay. We appeal to any true Briton, if he would wish to see the labouring class, or any portion of them that are able to work, consigned to such degrading wretchedness as a poor house. Whatever political economists may say, it would be better that machinery should be buried in the depths of the ocean, than have human beings, able and willing to work, confined in poor houses, and fed by ounces, like felons in a cell, instead of being employed in productive labour. Poor houses are necessary in all populous countries; but to be obliged to confine able-bodied healthy men in idleness, and not more than half fed, when the British dominions contains so many millions of acres of uncultivated and excellent land, is a state of things that is very much to be deplored. The general constitution of man is adapted to active employment, and it is changing his very nature, to shut him up in a poor house, where his mind and feelings must be utterly prostrated, and his state brought very nearly to that of the brute. These observations are not intended to apply to the old and infirm poor, who certainly have a

claim upon humanity, to be supported and taken care of during their lives.

We have no object in writing this article, but to induce others to reflect upon these matters. It may be said we might write something more useful in an Agricultural Journal; but all we can say in favour of improvement, will have no effect, unless remuneration of expenditure is to result from these improvements; and if the farmer, to benefit a few, is to be deprived of all encouragement; we may as well write no more in recommendation of improvement and increased production, if we are to have no purchasers for our produce.

The following lines we quote from Blackwood's Magazine for March, on the "Ministerial Measures," and they are so fully in accordance with our own views on the subject, that we conclude this article by copying them.—"

"The landowner has reasons to object to it (the Ministerial measure) both as an active and a passive measure, it proposes to leave him to his own resources, but it does not remove his restriction. Surely if the foreigner and the colonists are to be permitted to compete on equal terms with him in the production of the great necessary of life, his ingenuity ought to have free scope in other things, more especially as he labours under this disadvantage of an inferior soil and climate. Why may he not be allowed, if he pleases to attempt the culture of tobacco? The coarser kinds can be grown and manufactured in many parts of England and Scotland; and if we are to have free trade, why not carry out the principle to its fullest extent? Why not allow us to grow hops duty free? Why not relieve us of the malt-tax, and of many other burthens? The answer is one familiar to us: the revenue would suffer in consequence. No doubt it would; and so it suffers from every commercial change. But these changes have now gone so far, that, especially if you abolish the protective duty upon corn, we are entitled to demand a return, from the present cumbrous, perplexing, and expensive mode of taxation, to the natural, cheap, and simple one of poll or property-tax. At present no man knows what he is paying towards the expenses of the Government."

"If we are to have free trade, let it be free and unconditional. Open the ports, by all means; but open them to everything. Let the seas be as free for traffic as the Queen's highway; let us grow what we like, consume what we please, and tax us in one round sum according to each man's means and substance; and then, at all events, there can be no clashing of interests. This is the true principle of free trade carried to its utmost extent; and we recommend it now to the serious consideration of Ministers."

We have seen a copy of a Bill now before the Legislature, to allow the formation of more than one Agricultural Society in a county in Lower Canada; and we highly approve of this privilege being granted in any county where the farmers may wish to avail themselves of the provisions of this Bill. We cannot have too many Agricultural Societies, provided they apply the public money, committed to their charge, to the improvement of agriculture, where improvement is most required. It will also produce emulation between societies who shall produce most public good. There is, undoubtedly, much good necessary to be done, and this Bill will give an opportunity to farmers to connect themselves

with one society, if they should have any objection to be connected with another. From many considerations, we confidently expect that the Bill will work well; because it will be giving to more than one party the distribution of the public funds for a public purpose. The Bill most wisely provides, that no individual shall be a member of more than one of these societies, thus preventing one party from having any undue controul in more than one society. If it is desirable that the improvement of our agriculture should be promoted, this Bill, if finally becoming law, must have a beneficial influence, and give some chance of fair play. The 4th section of the Bill referred to, allows the County of Montreal Agricultural Society to retain public money belonging to the late District Agricultural Society, and apply it to the purchase of animals, seeds, and improved implements, which are to be the property of the said county society. This clause, we humbly conceive, is not just towards other agricultural societies. Animals, seeds, or improved implements, purchased with public funds, should be public property, and not given over to one society for their exclusive benefit. The animals and implements might be allowed to remain a reasonable period with this society, and then given to other societies; the animals for use, and the implements for models. The seeds might be given to farmers to propagate from, they returning a small portion to be distributed to other county societies. This is the correct principle to act upon, where general improvement is the object.

We have sent accounts and receipts to many, to whom we have regularly addressed this Journal, but we have not yet been favoured with a reply, or with the amount of the accounts. The Journal cannot be published without incurring considerable expense; and we are surprised that many, to whom we have applied for their subscription, have not paid, the amount is so very trifling. We have already returned thanks to those who have paid us, and we shall be happy to do so to those who may yet pay us. We have honestly endeavoured to promote the interest and prosperity of agriculture for a very long period, and have devoted our time and our money to this object. Agriculturists are best able to say what support or favour we have received from them in return.

The farmers of Eastern Canada, however desirous they may be to obtain public money to support Agricultural Societies, and distribute this money amongst themselves, contribute very little indeed towards the support of the only Agricultural Journal published in Lower Canada.

ATMOSPHERE.

In the warmest regions of the globe, the air is cold at the tops of high mountains, merely because the air is there thin and incapable of forming a medium for the retention of the sun's rays. In every country there is a point of altitude at which water freezes on all occasions,

whether summer or winter. In Europe, this point—called by some the snow line, or point of eternal snow—is from five to six thousand feet above the level of the sea; in the hot regions of Africa and America, it is fourteen thousand feet high. At these points of altitude respectively, snow lies constantly unmelted on the mountain sides and summits. In the warm regions of Hindustan, the atmosphere is as cool and pleasant at a certain height on the Himalaya mountains as it is in the northern part of Europe. The plains of Mexico under a burning sun would not be endurable by man, if they were not at such an elevation as to possess an atmosphere so thin as to be incapable of being heated to excess.

