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THE

Canadian Agriculturist,

OR

JRNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

L. XIII. TORONTO, NOVEMBER 16, 1861. No. 22.

Kohl Rabi.

is plant, sometimes called the cabbage tur- is extensively cultivated in Europe, and in situations enters with other root crops into egular rotation of the farm. In Canada it t little known, and we should like to be ed with the opinions and results of those may have given it a trial.

essrs. Lawson, the well known Seedsmen of burgh, recently communicated a very valu- paper on the culture and uses of Kohl Rabi, e journal of the Royal Agricultural Society gland; and we make the following general sary of the contents of the paper as to the s points to be noticed in the cultivation, rties and general management of the plant; sting our readers to keep in mind that is therein contained applies to the climate ason of Great Britain.

There are eleven varieties of Kohl-Rabi in ation; some of which are supposed to be fications of the others.

All soils appear to be suited to its cultiva- but it prefers heavy lands, even those ap- ning to stiff clays, and it can be grown turnips cannot.

The soil should be in fine tilth, well worked, rm-yard manure plowed in during the ; and in the spring it should be well d and pulverised.

It requires heavy manuring; phosphate , with common salt added, are most suit- able for it. Peruvian Guano, and other nitrogenous manures, should be avoided.

5. The seed should be sown in beds at the end of February or early in March, in drills 12 inches apart. A bed 6 yards square will afford sufficient plants for one acre of land, and eight ounces of seed will be necessary for the seed bed.

6. For successional crops, three sowings may be made, the first early in March, the second during the second week of April, and the third the first week in June.

7 Transplanting to the drills should be commenced the first week of May; but as a general rule, the plants should not be removed till they are from 6 to 8 inches high.

8. Plants for the main crop should be dibbled in at 18 inches distance. If successional crops are transplanted, the first (in May) should be 18 inches, the second (in June) 16 inches, and the third (end of July or first week in August) 15 inches apart.

9. If the seed is sown at once in the field in drills, the operation should be performed about the middle of April, but not later than the end. About 4 pounds of seed will be required for an acre.

10. Drills should be 27 inches in width, and plants should be singled to 14 inches.

11. While growing, the horse-hoe must be kept in continual requisition, until the spreading of the leaves prevents the operation being performed.

12. The *average* weight per acre is in Eng-

land from 26 to 30 to tons; in Scotland, 20 to 25 tons; and in Ireland from 30 to 35 tons.

13. Every description of stock will eat the Kohl-rabi, with avidity. In consuming the crop, sheep may be folded on the ground; but if given in the yard to cattle, the bulbs should be sliced or pulped; for pigs they should be steamed or boiled.

14. For cattle and horses it affords valuable nourishment when boiled with grain.

15. For milch cows it is invaluable, giving to milk and butter none of that disagreeble flavor which results when animals are fed on turnips.

16. For lambs and ewes it is as fine food as they can have in March and April; and when the ewes are lambing, it is found greatly to increase the supply of milk.

17. Kohl-rabi is, so far as at present known, subject to no diseases, except "clubbing" and "anbury."

18. If hares or rabbits exist in the nighborhood of the crop, they are sure to prove very destructive, unless means of precaution are taken.

19. The leaves are of equal value with the bulbs in nutritive properties.

20. The plant, for feeding purposes, is twice as valuable as ordinary turnips, and materially surpasses the best Swedes in point of composition and feeding value.

21. It bears transplanting better than any other crop, and is, invaluable, therefore, for filling up blanks in turnips, Swedes, or potatoes.

22. The Kohl-rabi can withstand any amount of drought in well and deeply cultivated soils, if the transplanting has been successful.

23. The most intense frosts do not seriously affect it, and therefore it stands the winter well, and affords good food even to the end of spring.

24. Its advantages over the Swedes are, that cattle, and especially horses, are fonder of it; the leaves are better food; it bears transplanting better than any other root; insects do not injure it; drought does not prevent its growth; it stores quite as well or better; it stands the winter better; and it affords food later in the season, even in June.

With such valuable properties, the Kohl-rabi well deserves a fair and extensive trial in this country, where, should it prove successful, it would be of the greatest advantage to our farmers in sustaining their stock through our long and severe winters.

International Exhibition, London, 1862.

The following is a copy of the circular recei ly issued by the Commission for C nad The Commissioners consist of Sir W. E. L GAN, Director of the Geological Survey, Chai man; The Hon. L. V. SICOTTE, M. P. P., S Hyacinthe, President L. C. Board of Agricu ture; Col. THOMSON, Toronto, President U. Board of Agriculture; J. BEATTY, Jr, Es M.D., Cobourg, President U. C. Board of Ar and Manufactures; J. C. TACHE, Esq., M. Quebec; B CHAMBERLIN. Esq., B.C.L., Mo treal, Secretary L C. Board of Arts, &c.; J. HURLBURT, Esq., LL.D, Hamilton.

QUEBEC, 15th November 1861.

The Provincial Commissioners appointed secure a representation of Canadian products the International Exhibition, to be held in Lo don in the summer of 1862, take the earli opportunity to make known to the public th they have this day been informed that the su of $6,000 has been placed at their disposal the Provincial Government for that purpo They are authorized, out of this sum, to pay t freight and charges on all articles approved the Commissioners for transmission to Lond but are not authorized to purchase any ma factured products.

Parties desirous of exhibiting articles of C nadian produce will please make applicati (post-paid) to the Commissioners through on or before Wednesday the fourth day of D cember next.

Articles intended for exhibition must be p pared to be sent in, on or before the 15th da February next, to places to be determined up of which public notice will be given.

The Commissioners venture to hope that public spirit of manufacturers and other p ducers will induce their general co-operation the endeavour of the Commission to procu representation as complete as possible of varied products of Canadian Resources and dustry in the forthcoming great Industrial hibition of all nations. Wherever it is dee desirable and advantageous the Commissio will gladly avail themselves of the assistanc Local Committees.

B. CHAMBERLIN, *Comr.*
SECRETAR

Experience vs. Innovation.—A Defe of Old Ways.

TO THE EDITOR OF THE AGRICULTURI As many of your numerous correspon seem to have had but little of what is calle best, but dearest school (*experience,*) allo to present such, through your *valuable* p with the following lines, which, if fairly tised may yield as good a *profit* with our

xpenses as the same quality of lands (stiff, ayey, adhesive, collapsing as they are) do in ngland with her *fourfold outgoings*. I shall nly go back to 1801, before the powerful timulants of Chemistry now in use were known, ither by agricultural or horticultural men, and nly a single block scarifier, with 5 A hows, hich produced 48 to 60 bushels of barley per cre, was used; but the lands herein described ere ell farmed, being kept *clean from weeds and not ercropped*, and no machinery in use except in e mining districts. But great crops were enerally grown by men of steady attentive abits. I have known 40 to 60 bushels of wheat, 0 bushels of beans, 40 of peas, 48 to 60 of arley, and 80 to 100 bushels of oats er acre of 160 rods, and 2½ tons or more of over hay grown. Great changes have taken lace in England in the last 45 years; a genera- on of good agricultural men swept away, pau- ers and taxation quadrupled, with other outgo- gs great, so that with all the machinery, owerful stimulants, &c., the average produce r acre available for the whole empire, does t seem to exceed £3 15s.; instead of £5; so ut I fear the poo. farmers have not a com- rtable fireside as formerly. But, Mr. Editor, hat is the clay land of Canada to come to? poverty struck garden, or land of thistles, ear grass, purse weed, rag weed, crotch weed, art weed, &c., all for the want of a regular od four course system of farming, such as ed to be done in England in this and the last entury. I warrant this plan would do well re. If not, let Jethro Tull's plan of one crop d fallow alternately be practised, as I know enty of land that cannot be cleared of weeds d well fertilized without it. My plan would to plough the half of such lands not very ep, say 4½ to 5 inches, early in the fall, to op the roots spreading, then in the spring, as on as the thistles are fairly up, take a good rifier, with say three inch wide tines or hows, break the ground, or pulverise it 3 or 3½ inches ep, and shortly after (say one or two weeks er, *when the thistles are up,*) fill the second hind block with good A hows 9 *inches wide*, en scarify it again. This cutting them *under ound* will set them bleeding or running their to waste, more than twice or thrice mowing m down, for in this dry climate the wounds y up immediately, and some of them will soon in flower and ripen the seed, which the winds read in all directions. When they get fairly wn ground, scarify it again, (the cost may be r a York shillings per acre), it is much better d cheaper than turning the furrows up and rn with bad ploughs, thus leaving the weed ds bound up in the clods for future years, the burning the fertility out of the soil, and out half the weeds *missed by five or six inch e shares*, used with bad ploughs to turn fur- w 10 and 12 inches wide, and 7 to 10 inches ep on which I never saw half a crop of grain grow yet. It promotes mildew, and I know no one here who could spend so large a sum of money, and so many years of doubled hard labor as it would require to pulverize and fertilize such lands to make them yield any profit. *I prefer the cultivating well of* 600 *tons of soil per acre for grain*, to 10 or 1200 tons, as the former has produced always good crops for me, but the latter never did. It does very well to raise oak timber, I found; and the Commissioners of Crown Lands in England proved this in the last century by cutting the tap roots off the young trees to make the roots grow horizontally, and in 18 years they were as large as those planted with their tap roots left on to grow perpendicularly down into the subsoil in 45 years. The arable land of Mr. Beetson in England, which he cultivated entirely with a good scarifier, and only drew a single furrow to mark out the stetches 7 feet wide, to carry off the surplus rain water that fell upon it *after the grain was sown and harrowed in*, produced him, on this new system, a clear profit of *three hundred and sixty pounds sterling a year*, (and he only cultivated 110 acres) being three times as much profit as he had received before. I cannot understand why so many farmers are so desirous of ploughing these clay lands so deep, as I know none that will require it, and very, very few that will bear it. It is truly hard for horse and man, and kills the fertility of the soil for many years, causing great outlay without profit in most cases. Indeed I know many farms that I would not accept as a gift to farm myself, even under the mania that I have had for agricultural pursuits, and horticultural also; for in seeing these well practised, delights me more than all the professions in this extraordinary world; but I think, Mr. Editor, that if I were to carry (say only five tons) of the soil that I usually see turned up with these ploughs to a sound, practical horticulturist for him to grow his tropical fruit in, he would look very serious, and very likely think that I must have made my escape from a lunatic asylum very lately, for tropical fruits require a soil that I believe would grow 70 bushels of wheat per acre, and other kinds of grain in proportion. Even in the land of Canaan, splendid crops are grown with only stirring up their lands with a Greek plough, which is of the simplest kind, made with wood, having a fair length of bottom and beam, a short handle, a double winged share, but no mould board, and one horse, or a pair of mules, draw it easily. But in this fine grain growing country, I think the ploughs made and generally used in the counties of Essex, Suffolk, and Norfolk, England, in the last century and beginning of this, by far the best that I have seen anywhere. I have seen sound, pretty good land ploughed in Canada, which produced from 1 to 7 bushels of wheat per acre; of peas, from 6 down to 1 and as high as 12 bushels per acre, and oats from 7 to 16 bushels per acre; Indian corn from 9 to 15

bushels per acre; potatoes from 30 to 50 and 70 bushels, and clover and grass many acres from 1,200 to 1,800 weight per acre, while heavy forests of good timber in the adjoining bush, fed by their own decomposed leaves, with most of their roots on or near the surface, looked lofty and splendid, and when the ground on which they stood was well cleared and sown with wheat it produced from 12 to 28 bushels of good grain per acre. The same land might now produce 8 bushels per acre, if midge, army worm, mildew, and weeds did not prevent it. The return for labour, seed &c., is so small that the owners of these lands have many of them left either for the States or other places. Indeed I think it better to take good wild land, than to take land that has been so badly used. The Society for promoting useful knowledge in agricultural pursuits, implements, manufactures, machinery, &c., in their published volumes state that carrying out the new theory of subsoil-ploughing has destroyed the fertility of nine counties for fifteen or twenty years, which can only be restored at an enormous expense. They are as follows, viz.:—Essex, Suffolk, Norfolk, Bedford, Buckinghamshire, Surry, Staffordshire, Wiltshire, and Devonshire. The Norfolk farmers say it is too expensive to fertilize *deep ploughed land*, and that deep ploughing poisons the land, and brings up a host of weeds.—The Devonshire and Wiltshire farmers say that it requires 20 years to restore the soil to its former fertility. I say that nothing but a good scarifier to pulverize the land, and plenty of lime and good rich oil cake manure can do it. Salt, broken bones, and oyster shells never did any good on my clay land, but 12 bushels of salt per acre adds 12 cwt. of clover per acre on sandy land, and horses, cattle, or sheep eat all the salted part before they will feed where there was no salt put on.

I hope, Mr. Editor, you will excuse my trespassing so long upon your time and space, but seeing the probability of so much destitution with the season, such as I never saw before, with little more than half a crop of many things, and no fruit, and many young people commencing the arduous profession of agriculture without having been brought up to it, induced me to write a little of what I have seen in so many parishes in England on different soils, from sand, gravel, loam, blue and yellow clay lands, &c., and if any of our younger brethren should profit by perusing and practising what is herein written, I should be most happy to know it.

The winters here require everything on a farm to be taken great care of, but the hay and harvest weather is generally delightful. In England I have known many wet hay and harvest seasons, raining three or four weeks, and the grain mostly spoiled. But here if it rains heavy, and even often, this clear, drying air soon makes the grain fit to haul again. It is a rare thing to see wheat stand and grow before cut, or after.

Congratulating you upon the extensive sale your useful publication, I remain, &c., &c.,

COMMON SENSE.

Cayuga, Oct. 1861.

Past and Future Exhibitions.

To the Editors of the Agriculturist.

GENTLEMEN. — Perhaps you will be k enough to give space to the following remar respecting the *management of our Provinc* Exhibitions, the result of observations carefu made at several late Exhibitions, and in t truth of which, I *am well aware that many of* leading agriculturists fully concur. With spect to the late Exhibition, I believe that w the conduct of the local committee no fault be found, except in the two respects in which local committees have more or less been fo wanting, namely, that they have been obli to borrow from the Association a portion of necessary funds necessary to complete their dertaking, and that while providing most ply for the accommodation of the manufactur artists, and ladies, they neglected till the moment the accommodation for the farm And even till the end of the show many valu animals were lying out without the least pro tion from the weather.

And this brings me to the consideration the most important question connected with future management of our exhibitions, and to which the attention of the farmers is ye becoming more earnestly directed. Why their interests as exhibitors always in prac if not in theory, regarded and treated as sec ary to those of the artizans or manufactu even of the most trivial productions; and are those artisans upon whose skill and ing ty he depends for the various articles whic requires, placed in an inferior position to others? If any one is inclined to deny the t of these propositions, let him for a moment p himself in the position of a farmer who go the exhibition with a certain amount of st say a stallion, a bull, a couple of cows, and dozen sheep. He goes, as he believes, t exhibition *mainly agricultural*, or, at *any* where agriculture and mechanics stand up equal footing. He enters the ground wit *stock, after a journey by rail attended* wit finite trouble, risk, expense, and fatigue. has been obliged to pay full fare for his st and say half *fares for himself and at least* men, and owing to the crowded state of the way line, he and his cattle have been sh about *from one siding to another, and* de at station after station, until they have pe been twenty four hours without rest, or an freshment, but what they have carried in pockets. Now, at any rate, he trusts tha troubles are over, and that his men and hi tle may obtain the repose they so much re