Although the heat of the atmosphere thus depends on the density of the fluid, it is proper to state that it is likewise influenced by other circumstances. Certain bodies have the power of heating the atmosphere in a greater degree than would otherwise be the case. For example, in valleys the heat is thrown off from the sides of adjacent hills, from forests of trees, or other objects, and in these situations the air is hotter than if there were no such radiation. If the spot be sheltered from the cooling effect of winds, there is another cause of increase to the temperature.

The more heated that any fluid becomes, it is the more expanded, and consequently lighter. Being lighter, it rises or mounts upward, while the colder fluid sinks and occupies its place to be warmed and lightened in turn. These alterations greatly disturb the tranquility of the atmosphere. Here the air is rising, there it is sinking or rushing sideways to supply the deficiency; in short, its motions are indescribably various, all in consequence of the ever-shifting temperature of the atmosphere. The currents of air so caused are the winds, with the effects of which all are familiar. In the British islands, and other countries similarly situated, the winds which blow are in general a result of disturbances in the balance of the atmosphere at the distance of thousands of miles in the tropical or hot regions of the earth, and their occurrence cannot be calculated upon, and hence a principal cause for uncertainty in the weather.

The atmosphere possesses the capacity for absorbing and sustaining moisture, but only to a limited extent. When saturated to a certain degree, it is relieved by the falling of the moisture in the form of rain. It is calculated that the whole atmosphere round the globe could not retain at one time more moisture than would produce about six or seven inches of rain. By an elevation of temperature, the capacity of the atmosphere to absorb and sustain moisture is increased, and by a lowering of temperature decreased. Cold breezes, by lowering the temperature of the air, cause the aciform moisture to assume the appearance of clouds, and then to fall as rain. Clouds disappear or melt into thin invisible vapour in fine weather, and again appear when it is cold. When a cloud descends on the side of a hill, it gradually enters a region of warmth or higher temperature, and disappears. One minute it seems a thick white vapour, and the next it is gone; but when a cloud ascends a hill, it enters a region of cold, and consequently being condensed, it is precipitated as a shower of rain. Hence the old familiar rhyme—

When the clouds go up the hill,
They'll send down water to turn a mill.

FIDELITY OF A SHEPHERD'S DOG.—It happened that in one of his excursions among his extensive flocks, a Northumberland shepherd chanced to carry along with him one of his children, an infant about three years old. Having traversed his pasture for some time, the careful shepherd, who as a matter of course had been attended by his dog, had occasion to ascend a hill of considerable altitude; and such an ascent being too fatiguing for the child, the father left him at the foot of the eminence, with strict injunctions not to stir till his return. That done, he set forward on his ascent, and had scarcely gained the summit of the hill when, by one of those impenetrable mists which often occur in mountain regions, day was suddenly turned into night. The father hastened back to his child; but

from the combined effect of darkness and fear, lost his way in the descent. Hours passed away, and still he wandered, not knowing whither; at length, however, the moonshone and the shepherd found himself at the threshold of his own cottage, having lost both his child and his dog. The dawn of the following morning showed the anxious father, accompanied by his neighbours, engaged in a renewed search for his infant son; but all was in vain, and evening drew the curtain on another day of fruitless fatigue. One fact, however, transpired. It appeared that the dog lost on the preceding day had been at home, and on receiving from benevolent hands a piece of oat-cake, had instantly started off. During several successive days the search for the child was continued with no better success; but the dog was observed to come regularly home, and as regularly to disappear again, on receiving his allowance of cake. This circumstance at length effectually attracted the farmer, and, instead of pursuing his search, he one day determined to remain at home till the dog should come for his customary allowance, and then to follow him and watch his proceedings. He did so, and was guided by his canine conductor to the mouth of one of those chasms down which, as is not uncommon among the Grampian hills, a roaring cataract descended into an abyss of fearful depth. Down the rugged and almost perpendicular sides of this rent in the mountain the dog, without hesitation, began to make its way, and at length disappeared in a cave beneath. The shepherd, with difficulty, followed, and on entering the cavern beheld his little son eating, with much composure, the cake which the dog had just brought—the faithful animal meanwhile standing by, with honest pride and pleasure in his eyes! The child, as it afterwards appeared, had wandered to the brink of the precipice, and then either fallen or scrambled down till it reached the cave, which fear of the torrent had afterwards prevented it from quitting. The dog by his faculty of scent had traced the child, and afterwards fed him, by appropriating his own daily allowance, nor had he ever left his little charge by night or day, except to fetch food, on which occasions, as those which had seen him enter and quit the cottage declared, he had always run at full speed.—*The English woman's Magazine*

FLAX IN IRELAND.—Lately a paper presented by command was issued containing parts of the fifth annual report of the Society for the Promotion and Improvement of the Growth of Flax in Ireland. It seems that the entire amount realized in Ireland, adding the value of the seed saved for the flax crop in 1845, was estimated at 1,750,000*l.*, being about the same amount as the preceding year. The condition of the linen trade in Ireland is favourably reported by the society. The report states—“Independently then of the claims which flax culture has on the ground of profit to the farmer and employment to the labourer, it has to add the very important one of mainly contributing to uphold and increase a manufacture which employs thousands of hands in its prosecution, has distributed wealth wherever it has settled, and is, in fact, the most flourishing and important of the industrial resources of Ireland.” After showing the sums expended on the importation of flax from foreign countries, the report states—“Thus we find that from 5,000,000*l.* to 6,000,000*l.* sterling are annually drained out of the country to pay foreign nations for the produce of a crop which can be grown at home with profit to the farmer, affording great employment to the labourer, and benefiting the community at large.”

THE POTATO CROD.—At the ordinary meeting of the Horticultural Society, held on Tuesday, Dr. Lindley exhibited several specimens of new formed potatoes, as well as those grown in the open ground, from various parts of the country, which proved the lamentable fact that the disease will be greater in the ensuing than it was during the past season. The propagation of the disease was of a very ambiguous character, as although the potatoes which appeared healthy had been produced from diseased sets, those in which it was very apparent it had not existed had produced diseased issues. Although experience and science had gone hand in hand investigating the subject,

they had suggested no practical remedy. Dr. Lindley further stated that on Saturday he had received from Lord Aberdeen the correspondence with the different British consuls amongst which was that from Washington, in which it was stated that the disease first appeared in 1843, and had gone on increasing in intensity the last two years. The same might be expected in this country, and it required the utmost caution to guard against the effect of its progress. That the disease was not confined to potatoes was apparent from some carrots exhibited by the Marquis of Lansdowne. It had shown itself also in onions, which would not keep this season, and nearly all the Dutch hyacinths are in a similarly affected state.—*Standard*

THE CORN TRADE.—Mr. William Miles (East Somersetshire) has obtained various accounts relating to the import, export, and consumption of corn, grain meal, and flour. In the year ended the 5th January the annual average was 55s. 10d. per quarter. The total quantity upon which the duty was paid for home consumption was 135,665 quarters and 5 bushels. The total amount of duty was 82,932l. 2s. 9d., of which sum the duty on foreign wheat was 78,344l. 2s. 5d.; on British Colonial it was 2,877l. 10s. 6d.; and on the produce of Canara, 1,700l. 9s. 11d. The quantity of wheat and wheat flour imported into Great Britain in the year was 1,912,674 quarters, and exported 64,961 quarters. The total quantity of corn, meal, and flour of Irish growth imported into Great Britain from Ireland in the year ended the 5th Jan. last was 3,251,901 quarters.

CORN-LADEN SHIPS.—Mr. W. Miles (East Somersetshire) moved, on the 23rd of January last, for a return of the number and tonnage, and number of seamen, of corn-laden ships entered inwards, distinguishing British from foreign; and of the number and tonnage, and number of seamen, employed in carrying corn coastwise in Great Britain for the last five years (1841 to 1845). From the first portion of the return it appears the corn-laden ships entered inwards from foreign parts numbered in 1841, British vessels, 1,363, of 198,772 tonnage, with 9,703 men; and of foreign vessels, 1,528 ships, of 256,616 tonnage, and 15,175 men. In 1842, British vessels 1,863, tonnage 296,267, and men 15,134; foreign vessels 1,452, tonnage 182,441, and men 9,787. In 1843, British vessels 461, tonnage 70,001, and men 3,322; foreign 1,090 ships, tonnage 121,656, and men 6,669. In 1844, British vessels 997, tonnage 150,431, and men 7,143; foreign 2,185 ships, tonnage 219,321, and men 12,742. In 1845, British 711 vessels tonnage 112,323, and men, 5,320; foreign 1,740 ships, tonnage 168,808, and men, 9,504.

THE PRESENT WINTER.—M. Arago, the celebrated French savant, gives the following information in the *Annual of the Office of Longitudes for 1846*, which we lay before our readers, for the purpose of demonstrating that the mildness of temperature which has hitherto prevailed this winter is not so extraordinary as it is generally supposed:—"The meteorological state of a given place is far less variable than those would be led to believe who judge by their personal sensation, by vague reminiscences, and by the state of the crops. Thus, at Paris, the average temperatures of the years oscillate within very narrow limits. The annual average temperature of Paris from 1806 to 1826 inclusive, was from 10deg 8.10ths above 0 (or zero.) The greatest of the 21 annual averages only exceeded the general average by 1deg. 3.10ths, and the least of the average annual temperatures was only 1deg 4.10ths below the general average. As far, therefore, as the annual average temperatures are concerned, systematic meteorologists have only to foresee, to predict very slight perturbations. The causes of perturbation will satisfy all phenomena, if they can produce 1deg 5.10ths (centigrade) of variation; more or less. It is not the same with the months. The difference between the general and the partial averages amount in January and December to 4 and 5 centigrade degrees. By virtue of these variations, if the extreme temperatures of each month be compared with the average or normal temperatures of all the others, it will be found that the month of January is sometimes as temperate as the average month of Feb.; that the month

of February sometimes resembles the second average fortnight of January; that the month of March sometimes resembles the average month of April, or the second average fortnight of January; that the month of April never attains the temperature of the month of May; that the month of May is very frequently, on an average, hotter than certain months of June; that the month of June is sometimes, on an average, hotter than certain months of July; that the month of July is sometimes, on an average, hotter than certain months of August; that the month of August is sometimes, on an average, slightly colder than certain months of September; that the month of September is sometimes, on an average, colder than certain months of October; that the month of October may be, on an average, nearly three degrees colder than certain months of November; that the month of November may be, on an average, five degrees colder than the hottest months of December; and that the month of December may be, on an average, seven degrees colder than the month of January."