His groom goes and looks for a stall for his horse. On payment of four or five dollars he is given the key of one hastily erected and in the roughest manner, but still impervious to the weather. The bull, too, which has been kept in a stall by himself, at home, cannot be risked here in any less secure position. A close stall is absolutely necessary, but for it another four dollars must be paid. The cows in the mean time have been fortunate enough to find lodging in a shed, all very well in dry weather, but when it rains the drip from the roof pours down all along the front of it, wets the floor, and renders it impossible for any one to stand and look at the animals without being drenched from above, and soaked in a puddle below. The sheep, however, have not been so fortunate, the train has been delayed, the pens are all taken, and the poor animals, after all the care that has been taken to bring them to the show in good condition, are compelled to bivouac in a temporary and most inconvenient and insecure manner, within an enclosure made of boxes and boards, which the herdsman has, probably, been compelled to collect and carry, as best he might, from all parts of the ground. This was literally the case in several instances at London. It was the same at Hamilton and Kingston, and was infinitely worse at Toronto. Let us suppose now, that our friend having made the best arrangement possible under the circumstances, and having also provided for himself and his three men, as well as he can, walks round the grounds to see what can be seen. Being a thorough farmer as well as breeder, he goes to see how his friend the plough-maker, or his other friend the threshing-mill-maker, or the ingenious mechanic who he knows has something new in the way of a cultivator, a fanning mill, or a seed drill, are getting on. He finds them and their wares arranged around the grounds, in a very picturesque manner no doubt, but thoroughly exposed to the weather, and he forgets his troubles for a while in examining the various improvements which are shown him. But suddenly a shower comes on, and he leaves the implement-maker to face it out as best he may, and goes for shelter into the nearest entrance of a very magnificent edifice which he has long been admiring from the outside, but has not yet entered. Here the first object that attracts him is a fine display of grain, which he examines with interest, and then asks where the roots are? In reply he is told that they have been put in a tent outside, because there was no room for them inside. Looking round to see what causes the deficiency he finds one half of the spacious building occupied with articles in which as a farmer he has very little interest, such as artificial legs, ready-made clothing, pianos, sewing-machines, pickles, socks, biscuits, green-house plants, &c., and the other half with things in which he feels no interest whatever, such as quilts, oil paintings, counterpanes, photographs, embroidery, and water colour drawings. And upon further enquiry he finds that while for his horse and his bull, worth together from eight hundred to a thousand dollars, he has had to pay eight or ten dollars for the use of stalls, which cost very little more in the first place, and while his sheep have no accommodation at all, the cork legs, pianos counterpanes, and pictures, worth comparatively little themselves, and costing little either of risk or expense in bringing them to the exhibition, are given place free gratis in a magnificent erection which has cost, perhaps, as the one at London did, something under ten thousand dollars! Can our farming friend help feeling a little sore at this state of things, especially when he learns at the general meeting held afterwards, that the association has had to lend the local committee three or four thousand dollars to assist in the erection of this fine palace from which he derives no benefit whatever. And his friend the implement-maker he sees in a still worse position, for he has not even the pretence of shelter afforded to him and his wares. He asks himself, in short, the very question which is now agitating the minds of many: whether the inconveniences thus occasioned by the combination in one exhibition of the four departments of Agriculture, Horticulture, Manufactures, and Fine Arts are not of more consequence than the attendant advantages?

Notwithstanding all the expense that has been incurred in the erection of permanent buildings, adequate accommodation for the agricultural portion has never been given, while such has been the increase in this department that I venture to say, that if arts and manufactures not directly connected with agriculture, were excluded next year from the exhibition building at Toronto, it would not be found one bit too large for the proper reception of implements, grain, roots, and other articles of a similar character. And at the same time an additional five or six thousand dollars would be less than would be necessary to provide the other accommodation, if such was intended to be of a permanent character.

That the question of the expediency of continuing the present system will soon be more openly discussed than it has been, no one can doubt, although when that time does come many other matters will be taken into consideration than those above alluded to, and which have only been mentioned in this report, as causing practical grievances, which must be met by some means or other. The most important of these is, the want of proper provision for the live stock. The accommodation has always been deficient both in extent and quality. This year there was not anything like the proper accommodation, and yet, we saw in a leading daily journal, a suggestion, that it is admitted that the live stock are well provided for, but that further accommodation is required for manufacturers! At London, the whole of Mr. Lock's cattle,

some forty head, stood out all the time. Had he required shelter for them he could not possibly have had it. Several lots of sheep had no pens of any kind whatever, and what a filthy state the pig-places would have been in had the weather not been extremely fine. To remedy this evil two steps are requisite: In the first place, let the Board decide upon some plan of cattle-shed, which shall enable visitors to see the animals at all times, as completely sheltered as if they were in the main building, and with ease and comfort to themselves, and that having adopted such a plan the Board have some guarantee, that it be properly carried out. In the second place, let the entry books be absolutely closed a month before the show, so that a complete list of the animals entered may be forwarded to the superintendent in time for him to ensure not only plenty of room for all, but plenty of room in every particular class, so that the arrangement may be made complete throughout, and the things properly placed as they come upon the ground. Then the rule requiring the owners of stallions to pay for their stalls should be abolished. Why should a tax be put upon them which is not levied on any one else? A building should also be provided for the exhibitors of agricultural implements. Why should they be the only ones for whom no shelter is provided? These are all reforms which agricultural exhibitors expect and have a right to demand, and if they cannot be carried out on the union system, the sooner it is changed the better—at least, so say the farmers. At the coming show at Toronto, there is no reason why all this should not be done, and well done. Large roomy cattle-sheds supported by iron columns, spacious enough to hold a double row of stalls or pens, with a wide passage for visitors between them, or on each side, could be cheaply erected, and in such a manner as to be highly ornamental, and useful hereafter for any similar purpose. A somewhat similar building, only more lofty, would answer well for the implements, and another might be erected for carriages. Another suggestion I might make, which if properly carried out would be a great boon to many; it is, that some respectable person should be allowed to provide in some retired part of the ground sleeping as well as eating accommodation for herdsmen and others in charge of stock, and for them only, where they could get a good breakfast and supper, as well as a dinner, and a clean bed, no matter how coarse, at a reasonable rate, and without the inconvenience of having to go far from their work to get lodgings.

Another matter to which the attention of the Board should be directed, is the appointment of judges. The present system is one that can only be tolerated on the plea of absolute necessity, and we have seen so many instances of its inefficiency that almost any change would be advantageous. Instead of writing to the different county societies for judges, and then apportioning out those that come among the differe classes as is now done, it would be much bette to make out a list of men who are known to b judges of different breeds, and of whom the are plenty in the country among retired farmer and others, who are not exhibitors, and by pay ing their expenses a sufficient number could a ways be got to do the work properly. Unde the present system no one knows whether thos who attend as judges in the different classe really understand their business or not; and t give an instance of how utterly ignorant the sometimes are of what they profess to know, judge of Short-woolled sheep at one exhibition on being shown a Merino, asked whether it wa not a Southdown! Such things are of constan occurrence, and under the system now in vogu it is impossible to avoid it.

Another suggestion which I have been request ed to bring into notice, is, the desirability o giving ribbons to the successful animals immedi ately on the decision of the judges being made This is done in the States, and used to be the custom here, and would add much to the interest of the proceedings.

Might we not also adopt the plan of the Royal Agricultural Society of England, and have a printed catalogue of the cattle and implements exhibited, so that any person having one of them might by merely looking at the number of the ticket refer . . once to the corresponding entry, and there ascertain without further trouble all the particulars that he could possibly desire, as to the owner of the animal or implement, and, in case of the former, its pedigree, &c. A sufficient number of such a catalogue might be sold to cover all the cost of printing them.

The next exhibition will, I hope, be held under the patronage of our new Governor General, who is ranked as one of the first agriculturists and breeders in Ireland, and who we may therefore expect to take a very lively interest in the influence of our association.

I cannot conclude without briefly referring to the disgraceful manner in which the municipal authorities of London permitted the most outrageous and barefaced gambling to go on from daylight to dark, outside the gates of the exhibition ground, in open violation of law and decency. This has never been permitted before, and I trust that it never will beagain. No one who saw the way in which it was carried on, and the mischievous results which followed, could help feeling that, however handsomely the local authorities may have acted in other respects, in this they were deserving of the severest censure.

I remain,
Yours obediently,
WILLIAM O'BRIEN.

CHARRING.—The best method of charring the surface of wood, is to wet it with the most highly concentrated oil of vitriol. By this means you carbonize not only the outer surface but the surface of all the cracks and holes.—*Chemical Times.*

Flax Cultivation.

We find the following communication on this important subject in the Toronto *Leader*, by which it will be seen that the Government has undertaken to introduce into the Province several of the improved flax scutching machines lately brought into use in Ireland. By these machines flax can be scutched in a much more expeditious and economical manner than heretofore, and their introduction into this country will doubtless tend to remove one of the chief obstacles which have lain in the way of extensive flax culture.

To the Editor of the Leader, Sir—Some time ago, I published in the columns of your valuable paper a letter on the cultivation of flax. I again deem it advisable to remind the farmers of the importance of this valuable branch of agriculture. During my visits to several Agricultural Societies, I found a strong desire on the part of the farmers to give it a fair trial, but the absence of proper machinery to prepare it for market seemed to be a strong objection to use it to any extent. On my visit to Quebec, a few days ago, I brought the matter before the Government, who seemed to see at once the necessity of meeting this objection, and an order in Council was at once issued for the importat n of a number of those machines, manufactured by Messrs. Rowan & Bro., Belfast, to be distributed in various parts of the provinbe, where it may be thought a quantity of flax will be cultivated, and also that mechanics may see them and have the opportunity of making others by them. Certainly too much credit cannot be given to the government for this liberality in thus purchasing those mills. I also had the honor of bringing the matter before His Excellency the Governor General, and Monck, who expressed his most hearty approval of the project, and was much pleased at the very flattering prospects of Canada becoming a flax growing country. It would, therefore, be most desirable that the members of the agricultural Societies would organize a flax association; and I hope in a few days to be able to inform them that His Excellency the Governor General will be pleased to become its patron.

Now that machinery for scutching and preparing this valuable plant for market is to be readily obtained, it is to be hoped we will see farmers of experience, and who already understand the cultivation of flax to a very great extent, make the trial and give it that attention it well deserves. On my way to Quebec, I called at Montreal, where I was informed, on visiting the extensive mills of Messrs. Lyman & Co., that they had purchased over 40,000 bushels of Flax seed from parties in Upper and Lower Canada this season, furnishing another strong proof that our soil and climate are so well adapted for its growth and cultivation. From this seed is manufactured large quantities of Linseed Oil, and Oil Cake, which we are obliged to send to Montreal and purchase, instead of having those mills in our midst. With the present prospects of a small supply of cotton, owing to the sad disruption in the Southern States, certainly flax must take its place to a very great extent, and become more and more profitable to the farmer every year.

The mode of handling flax, as at present carried out in Canada, does not secure to the farmer the best quality nor most remunerative price, as it is well known by those who have seen it done in Ireland, the seed is never allowed to ripen. The flax is pulled between the time the bell or blossom is on and before the seed is allowed to ripen, thereby securing a much finer fibre and a larger quantity, for which the highest prices are obtained. Only a trial and experience will convince the farmers of this fact, and by attention and perseverance they may obtain their £70 or £80 sterling per ton. as the farmers are doing at present in Ireland.

I may also mention, in conclusion, that I met a gentleman in Montreal on his way to the mills of Messrs. Blaikie & Alexander, Norval, to Messrs Perine' Conestoga. also other mills in the neighborhood of Galt and Berlin, for the purpose of purchasing all the scutched flax they had, and the moment it is known that a quantity is grown here, he will have agents and buyers in the country at once. Let me again urge on the farmers to make the necessary inquiry, and visit those mills, where they will see the ample process carried on of preparing the plant for market after growth, and informing themselves in every particular, which they can readily obtain from those who have already tried it. I trust that the other papers throughout the Province will copy this letter, imperfectly written as it is, in order that one and all may benefit alike by following this most important branch of our agricultural pursuits. In the list of prizes, too, next year, I hope flax and flax seed will be included in every list issued by the agricultural societies.

Your obedient servant,

John A. Donaldson.

Canadian Government Emigration Agent.

Linnæa Borealis.

To the Editor of the Canadian Agriculturist. Sir,—The 19th No. of the *Agriculturist*, dated Oct. 1st did not reach my hands till yesterday, although I am a regular subscriber. I should have otherwise have troubled you with an earlier comment on a notice of the "Linnæa Borealis," page 607, which you have transcribed from the pages of the Montreal *Commercial Advertiser*. The correspondent of the latter paper is, I think, in error when he asserts that the plant received its title from

Linnæus. It was selected as the vehicle for the conveyance of that illustrious and honored name to posterity, by Dr. J. F. Gronovius, who obtained the sanction of the great botanist of of Sweden for that purpose. Its colour, too—I have a sketch of it, drawn from nature, before the present moment—is scarcely correctly noted: instead of being "white tinted with pink on the inside," its blossom may with greater propriety be called "flesh-colored;" or, according to Gray, "purple and whitish." The hue, however, may vary with the situation.

Neither let it be imagined that its "habitat" is confined to the neighborhood of Riviere du Loup and Cacouna. It is a floral "citizen of the world," found in various European and Asiatic countries, as Sweden, Lapland, Norway, Germany, Switzerland, Savoy, Siberia, Russia, Scotland, where toward the end of the last century it was discovered in the Highlands,—it may be gathered in abundance in this county, and if the ladies of Peterboro destre to deck their summer hats with its graceful, pendent, twin-blossoms, they have but to stroll to the cemetery on the margin of the "little lake," where they may gratify their taste to any extent they please. Your obed't. servant,

V. C.

Peterboro, C. W., Nov. 20, 1861.

Anacharis Canadensis.

To the Editor of the Canadian Agriculturist: Dear Sir,—In the *Agriculturist* of 16th June last, page 382 you notice an American weed in England under the name of *Anacharis Alsinastrum*, and in the last number of the *Agriculturist* the same plant is noticed under the name of *Elodea Canadensis*, and you ask if it is known in Canada.

The plant is known to Botanists under a variety of names, being called

Elodea Canadensis, by Michaux.
Udora Canadensis, by Nuttal.
Anacharis Canadensis, by Planchon.
Anacharis Alsinastrum, by Babington.
Serpicula Verticilata, by Muhlenberg.
Serpicula Occidentalis, by Pursh, and
Apalanthe Canadensis, by Planchon.

Professor Asa Gray in his Manual of the Botany of the Nothern States, adopts the name of *Anacharis Canadensis*, and mentions it as being common. Mr. Billings, in his list of indigenous plants found growing in the neighborhood of Prescott, published in the *Canadian Naturalist*, vol. 5, page 19 mentions it under the same name *Anacharis Canadensis*, as being common in ponds and slow streams. I have not observed it in any other list of Canadian plants; it is, however, abundant in the Dundas Marsh and Burlington Bay, and I have no doubt it is common in the neighborhood of Toronto about the mouths of the Don and Humber.

It is somewhat singular that a plant which has caused as much trouble and annoyance in England and Holland, by filling up watercourses and impeding the navigation of rivers and canals, should be almost unknown, and should not have caused any sensible obstruction to the navigation of the canals and rivers of this country where it is indigenous. I am inclined to think that the accounts given of it in the English papers are a little exaggerated. That the plant is propagated with extraordinary rapidity, and that it may intefere with the flow of water in ditches and small watercourses is very probable, but that it should interfere with the navigation of large rivers and canals seem to be extremely improbable and contrary to our experience in Canada. A plant that propagates itself with such ease and rapidity can be easily experimented upon, and its habits studied in a small aquarium, and perhaps some of your readers may be induced to try some experiments with it.

I am, yours &c.,

"Canadensis."

Hamilton, Oct. 22, 1861.

On the Rearing of Calves.

By Major S. M'Clintock.

These observations are offered to advocate the abandonment of the old system of raising calves for one which shall insure a quicker return, and therefore, greater profit to the farmer—a change which the condition of our stock and the markets, the state of our root crops, the rising prices of dairy produce, and the sounder views of economy now prevailing unite in enforcing.