THE SEASONS.—There are still as few signs of winter as ever. Not a single night's frost has yet occurred to check vegetation, which is advancing more rapidly than it usually does in the month of April. So great is the abundance of grass, that the sheep and cattle are still in the fields, living entirely on the green herbage. In Lincolnshire the supply of green food is so great that some of the farmers are giving away their turnips, that is, allowing any one who is willing to do so to turn sheep into their fields to eat them, without any payment. As far, therefore, as stock is concerned, the weather is very favourable as relates to the supply of food, but it does not appear to be wholesome for them. The murrain still prevails amongst the horned cattle to a great extent, and the sheep, in some districts, are suffering from a disease which cause the hools to fall off. This unnaturally mild weather is decidedly unfavourable both to human life and to the food of man. Disease, especially fever, exists to a great extent, both in England and Ireland, and the rot in the potato crop continues to destroy the food of the poor. The price of potatoes is rising everywhere, and in many parts of Ireland famine and disease are advancing with rapid steps. Judging from rural sights and sounds one might suppose that we were in the midst of spring. The fields are quite green, and most of the half-hardy flowers are in bloom in the gardens, whilst the thrushes and other song birds make the woods resound with their notes. In the wilder parts of South Lancashire, the mistle thrush, or, as the country people call him, the shercok, has been in full song since Christmas week, and for the last fortnight the common thrushes have been singing with equal vigor and sweetness. They appear to be building their nests and to be preparing to hatch their young. Another remarkable proof of the mildness of the season is, that the wild geese, which seldom remain on the Lancashire moors more than a few days in their flight to the south, have this year stayed nearly the whole of the winter, and do not seem disposed to leave at all. They no doubt find an abundant supply of reptiles and insects, and if the mild weather continues, the farmers will also find them next summer to their cost.—*Liverpool Times*.

THE WAY TO GET ON IN THE WORLD.—To get on in this world you must be content to be always stopping where you are; to advance you must be stationary; to get up, you must keep down; following riches is like following wild geese, and you must crawl after both on your belly; the minute you pop up your head, off they go whistling before the wind, and you see no more of them. If you haven't the art of sticking by nature, you must acquire it by art; put a couple of pounds of bird-lime upon your office stool, and sit down on it; get a chain round your leg, and tie yourself to your counter like a pair of shop scissors; nail yourself up against the wall of your place of business like a weasel on a barn door, or the sign of the spread eagle; or what will do best of all, marry a poor honest girl without a penny, and my life for yours if you don't do business. Never mind what your relations say about genius, talent, learning, pushing, enterprise, and

such stuff; when they come advising you for your good, stick up to them for the loan of a sovereign, and if you ever see them on your side the street again, skiver me, and welcome; but to do any good, I tell you over and over again, you must be a stickler. You may get fat upon a rock, if you never quit your hold of it.—*Blackwood's Magazine*.

THE BIRD ROCKS OF THE FAROE ISLANDS.—The Vogelbergs, or bird-rocks, of the northern seas, one of which, at Westmannsharn, in the Faroe group of islands, seldom intruded on by man, presents a most extraordinary spectacle to the visitor. The Vogelberg lies in a frightful chasm in the precipitous shores of the island, which rise to the height of a thousand feet, only accessible from the sea by a narrow passage. Here congregate a host of birds. Thousands of guillemots and auks swim in groups around the boat which conveys man to their domain, look curiously at him, and vanish beneath the water to rise in his immediate neighbourhood. The black guillemot comes close to the very oars. The seal stretches his head above the waves, not comprehending what has disturbed the repose of his asylum; while the rapacious auks pursue the puffin and gull. High in the air the birds seem clustering like bees about the rocks, whilst lower they fly past so close that they might be knocked down with a stick. But not less strange is the domicile of this colony. On some low rocks scarcely projecting above the water, sit the glossy cormorants, turning their long necks on every side. Next are the auks gulls, regarded with an anxious eye by the kittiwakes above. Nest follows nest in crowded rows along the whole breadth of the rock, and nothing is visible but the heads of the mothers and the white rocks between. A little higher on the narrow shelves sit the guillemots and auks, arranged as on parade, with their white breasts to the sea, and so close that a halibone could not pass between them. The puffins take the highest station, and though scarcely visible, betray themselves by their flying backwards and forwards. The noise of such a multitude of birds is confounding, and in vain a person asks a question of his nearest neighbour.—*Gallery of Nature*.

GOOD AND BAD NEWS.—Bad news weakens the actions of the heart, oppresses the lungs, destroys the appetite, stops the digestion, and partially suspends all the functions of the system. An emotion of shame flushes the face; fear, blanches, joy illuminates it; and an instant thrill electrifies a million of nerves. Surprise spurs the pulse into a gallop. Delirium infuses great energy. Volition commands, and hundreds of muscles spring to excite. Powerful emotion often kill the body at a stroke. Chili, Diagoras, and Sophocles, died of joy at the Grecian games. The news of defeat killed Philip V. One of the Popes died of an emotion of the ludicrous on seeing his pet monkey robed in pontificals, occupying the chair of state. Muley Moloo was carried upon the field of battle in the first stages of an incurable disease; upon seeing his army give way, he rallied his panic-stricken troops, rolled back the tide of battle, shouted victory, and died. The door-keeper of Congress expired on hearing of the surrender of Cornwallis. Eminent public speakers have often died in the midst of an impassioned burst of eloquence, or when the deep emotion that produced it has suddenly subsided. Lagrange the young Parisian, died when he heard that the musical prize for which he had competed was adjudged to another. The case of Hill, in New York, is still fresh in the memory of all; he was apprehended in theft, taken before the police, and, though in perfect health, mental agony forced the blood from his nostrils, and he was carried out dead.