Let us first cast a glance at what may be called the "old system," or that according to which calves are kept on as *little* as will maintain them alive, turned out by day in all weather, indifferently housed at night, receiving a scanty supply of milk, and that, perhaps, skimmed, so that to the pasture the calf must look for food all day—the half of which is spent by the unfortunate and neglected animal standing gazing and shivering at a gate, in anxious expectation of the herdsman to drive him to the hovel. What is the appearance of this animal? Do not his lean, ridgy back, his bare points, staring coat, and distended belly show his pitiable condition? And whence this last feature? When the calf, with a keen appetite, leaves the hovel, supposing he has the benefit of such cover, and proceeds to "blow himself out" with grass like a half-starved Caffre revelling on the carcass of an eland, the result will in either case be a distended abdomen, showing clearly the impudence of the "the *large and seldom*" mode of feeding, as compared with that of *little* and often.

The calf, of all the animals on which the farmer is dependant, certainly fares the worst, and to him "fair play" is too often unknown. Yet, however great the value of milk may be to man for other objects, it must surely be unwise to rob the calf as much is frequently done; let milk not be deemed pure as good milk for a time, and only as he gains strength let other food be substituted.

As soon as the calf is dropped, nature prompts the cow to lick her offspring, and I am disposed to allow her to do so, feeling satisfied it is a vivifying process, very beneficial to the calf, and under which it seems to be really at times endued with life itself, besides cleansing the skin from the viscous matter by which it is overspread; the mother also is benefitted by this operation, obtaining thus a medicine suited to her present situation—one which nature designed for her.

I am aware it is sometimes the practice to take the calf at once from the cow, in order to prevent her from knowing and becoming attached to it, and thereby guarding her against fretting, which would not only intefere with her proper yield of milk, but aggravate the fever which already prevades the system; in this case it becomes necessary to rub the calf with cloths and whisps until it is dry and clean. It may, indeed, in certain cases be desirable to remove the calf at once, as some cows, and especially those with their first calf, plainly show an intimation to injure it. But, as a rule, it is better to allow the cow to lick the calf; and so much importance do some breeders attach to this operation that, when the mother shows a disinclination to perform the office, salt and meal are sprinkled on the body, to tempt her to do it.

Supposing the operation of licking or rubbing to have been duly performed, the calf should be left quiet for some time in a place by itself, and beyond the mother's hearing, when she will very soon forget it, as it is, doubtless, desirable that she should do.

The following reasons may be briefly assigned for giving the preference to rearing by hand rather than allowing the calf to "run" with the mother, in spite of the advantages which the natural process has in promoting the secretion of milk, and thus aiding the organs of digestion. When a cow is allowed to suckle her calf, she will not give her milk to the hand during the time the calf is "on her," and seldom *so kindly* even after; neither when he is removed after a few weeks, will she readily suffer a nursling to be foisted on her. If the cow fails ill it will then be too late to endeavour to substitute the pail for the mother, and in all probability the calf, reared at all, will prove an unthrifty, unpaying animal; again, if a cow bring up two calves at once, the fastest sucker will have an undue share of the milk; lastly, rearing by hand is the most economical method, as guarding against all irregularity or failure in the supply of food, which may be regulated to suit the object in view—diluted, mixed, increased, or decreased, according to the age of the animal, so as both to promote growth and make the process of weaning almost unfelt.

The cow herself should never be hurried or overdriven, as any increase in the ordinary respiration produces a heat in the milk which takes from its excellence. Respiration is a species of combustion; at every breath we inhale oxygen from the atmosphere, which unites with and consumes the fatty matter in the food. Cows when overdriven or worried breathe more frequently, inhale more oxygen, and consequently, more of the buttery portion of their food is consumed, leaving less to impart richness to the milk. On this account, in very hot weather it is well to house cows by day, thus relieving them from the irritating attack of flies, and to turn them out at night; on the other hand, it is well known to experienced dairymen that their cows yield more milk inwarm, pleasant weather, when they have the run of a sheltered pasture, than on a bleak field, in cold, rainy days—a difference which the same theory of respiration equally accounts for.

The old, and I trust almost exploded, system of giving medicine to the calf, in order to cause it to expel the first glutinous fæces (or meconium) is so contrary to nature that it must be censured. The delicate intestines of a newly born calf are not prepared for castor oil or spirits.

Let its own mother's first milk, colostrum, or beistyn, be given two or three hours after birth; it is nature's medicine, unfit for human use, but prepared with a wisdom beyond ours to meet the requirements of a newly-born calf. This "colostrum" appears at every delivery, and from its peculiar nature produces a purgative action, and causes the "meconium" to be voided, which for some time before birth, has been forming in the intestines of the calf.

We have heard of an egg shell filled with spirits being put down the unfortunate animal's throat—the spirits to invigorate, and the egg-shell to clear the way and lubricate the passage to the stomach. Some give the egg, yolk, white, shell and all; and in Ireland, the panacea of all Hibernian woes—whiskey—is thought to be the "elixir of life" for calves, though it must be said that the sister kingdom of England has its breeders, and some of celebrity, who do not fail to administer the glass of spirits in every case where a calf is born.

By thus early overtaxing the stomach and thwarting nature in its well-ordered course, the seeds of delicacy are surely sown. Medicine should not be tolerated until there is actual cause for its use, and then let it be administered by some one who can not only judge of the disease, but suggest a remedy to meet it. I hold it to be a great mistake to overload the stomach of a newly-dropped calf; so I consider the "beistyn"

should be given in small quantities at a time, and, in the case of a healthy calf, not until it has strength to stand, as it is clear as it could not suck its mother until it had so far progressed.

Should any apprehension be felt respecting the inactivity of a calf's bowels, or tardiness in expulsion of the meconium, the simple mode of inserting a piece of common soap, from two or three inches in length by half an inch in diameter, in the anus, and then rubbing the part briskly with the hand, in nine cases out of ten will cause a proper evacuation. I have so very often seen this plain and harmless treatment successfully applied, that I invariably adopt it, and with the greatest confidence recommend it from its simplicity and efficacy.

The colostrum or beistyn, more commonly called "beastings," sometimes continues so long as to be of serious injury to the calf, but this is chiefly caused by feeding the cow too highly after calving.

The milk given to the calf should not be suffered to become cold, and by the assistance of the herdsman's fingers (which the calf will eagerly suck) as much may be taken up as required. Some calves will learn to suck by the fingers in a day. The palm of the hand is placed over the nose, with the fore-arm against the face; the middle finger is inserted in the mouth of the calf, while the other fingers retain the head in the proper position. With the other hand the vessel is held, which at first should be somewhat raised, and not allowed to rest on the ground—that being an unnatural position, and different from the one the calf would be in if allowed to suck its mother. In this we shall be only adopting in the calf-house the same amendment which has already made its way into the stable, where the hayrack is no longer fixed in a manner rather suited to the giraffe than the grass cropping horse.

The milk should at first be given in small quantities, say three pints every four or five hours, till the calf gain strength, when it may be increased gradually to as many quarts. Of this increase the herdsman alone can be the judge—a practised eye at a glance sees anything wrong. There is no animal in which disease is more easily detected than the calf. In health, he sleeps quietly or is full of play; in sickness he is dull, and, from the action of the flanks, distaste for food, sharp champing of the teeth, cough, or symptoms, it is clear he is *amiss*.

There is considerable danger to calves from taking up straws and swallowing them before their powers of digestion are able to master such food. I have seen valuable animals lost by this, and, on being examined after death, a mass of undigested straw has been found incarcerated in the stomach. In order to guard against such occurrences, a muzzle should be kept on the calf until after it has been perceived to "chew the cud." The muzzle may be made of either wire or leather, simply shaped, with a band sewn at each side to buckle behind the ears. It is usu for the calf to begin to the cud in ten day when the muzzle may be removed.

Much injury has been caused to calves house together, from sucking each other, as they fr quently take hold of the navel-string, a part great delicacy in a newly dropped calf.

The passage of the urine is also very impor ant. I have seen calves appearing heavy an dull, lying down and panting, and to an obser ing eye evidently "wrong." The herdsma satisfies himself that the bowels are regular, bu he cannot be so sure of the urine. I have ob served him get the calf up, stand immediatel behind it, and rub its sides vigorously with bot hands at the same time, then gently manipulat the sheath, when presently the water flows cop ously, and the animal is at once relieved. Now here are cases which, perhaps, were they neg lected, might become formidable and require th drenches of the cow-leech, and they combate most successfully by the simplest means.

It is important that the calf should be fe from the milk of the same cow daily; a ver little attention will ensure this, if the cows ar milked and the calves fed in the same order Any sudden change of food is injurious, as th least sourness in the stomach causes "scour"— one of the worst evils calves are liable to. O first observing it, a diminution in the quantity o milk may check the disease, which not unfre quently arises from the stomach being overtaxed

In rearing calves our object must be to com bine efficiency with economy, and to realis profit from the dairy without robbing or stintin the calf. We follow nature for a while, but ar forced into another course ere long. We begi with pure "mother's milk," but in a fortnight change must come. Milk is too valuable to b continued in its pure neat condition, and a slight very slight, change is introduced, consisting i the substitution of oil-cake gruel for a portion o the milk. The gruel is prepared in the follow ing proportion—one quart of cake (ground fine to four of water. This pulverised cake is pu into a bucket, and the water, boiling, poured o it. It is allowed to stand about eight hours being occasionally stirred. My practice is t begin when the calf is about a fortnight old, t add a very little of the gruel to the milk, and t increase the quantity by slow degrees, with a de creasing allowance of milk, until, at weanin time, the former has gradually taken the plac of the latter. But when a large quantity o gruel is given, its potency must be lessened, t guard against purging; and it will be desirab to add to every two quarts of the gruel, as abov mentioned, one quart of water.

In employing an artificial substitute for milk the following principles should guide ou choice:—

1st. The nearer we are to nature the bette and the food which most resembles milk mus be the best for calves.

2ndly. Care must be taken that the food be not too rich for the young animal.

3rdly. Growth and development of the frame must be provided for, to which end the food should contain an ample supply of the phosphates.

Oil cake gruel seems to fulfil these conditions, being less rich, and containing a larger percentage in phosphates, than the pure linseed. We learn, it is true, from Mr. Cuthbert Johnston's excellent book, "The Modern Dairy and Cow Keeper," that the only kind of food in which casein exists is that derived from leguminous plants, such as beans, peas, and lentils. When bean-flour is softened and ground up with water, and the infusion passed through a sieve, the water is found to contain casein, fat (butter), and starch. The latter deposits by standing, and the infusion has now all the character of skimmed milk, as, in fact, with the exception of sugar of milk and butter, it is precisely identical with it. The addition of some fatty gummy matter (as an infusion of linseed-cake) would more nearly approximate it to the composition of ordinary milk; and it is well worthy of remark that in several districts in England, and in many of Scotland, pea or bean soup is very frequently given to young calves."

In spite of this resemblance between milk and bean or pea soup, I confess to giving a preference to oil-cake, partly because I have no trouble in procuring it, whereas in some seasons I have failed together in securing a supply of those crops in the neighbourhood.

Though doubtless much may be learned from the practice of owners of short-horns who exhibit at our agricultural shows, I fear we should bid adieu to profit if we adopt their mode of calf-feeding. I am satisfied no yearling calf is put into a show-yard for competition at a less cost than £20. The fat must be put on "regardless of expense;" a lean calf has not a chance of gaining a premium; and though I cannot defend the system of "fat at any price,', still. judges must not be condemned who pass over a lean animal with a good shape. Early maturity and great thrift are characteristics of true short-horns; and I must confess I should suspect delicacy when I did not at a show see ripe condition.

A good feeder is invaluable to an exhibitor: the ignorant herdsman thinks *quantity* is the object: the judicious feeder is always on the watch, adopting the "little and often system," changing the food by degrees, and correcting any loosening effect which one kind of substance may have on the substitution of another. He never puts an animal up that is lying, as he knows it is "doing" as much when at perfect rest as if it had its head in a bucket of milk; quietness and gentleness follow all his movements, and the animals remain in that peaceful, placid state so conducive to their well being. They know the times and seasons" as well as he does, and with astonishing punctuality rise and expect their feed; and the herdsman is careful not to be behind time, knowing well that "fretting causes wasting," and, if the calves are suffered to bellow and moan for their meals, the meat will not be "put up" as rapidly as it ought. This part of the system might well be more generally adopted, for kindness, quiet, and regularity cost nothing.

No doubt, some owners of short-horns make this mode of feeding pay, particularly those who have tribes of cattle of undoubted purity of blood and fashion, and have won themselves names as breeders; but to the ordinary amateur it is an unprofitable amusement, expensive and disappointing—*Journal of Royal Agricultural Society of England.*

To be continued.

The Potato Disease.

If the name of De Bary were not so well known both in this country and the continent as that of a painstaking, judicious observer, far less given to theory or to merely transcendental views than the greater part of the compatriots, the pamphlets which he has lately written on the potato disease would have quietly died in the birth, if the author escaped ridicule for approaching again a subject which could scarcely end in anything after all his labour better than the production of a "ridiculus mus." The brochure, however, contains a great deal that will repay more than cursory perusal. He has not only passed in review, without a particle of prejudice, all that he has met with at all worthy of notice, but he has instituted a careful series of experiments, which place the particular view of the subject which he embraces in the most clear and convincing light. He has, moreover, added greatly to our knowledge of the peculiar parasite which uniformly precedes, and as he, in common with most authorities at the present day, believes is the immediate cause of the malady, and especially as regards its mode of reproduction and the limits within which its reproductive organs germinate.

It is not our intention to go again over the ground which has been so often traversed in this journal. All attentive readers of our pages are acquainted with the external characters and habit of the parasite as described by its earlier observers, and we have already given some account in the *Agricultural Gazette* of this year, at page 486, of the curious discovery of De Bary relative to a third mode of propagation by means of zoospores, and that apparently the most frequent. The spores themselves under certain circumstances are undoubtedly capable of germination, but more frequently, when well supplied with water, instead of germinating they show at once signs of important changes in the granular matter which fills their cavity, which

ends in the production of a number of reproductive bodies closely resembling many of the more minute infusoria, and moving about for a time with the utmost activity by means of two long lash-like appendages, one of which appears to be the organ of motion, and the other to act as a rudder for its regulation and direction.

In consequence of this mode of increase, and of the extreme rapidity with which the zoospores run through their course from germination to the production of perfect spores, the quantity of bodies capable of propagating the disease which may arise in the course of one season from a single diseased plant is almost incredible. Passing over the stem, from which the perfect parasite more seldom makes its appearance, it is calculated that one square line of the under surface of the leaves is capable of producing 3,270 spores, and as each of these yields at least six zoospores (the number being sometimes as high as 16), we have 19,620 reproductive bodies from that small space. The quantity, therefore, yielded by a single plant is enormous, and as the mycelium from the zoospores is capable of penetrating the cellular tissue in 12 hours, and when once it is established there, and bursts through the breathing orificies or stomates of the leaves, it perfects its fruit in from 15 to 18 hours, and since the zoospores are perfected and ready to germinate in 24 hours from their being placed in water, it is scarcely possible to calculate the myriads of plants that may spread from a single centre. As continued moisture is absolutely necessary for the germination of the spores and the production of the zoospores, it will at once be understood how rapidly the disease is propagated in wet weather, especially if it be warm, and what a check to the disease a season like the present autumn must be. It will also be apparent under what circumstance the zoospores will have readiest access to the tubers, and that those which are nearest the surface have a less chance of escaping than those which penetrate deeper into the soil.