IMPROVEMENT OF LAND IN IRELAND.—There are several provisions in the bill now before the House of Commons, respecting public works in Ireland which require particular notice. Out of the sum of £50,000, advances may be made to improve lands, which will of course give employment to the labouring population, and render the soil more available. By the ninth and other sections it is mentioned that further encouragement should be given for the improvement of land, by enabling parties to obtain advances on more favourable terms than were pre-

scribed by the 1 and 2 Wm. IV., c. 33; and for that purpose the provision recited it is declared should be amended. It is then provided that the Commissioners of Public Works may make any loan, or advance in aid of the drainage, embankment, reclaiming, or other improvement of land, upon the terms and conditions that the whole amount of such loan or advance shall be secured, and shall be repayable within such time or times, not exceeding 20 years, for the completion of such drainage, embankment, reclaiming, or other improvement, at interest payable half-yearly. As such advances in aid of permanent improvement of lands will benefit the proprietors, and increase the value of the lands, it is proposed that tenants for life and others having only particular estates, and are under legal disability or incapacity to raise or charge money on such estate for the purpose of such improvement, may charge their lands to the commissioners for advances, to be laid out in drainage, embankment, reclaiming, or other improvements, which advances may be paid off at any time; such advances to be made by instalments not exceeding £500, and no second or subsequent instalment to be made until it had been ascertained that the former one had been properly applied. After stating that in no case shall the advances exceed £5000 without the sanction of a court of equity, there is a provision in case of misapplication of the advances made. It is provided that in case of default in the application of any instalment, the commissioners may recover the amount and forthwith enter upon the land and complete the improvements intended to be made.

TIMBER TAKEN INTO CONSUMPTION IN THE FIRST ELEVEN MONTHS OF

	1843.	1844.	1845.
Deals, &c. colonial loads .	317,878	365,639	674,054
Ditto, foreign.....	208,692	300,414	322,957
Timber, colonial loads.....	554,607	503,221	722,465
Ditto, foreign.....	113,323	192,161	263,215

AGRICULTURAL.—Now lay down your copper wires, and commence galvanizing barren fallows. In chalky soils turn on your sulphuric acid, and dress with carbon. Stimulate slow vegetation with alcohol, and repress redundant growth with lunar caustic.—*Punch's Almanac*.

Twelve intelligent agriculturists, from different parts of England, have been appointed by the Central Agricultural Protection Society, to attend in London during the discussion in Parliament on Sir Robert Peel's new measure, as affecting the present amount of protection to agriculture, in order to furnish the members who are the supporters of the agricultural interest with any information they may wish to be supplied with on so important a subject. From this district our respected neighbour, Mr. George Turner, of Barton, has been selected for this purpose.

IMPORTATION OF POTATOES FROM NAPLES.—A ship load of potatoes has just arrived in the Cove of Cork from Naples, which to all appearance are as fine and sound as any we have ever seen. The captain of the vessel, with whom we have had an interview, states that there is an immense crop in the kingdom of Naples, and through the Italian states, and no sign of disease has been found in it. They are of the description called in this country "Potato Rosco."—*Cork Reporter*.

A new potato digger was recently exhibited in operation at Salem, West Jersey. It threw out upon the ground, with two horses at the rate of five or six acres per day, and as fast as thirty hands could pick up and carry them away. The soil produced 400 bushels of potatoes per acre by the use of compost muck.

Great workers are always tranquil and orderly, and being possessed of incessant activity, they never lose a moment. They apply their whole mind to what they are about; and like the hand of a watch, they never stop, although their equal movements in the same way almost, escape observation.

MORAL.—The earth yields nothing to one who refuses to labour. Whatever the object of your pursuit you must give an equivalent; and, if that object be valuable, your offering must be in proportion; you must pay the best price if you want the best article.

Surely, as much food as a man can buy, with as much wages as a man can get, for as much work as a man can do, is not more than the natural, inalienable birthright of every man whom God has created with strength to labour and with hands to work.—*Mrs. Somerville.*

THE "DARK UNFATHOMED CAVES OF OCEAN."—Mr. Mackain, C. E., in a paper in the *Glasgow Philosophical Transactions*, states some strong reasons for believing that water is as compressible as air under the application of proportionable forces; and assuming it to be so, he concludes, that bricks might be found floating at a depth of 23,330 feet, granite at 56,000 feet, and cast-iron at 200,000 feet, or 39 miles.—*Mechanics' Magazine.*

THE POTATO DISEASE.—The *Brussels Journal* publishes the following letter from Barleduc (Antwerp) relative to the disease in the potatoes:—"In gathering in our potatoes in October last, we found that the greater part of them were diseased, and, moreover, were covered with tubercles. It immediately occurred to us to replant those tubercles in a light sandy soil; the result of which was, that we obtained a second crop in January; this time the potatoes were perfectly healthy and of an excellent flavour, and keep perfectly well in our cellars. Subsequently we made another experiment, which was attended with similar success. Potatoes of the year 1844 planted in the month of September last, have likewise produced an abundant yield, and of a superior quality. Are not these experiments of a nature to remove all fears respecting the cultivation of the precious vegetable, and the apprehensions which many persons entertain lest it be found impossible ever thoroughly to eradicate the disease which we have this year had to deplore?"