That the brown spots so characteristic of the disease are a consequence of the action of the spores or zoospores has been proved by direct experiment by Dr. De Bary. By placing a quantity of spores in a drop of water on the leaves, stems, and tubers under a bell glass so air-tight below that evaporation cannot very readily take place, he has produced the brown spots, and has traced their progress from the first penetration of the spawn of the fungus from without, when the discoloured specks are quite microscopic.

He has moreover shown that neither the spores nor sporangia can resist many weeks of continued drought; and inasmuch as the spores so rapidly produce zoospores when exposed to sufficient moisture, it is clear that the disease cannot be propagated from year to year by means of either. As regards another form of fruit which has been observed, though very rarely, amongst the creeping threads of the spawn, too little is known to speak with any probability, much less with certainty, of its powers of endurance.

As, however, it is a well known fact that fungi may appear under very different forms and that there are two fungi, especially Fusisporium Solani, which form the white nodules on the decaying tubers, which are almost as constant attendants on the potato murrain as the well known parasite of the leaves, it became necessary to follow out their growth, to see whether in any case the fungus of the leaves or the brown spots could be produced from the white moulds of the tubers. Every experiment, however, under whatever form it was made and however varied, produced only like from like, and De Bary was obliged to give up the notion as visionary. It appeared clear, therefore, that the disease was transferred from year to year by means of the tubers, which when impregnated with the mycelium, and not in too advanced a state of decomposition, always yield on experiment the true fungus of the potato murrain. The conclusion from the whole matter is clearly this, that it is quite useless to attempt to destroy by any external remedies a parasite which so completely undermines the tissue of the plant, as in the case of the vine mildew, where the threads of the parasite creep over the surface. Early planting, removal of the haulm when diseased, drying of the tubers and other remedies which have been recommended, must be considered rather as palliatives than preventives. De Bary, however, suggests one mode which may in all probability prove useful in careful, intelligent hands. A plot of ground of sufficient size only for the production of the seed tubers which may be requisite, and as distant as may be in the farm from the general potato crop, is to be selected, and that perfectly well drained and as much adapted as possible for the growth of healthy tubers. This is to be planted with tubers which show no outward trace of disease. The crop is then to be watched carefully, and the moment a diseased leaf appears, it is to be removed and destroyed, the cultivator himself undertaking the task, and going carefully over the plot, which must, of course, be of manageable dimensions, two or three times a day. The stems are always to be watched, and if necessary, they as well as the leaves must be removed. The zoospores under such circumstances, unless brought from a distance, cannot be washed down to the tubers, and a very few only will be diseased. A repetition of the process would, in all probability, banish the malady in a great measure from the farm. It is obvious, however, that the cultivator must have a distinct knowledge of his enemy before he sets to work, and not mistake merely withered or curled leaves for the ravages of the mould.

We may speak highly from our own experience of the benefit of deep digging before the

otatos are planted, though they themselves hould not be sunk too far in the soil, and of a econd hilling up to cover effectually the more perficial tubers. Those which are deep seat- are seldom diseased except in very unpropi- ous years.

We may add a peculiar circumstance which as occurred to De Bary in the course of his ex- riments. On dividing sound potatos, for the ke of observing the difference which takes ace in those parts which have been left in eir original condition and those to which he plied the zoospores, he found that after a time new cuticle, consisting of several layers of ble shaped cells, was produced on the cut sur- e. This is precisely what takes place in the ease called scab, as will be found in a mem- r on the subject in the third volume of the rnal of the Horticultural Society of London. —*M. J. B, in Gardeners' Chronicle.*

The Wheat Crop.

(*Continued from page* 650.)

The quantity of seed per acre is the next int which claims the farmer's attention. This ne of the questions—"thick or thin seeding" at has been of late years the most discussed agricultural circles, and one about which the eatest difference of opinion still exists. There e some principles connected with this point, hich, if admitted, ought to render the solution f it less difficult than it appears to be, by lim- ing the range of difference to certain conditions. e can readily conceive, and long experience s confirmed it, that under equal circumstances plant like wheat will increase more in nine or n months (if sown in October) than in five or x months (if sown in February or March,) and at the produce will be greater in a rich, deep- lled soil than in a poor, shallow one. The ductions we should make from these facts are ry obvious:—1. That the earlier we get our ed into the ground, the more opportunity it as to increase, and the less the quantity re- ired to produce a crop. 2. The better the il and the deeper it is tilled, the greater the roportion of food, and the greater the range e roots have to procure it in, and consequently e more vigorous and productive each plant ill be, and the less necessity is there for mul- plying them by thick seeding, in order to secure sufficient crop. Therefore, as a general rule, e may consider the quantity of seed sown ac- ording to the lateness of the time of sowing, nd also according to the character and general ondition of the soil. For instance, on land where ne bushel would be considered sufficient for Oc- tober sowing, it would be advisable to increase he quantity to 1½ bushels in November, to 2 ushels in December, and to 2½ to 3 bushels for spring sowing, according as the season was ad- vanced. On rich, deep soils, compared with the soils of inferior quality, the same rule should be observed, bearing in mind always that the char- acter of soil, and the period of getting the seed in, have each of them an influence on its powers of produce.

There are three different modes of effecting this, practised in different parts of the country— "broadcast," "drilling," and "dibbling." In the north the first, broadcasting, still is gener- ally practised. In the midland and southern districts drilling universally prevails; while the dibbling process is only to be met here and there, under peculiar cumstances either of soil or labor. The preparation of the soil for each mode of sowing is the same. It should be plowed as deep as possible, carefully cleaned, and the mass, not merely the surface, reduced to the finest tilth so that the rootlets of the young plants may have no obstacles in penetrating the soil, and may have their feeding surfaces in- creased.

The process of *broadcasting* is a simple one. The seed to be sown is carried by the sower in a bag (sowing sheet) or basket (seed-lip,) of a convenient form, suspended from the neck in such a position that the sower can have access to it either with one or with both hands, according to the manner in which he intends to distribute the seed, whether with one, as is usually done, or with both hands. At starting, he marks off with a "feering pole," on the headland, a distance equal to the breadth he can cover in his cast, so that on his return down the land again he may keep a perfectly straight line, and thus avoid leaving any portion unsown, as is frequently the case with careless sowers. The breadth cover- ed with each cast is from 6 to 8 feet, and from 10 to 12 acres is quite sufficient for a day's work.

The operation is purely that of a skilful and careful manipulation, and a few acres more per day sown are not to be considered for an instant in comparison with the regular and careful dis- tribution of the seed on the surface, which is usually only acquired by long and careful prac- tice.

In *broadcasting*, whether on the harrowed surface or on the plowed ridges, which is fre- quently done for the purpose of more readily covering the seed, a certain proportion of the seed is always left under conditions unfavorable to germination, either by being left on the sur- face or by being buried too deep; consequently, it is always customary to allow for this by in- creasing the quantity sown. This increase should be about one-third to one-half more than than that used by the drill; say, for in- stance, where two bushels of seed are drilled, three bushels should broadcasted. The use of the broadcast machine ensures a more equal distribution on the surface, but leaves the other imperfections of the method the same. The

necessary quantity of seed should be carried into the field, and left in sacks most convenient for the sower.

The practice of *drilling* was introduced by Jethro Tull, to obviate the difficulty, nay, impossibility, of keeping the land sown broadcast free from weeds. Owing to the vast improvement in the adaptation and manufacture of agricultural machines generally, this practice has widely spread itself of late years. The advantages it offers are—a considerable saving in the quantity of seed necessary (from one-third to one-half), owing to the greater regularity in the proportion of seed sown, and the depth at which it is deposited; and the power it gives to sow the seed in parallel lines at any distances apart that may be desired, so that the surface may be stirred after the heavy rains of winter, and kept free from weeds, either by the hand or the horse hoe, during the early growth of the plants. The quantity of land to be drilled in a day depends upon the size of the machine used, and this is generaly determined by the size of the farm, or rather the arable portion of it. This can readily be calculated: thus, if the amount of labor, both manual and horse, with an allowance for the use, or wear and tear, of the machine, be summed up, and divided by the area of the land sown, the cost per acre for drilling is readily ascertained.