"FARMERS' FRIENDS."—The injuries arising from insect ravages, resulting from a scarcity of birds consequent on the destruction of hedge-rows has, if we recollect rightly, been experienced in England. "Travellers in the north of England," says Mr. E. P. Thomson, in his "Notebook of a Naturalist," "cannot but perceive the almost total absence of birds in that district. The country is open, and rarely broken by a hedge row; and thus, shelter being denied them, they seek more favoured spots. The effect is as obvious as it is injurious; for there is no limit set to the ravages of the caterpillar, or the destruction of the grub. The small cabbage butterfly swarms to an extent which must be seen to be believed. I have seen many hundreds on the wing at one time. The cockchafer too, flies in myriads; and there are no rooks to follow the plough."—*Westminster Review.*

Distrust the man whose friendship consists in protestations of his friendship, but who has the first time to prove it by any act of a decided character. It is actions not words, that speak the language of truth.

The wise and active conquer difficulties by daring to attempt them; sloth and folly shiver and shrink at sighs of toil and hazard, and make the impossibility they fear.—*Rowe.*

Fresh preserved boiled beef, which is a novel article of importation, is made up, after being cooked, in air-tight tin cases. It is principally sold on the banks of the Danube, in Hungary; and the pastures being rich, it is excellent in quality. It can be sold at the price of 43d per lb. cooked and free from bone. At present the supply is but limited, and owing to the Danube being frozen, no increase need for some time be expected.

Man is intended to draw in fresh air every time he breathes. *Almost all people, when in their houses, and the working people in their shops, breathe the same air over and over again.* To show the necessity of allowing fresh air continually to enter living rooms, and the bad air to escape, it may be stated that every person, during each minute of his life, destroys a quantity of air twice as large as himself.

Prefer solid sense to wit; never study to be diverting, without being useful; let no jest intrude upon good manners, nor say any thing that may offend modesty.

Of all that I have lost on earth of youth and joy, I regret nothing so much as the loss of the ideal I had formed of all.

The flax crop in Ireland this year is less by one-fourth than that of last year, owing to the failure of the Russian seed; but still the value of the flax and seed of the present year is not less than £1,750,000.

Love is the shadow of the morning, which decreases as the day advances. Friendship is the shadow of the evening, which strengthens with the setting sun of life.—*La Fontaine.*

An inward sincerity will of course influence the outward deportment; but where the one is wanting, there is great reason to suspect the absence of the other.—*Sterne.*

Minds capable of the greatest things can enjoy the most trivial, as the elephant's trunk can knock down a lion, or pick up a pin.

It is impossible to make people understand their ignorance; for it requires knowledge to perceive it; and, therefore, he that can perceive it, hath it not.

He that cannot forgive others, breaks the bridge over which he must himself pass, for every man hath need to be forgiven.

In England and Wales the value of household furniture is £13,000,000 of wearing apparel £16,000,000, and of plate, jewels, &c., £31,000,000.

A NEW IMPORT FROM AMERICA.—Some barrels of fresh pork have arrived in this port; it is preserved fresh and wholesome by filling up each barrel with melted lard.—*Liverpool Times.*

RANK AND TALENT.—Many a man may justly thank his talent for his rank, but no man has ever yet been able to return the compliment, by thanking his rank for his talent. When Leonardo da Vinci died, his sovereign exclaimed, I can make a thousand lords, but not one Leonardo. Those who value themselves merely on their ancestry, have been compared to potatoes, all that is good of them is under ground.

SPRING WEATHER.—We have had another week of unseasonably mild weather, in consequence of which we have seen, almost without surprise, various casual vegetable productions which have been shown to us, but which are naturally looked for three or four months hence, including a sprig of gooseberry bush, with the fruit setting on it. In some parts of the United States, there usually occurs towards the end of the year a turn of fine weather, called by the residents "The Indian Summer;" and it seems that meteorologists and almanack makers in this country will, by and by, have to devise some appropriate appellation for the spring-like weather that so often interpolates the winter quarter of our modern English year. We receive accounts from all localities of the extraordinary mildness of the present season. Gooseberries, perfectly formed, were gathered within a day or two by Mr. James Pearson, of Wirksworth Moor; and strawberries, both in full bloom and fruit, may be seen in Mr. Saxton's garden, at Matlock Bath. Children have also been seen gathering with great delight the common daisy. A boy in the service of Mr. Joseph Allen, farmer, of Shirland, whilst gathering turnips in a field on Saturday, found under the leaves of a large turnip a yellowhammer's nest, in which were three newly-laid eggs; the farmer, to convince himself, broke one, and found to his gratification that they were indeed new. The blue-bottle fly has been seen frequently in the neighbourhood. A bat was also seen on Thursday evening, apparently in search of its prey, and as full of life and vigour as at Midsummer. Mr. John Genness, grocer, Ashbourn, gathered a quantity of gooseberries, on Monday last, quite in full berry, in the garden of Mr. Colclough, Sturston, near Ashbourn.—*Derby Mercury.*

THE WHEAT LANDS.—The young wheats never presented a more healthy appearance than is at present the case; but it is by no means improbable that their growth will be checked by spring frosts.—*Derby Mercury.*

SNUFFERS.—A gentleman once asked the celebrated Abernethy if he thought the moderate use of snuff would injure the brain? "No, sir," was Abernethy's prompt reply, "for no man with a single ounce of brains would ever think of taking snuff."

THE WEATHER IN SCOTLAND.—The mild weather with which the year commenced still continues. During two days of last week a heavy rain fell, and a considerable quantity also fell during the last and the previous nights. Most of the daytime, however, is exceedingly mild, and enlivened occasionally by the faint but cheering rays of the sun. Vegetation is proceeding with a rapidity quite unusual at this season, and in some of the gardens at the south side of the town many native flowers will soon be in bloom, and we know of one or two instances where berries the size of a pea have been observed on gooseberry-bushes. Indeed, all accounts from the country speak of the unwelcome luxuriance of the season, and the uneasiness which prevails in consequence.—*Edinburgh Advertiser*.

THE REVENUES OF THE MIND.—The ear and the eye are the mind's receivers; but the tongue is only busied in expending the treasure received. If, therefore, the revenues of the mind be uttered as fast or faster than they are received, it cannot be but that the mind must needs be bare, and can never lay up for purchase. But if the receivers take in still with no utterance, the mind may soon grow a burthen to itself, and unprofitable to others. I will not lay up too much, and utter nothing, lest I be covetous; nor spend much, and store up little, lest I be a prodigal and poor.—*Bishop Hall*.

LITERARY MISSIONARY.—Fanny Foster (Miss Chubbuck) the popular magazine writer, it is said in a Philadelphia letter to the Journal of Commerce, is to be married to Rev. Mr. Judson, and will accompany him on his missionary labors in India. She will carry with her, it is added, the high devotion which a former one of the name exhibited, who followed the missionary fortunes of her husband in the East.

INDIAN CIVILIZATION.—The editor of the Cherokee Advocate asserts that, in proportion to the population, there are fewer men among the Cherokees who cannot read or write, either Cherokee or English, than are to be found in any State of the Union.

We copy the following Notices to Correspondents from the *Mark Lane Express*:-

HEMPE.—To "An Irish Farmer."—The quantity of British hemp is superior, when well manufactured, to that of Russia and India; it requires a rich moist alluvial soil or its cultivation; about 3 bushels of seed to the acre is an average quantity, and it should not be sown before the end of April. When it is grown entirely for the fibre, it is pulled when in flower, and no distinction is made between the male and the female plants; but when both fibre and seed are wanted, the usual method is to pull the male plants as soon as the seeds have set in the female plants, the female plants being left four or five weeks longer before they are pulled, so that the seed may fully ripen.

URINE.—To "Experimentalizer."—There is a very considerable difference between the quantities of nitrogen and phosphates contained in human urine and that of the horse; according to Fourcroy and Vanquelin the quantity is four times greater in human urine.

FOR DESTROYING SLUGS, &c.—To "Sufferer."—We do not know that you can do better for destroying them than by dusting with quicklime, which is very destructive to such depredators. Take the side of the land from which the wind blows; dust up your lime, and let the wind distribute it. A little judgment in the management is all that is required.

PEPPER BRAND.—To "C. A. W."—Pepper Brand is not considered identical with smut; it is by some considered to arise from a different species of the same fungi as smut. It differs from smut, in the heads of grain never bursting, and also in the feid smell which they give out.

NITRE.—To W. W."—The quantity of nitre applied to land varies very much, according to the description of the crop and the nature of the soil; from half a hundred weight to four times that quantity per acre has been used by some agriculturists.

THE POTATO CROP.—(To the Editor of the *Sherborne Journal*)—**SIR,**—I have seen in the newspapers a letter from the High Sheriff of Dorset, Mr.

Porcher, which is calculated to alarm the growers of potatoes in this country, as I think, more than necessary; and I therefore send you for publication the following facts: I planted in September some very badly diseased tubers of potatoes in small pots, and kept them in a cool frame until December, when they were shifted into larger pots and placed in my hot-house, and kept in a dry heat. The crop is now ripening, and I examined on Friday last one plot, and found all the tubers sound. I sent the haulm and the tubers, which I did not cut, to Dr. Lindley, and have just received his observations thereon:—He says, "Your potatoes have no symptoms of disease in the young tubers, and the stem and leaves indicate no tendency to assume the condition of the murrain. I fear they would soon do so if exposed to wet. It would be well to try the effects of a damp place on one of the pots of potatoes you still have. I expect that your Dorsetshire potatoes are among some of the best we have." If it should please God to give us a dry hot summer, we have, as I think, no reason to despair for the crop of potatoes that are now about to be planted. If the season should be like that of 1845, we may then perhaps have more cause for anxiety.—I am, your obedient servant, **PORTMAN.**—Bryanston, March 17.

POTATO CROPS.—(To the Editor of the *Corwall Royal Gazette*).—**SIR,**—The time is fast approaching when farmers will be selecting their seed for their general crops, and I beg leave, through the medium of your paper, to impress strongly on their minds the great necessity for selecting all the small potatoes, from the size of pigeon's eggs and under and sowing them whole, as affording a greater probability of ensuring a healthy crop the ensuing season. If they trust to their seed from the large bulbs, the disease may again make its appearance; for it is more than probable that many potatoes which are tainted with the disease of last year, may escape the observation of the most particular scrutiny, and however trifling the defect may be, the whole bulb will be affected by it, and every plant produced from such seed may again be a failure. The small potatoe is generally found at the end of the root; and the large bulb partaking of the first nourishment carried down by the stem, the disease in a great measure will stop there, and the small potatoe will most probably be found healthy. This I found to be the case in 1832 and 33, when the potatoe suffered from dry-root.—I am, Sir, your obedient servant, **RICHARD JOHN HEAD.**—Falmouth, March 9.

THE POTATOE CROP.—At the last ordinary meeting of the Horticultural Society, Dr. Lindley read two communications, and stated the results of experiments made on the propagation of potatoes from seeds, which had been suggested for the purpose of producing a more healthy future source of supply, from the probable present exhaustion of the stock. Such anticipations it was thought might lead to disappointment, and the experience of one case in particular, showed that little reliance could be placed upon it, as the seeds of the season of 1844, before the disease had appeared, produced 80 potatoes which were very much diseased, although the haulms were not in the first case affected. All the evidence on the subject was, however, very conflicting; for whereas in this country the results of the experiments were very unsatisfactory, the reverse was the case in Prussia, where crops of excellent quality had been procured from seeds, with most satisfactory results, both in the greater

quantity as well as the superior quality of the produce. So satisfied were the Prussian Government with the result of these experiments, that they had given instructions to purchase seed wherever it could be obtained.

TAKING A HINT.

It is very surprising to see how slow some men are to take a hint. The frost destroys about one-half the bloom on fruit trees; everybody prognosticates the loss of fruit; instead of that the half that remain are larger, fairer, and higher flavoured than usual; and the trees instead of being exhausted are ready for another crop the next year. Why don't he take the hint, and thin out his fruit every bearing year? But no; the next season sees his orchard overloaded, fruit small, and not well formed; yet he often boasts of that first mentioned crop, without profiting by the lesson which it teaches.

We heard a man saying, "The best crop of celery I ever saw, was raised by old John—, on a spot of land where the wash from the barn-yard ran into it after every hard shower." Did he take the hint, and apply liquid manure to his celery trenches? Not at all.

We knew a case where a farmer subsoiled a field, and raised crops in consequence, which were the admiration of the whole neighbourhood; and for years the field showed the advantages of deep handling. But we could not learn that a single farmer in the neighbourhood took the hint. The man who acted thus wisely, sold his farm, and his successor pursued the old plan of surface scratching.

A staunch farmer complained to us of his soil as too loose and light; we mentioned ashes as worth trying; "Well, now you mention it, I believe it will do good. I bought a part of my farm from a man who was a wonderful fellow to save up ashes, and round his cabin it lay in heaps. I took away the house, and to this day I notice that when the plough runs along that spot, the soil turns up moist and close-grained." It is strange that he never took the hint.

A farmer gets a splendid crop of corn or other grain from off a grass or clover ley. Does he take the hint? Does he adopt the system which shall allow him a sword to put his grain on? No, he hates book farming, and scientific farming, and "this notion of rotation" and plods on the old way.

PARLIAMENTARY PAPERS.

HOUSE OF LORDS.

WHEAT AND FLOUR.—A return of the quantities of wheat and wheat-flour imported, exported, and retained for home consumption during each year from 1815 to 1845, inclusive; also the quantity remaining in bond at the close of 1845; and the annual average prices of wheat for the same period. The following is an abstract of the results:—

Years.	Average price per qr.		Imported.	Exported.	Retained for home consumption.
	s.	d.			
1815	65	8	384,475	227,947	116,382
1816	76	2	332,491	121,611	225,263

Year.	s.	d.	qrs.	qrs.	qrs.
1817	94	0	1,089,955	317,524	1,024,443
1818	83	8	1,694,261	56,668	1,596,511
1819	72	3	325,638	44,689	122,000
1820	65	10	996,479	94,657	34,275
1821	54	5	707,385	199,846	9
1822	43	3	510,602	160,499	2
1823	51	9	424,019	145,951	12,137
1824	62	0	441,591	61,680	15,778
1825	66	6	787,606	38,796	525,231
1826	56	11	897,127	20,054	315,892
1827	56	9	711,868	57,323	572,705
1828	60	5	1,410,000	76,489	841,828
1829	66	3	2,190,095	75,097	1,363,847
1830	64	3	2,205,751	37,149	1,700,548
1831	66	4	2,867,860	65,875	1,487,807
1832	58	8	1,254,351	289,558	375,788
1833	52	11	1,166,457	96,212	83,691
1834	46	2	981,486	159,482	64,552
1835	39	4	750,808	134,076	27,525
1836	48	6	861,156	256,978	30,096
1837	55	10	1,109,492	308,420	242,593
1838	64	7	1,923,400	158,621	1,821,151
1839	70	8	3,110,729	42,512	2,652,552
1840	66	4	2,526,645	87,242	2,284,522
1841	64	4	2,010,263	30,390	2,515,597
1842	57	3	3,118,833	68,047	2,326,156
1843	50	1	1,482,988	71,236	965,289
1844	51	3	1,761,031	80,800	951,882
1845	55	10	1,912,674	64,961	303,492

The quantity of which remaining in bond at the close of the year 1845, was 1,106,874 qrs.

PERFECTIONS OF A THOROUGH-BRED HORSE.

TRANSLATED FROM THE GREEK.

Much famous is the Arabian breed, but best—
The horse that sportsman prize above the rest)—
Is he whose shape's with these perfections crown'd;
Light let him shift his limbs, and rid the ground;
Above his neck, his head should gently rise,
His looks erect—full fifteen hands his size;
His jaw should to his neck below incline,
And his large front with sprightly vigor shine.
Let waving tops adown his forehead fly,
And brills imbrown'd should edge his broad bright eye;
Wide nostrils, ample mouth, and little ears;
Arch'd be his neck and fleg'd with floating hairs,
Like a plun'd helmet, when it nods its crest;
Broad back'd, long-bodied, spacious to his chest.
Let his strong back be furrow'd with his chine,
And run his tail out in a brushy line,
Clean be his thighs and siney—but below
Straight, long, and spare the well-turned shanks—
Should show.
Lean be his legs, and nimble as the stag's,
With which in speed the fleeting tempest flags;
Firm let him tread and just; moving along
Upon a well-grown solid hoof and strong.
Such be the horse to bear me to the field,
To share the sport and to no rival yield.

The Canadian Agricultural Journal.

PUBLISHED MONTHLY,
AT ONE DOLLAR PER ANNUM,
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50 copies for.....	\$30
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WILLIAM EVANS, EDITOR AND PROPRIETOR.