The third method of sowing, that of *dibbling* the seed in, is very rarely met with in practice to any extent in reference to wheat sowing, though it still prevails to a considerable extent with beans, mangel wurzel, and similar crops. The object gained by this process is a great economy, even in comparison with the drill, in the quantity of seed necessary, an equal distribution of the seed over the whole surface, and security against any of it remaining on the surface uncovered. The proportion of seed for dibbling is usually from one-third to one-half the quantity that would be used for drilling under the same circumstances—that is to say, when from 1½ to 2 bushels are drilled, from 2 to 4 pecks would be sufficient for dibbling. The process of dibbling is a very tedious and expensive one, notwithstanding the certain amount of success which has attended several attempts to substitute mechanical for manual labor. These may be seen well described in the *Cylopedia of Agriculture*, under the head of "Sowing Machines." In all the operation is the same, though effected by different means: a hole or depression in the soil is made to a given regulated depth, at the bottom of which a certain proportion of seed (usually about three grains) is to be deposited—these holes being made at certain regular distances from each other, and in as perfectly straight lines as with the drill. It is a very difficult matter to estimate the quantity of land to be dibbled per day, as as it is entirely governed by the mode of doing the work. Where, through an erroneous idea of social economy in relation to the applic of labor, the operation is done by hand, both proportion of seed and the depth at which deposited are always irregular and unsatisfact and the work done is very small. These d backs, however, more or less disappear by machinery placed at our disposal. The comparative trials that I have had an oppo nity of making have been with Newberry's bling machine. This is a costly and cum some, but, under suitable conditions, an effec machine for the purpose. With this mach about four to five acres per day can be got with the same amount of horse and man labor as would, with the drill, enable you to about three times that area, or twelve acr consequently, the expense of dibbling un these favorable conditions would amount rather more than three times that of drilling, the sum allowed for the wear and tear of chine would be considerably increased.

The relative advantages and disadvantages these three methods seem to be as follows:—

Broadcasting enables the farmer to get seed in at a quicker rate, and at a less cost th by the use of machines; while, at the same tim in adverse seasons, he is less dependent upon t weather at seed time, if his land is kept w cleaned in his fallow crops, he may not suf much by leaving his crop beyond the reach of t hoe during its period of growth. On t other hand, if his land be foul at sowing, it n cessarily becomes worse at harvest time, as the crop must have been injured, as every wee grown on the surface has abstracted from th soil a certain amount of food, which would hav gone to increase the crop under cultivatio This condition of things soon tells its own ta on the debtor side of the farm ledger, while a other item to be entered there is the extra qua tity of seed required to be sown. This general amounts to considerably more than the enti cost of machine sowing.

Drilling offers the great advantage to th farmer f being able to regulate the exact qua tity of seed to be sown—to sow it equally a over the field—to deposit it at a given regul depth in the soil—to ensure its being proper covered. A saving of seed to the extent of on third to one-half as compared with broadcastin is effected, and by being deposited in the grou in straight parallel lines, great facilities are a forded for keeping the surface free from weed either by hoeing or hand-pulling. The produc also per acre is, under equal conditions of soi climate, &c., shown to exceed that of broadca ing. The only charge that can be advance against drilling is, that perhaps it offers som assistance to the wireworm in its destructi attacks on the young plant, by forming a furro of loosened soil, along which the wireworm tak its course without any difficulty, destroying eac plant in succession. This, however, on soi subject to it, may easily be checked by runnin

ribbed roller, either Cambridge or Crosskill, ross the line of drills, by which the continuity the furrowed course is stopped at each indenation of the roller. The wireworm, then, owing its small powers of forcing itself through the il, can only move from plant to plant by comg up to the surface; this materially checks its ogress, while its presence there is continually ught for by various insectivorous birds.

Dibbling is to be recommended chiefly for e more perfect manner in which the seed is posited in the soil, both as regards the equalof its distribution and as regards the portion area allotted to each plant. The amount of d saved by this method is an item of considertion—drilling requiring twice, and broadcastg four times the quantity. The seed, too, by ng deposited in separate, unconnected holes, not so liable to be destroyed by the wire-worm when sown in drills; while the parallelism of lines of plants offers even greater facilities cleaning than in ordinary drilling. Some e, however, is necessary that the dibbling maine should only be made use of when the soil uitable, and in suitable condition. If it is too ht or too dry, the sides of the holes are apt to l in with the seed, or often it is quietly deposit, and then the depth is irregular, often too le. If the soil is heavy or too wet, the dibe forms a hole or cup, with compressed sides d bottom, in which the water collects, checks e germination of the seed, and materially ines or destroys the vitality of the young plant. As soon as this change has been effected, and e plant recovers from it and assumes its indeendent functions, a knot or node is formed at e surface of the soil, just above where the m and roots meet, and from this other roots d stems branch out, forming independent ants, and materially adding to the produce of e original seed. This is what is known by the m "tillering" in the wheat, and never is comenced until the plant has assumed its independt functions, and the roots have begun to assimte inorganic food from the soil. Here the gorous and healthy constitution of the plant hibits itself, by the "tillering" power it sesses in the formation of new roots and stems; ile the condition and quality of the soil are so seen by the manner in which the subsequent velopment of the plants is carried out; as, less it contains plenty of food, in a suitable ndition for the crop, the roots, vigorous ough they may be, will not, of course be able obtain the necessary supplies. We should en see that an increased number of plants es not always produce an increased return—t, in fact, the stock was in excess of the p; for, if we have increased numbers, we re increased power of supplies, or their vitalwill be affected, and their produce diminished. In suitable soils and under favourable circumances, this power of increase in the cereal nt is remarkable. Pliny relates that in the time of Augustus Cæsar a sheaf of wheat, containing 400 perfect stems rising from a single stock, the produce of Mauritania (now Algeria), was exhibited at Rome, and that at a later period another sheaf, containing 360 perfect stems, the produce of a single grain, was presented to the Emperor Nero. There are numerous well authenticated instances of the reproductive powers of the cereals, under favourable conditions of soil and climate in our own as well as in other countries. At the exhibition in Paris, 1849, two plants of wheat were shown, the one carrying 122, and the other 152 perfect stems. Again, at the International Exhibition of 1855, several similar instances of the fecundity of the wheat plant were to be seen. In the Museum of the Royal Agricultural College, a barley plant may be seen, consisting of seventy-eight perfect stems, which yielded 1,780 grains, the produce of a single seed sown in the neighbourhood of Cirencester in the spring of 1847. These, of course, are all exceptional cases; still, they have their value as instances of the enormous increase the reproductive powers of the cereal plants are capable of when acting under favourable conditions.

Although the individual farmer may never be able to realise in general practice anything like these returns, still he may rationally expect that the more he strives in his practice to meet the requirements of the plant he cultivates, the more likely he is to secure successful results. In agriculture especially, *effects* are readily seen—say in the shape of good or bad crops—though, in the present defective state of our knowledge, it is very difficult to assign their exact *causes*. The best way to ensure success is to deserve it, and we can only deserve it when we have fulfilled all the conditions which experience in principles, as well as in practice, has pointed out to us.

In the cultivation of wheat we have, first of all, the *soil* to look to, to see that it is in a proper state, both mechanically and chemically, for the growth of the plant—mechanically, that its particles are finely divided, and yet sufficiently coherent to form a firm bed—that they absorb moisture, but admit of free percolation of superfluous wet—and that the tillage processes have been carried down as deep as possible, so as to give the roots the maximum amount of feeding surface.

The *chemical* conditions of the soil are less understood, and far less under our control, than the mechanical; for, not only is it requisite that the soil should contain all the ingredients required by the growing crop, but that these ingredients be severally in a state such as the plant can assimilate or make use of. The roots, of course, are the only parts of the plant through and by which the ingredients of the soil can be absorbed for the use of the growing plants, and these can only assimilate them when in a soluble state. Without now venturing upon a discussion

of the important question of plant nutrition, as to whether the excretory theory of Decandolle, recently revived and supported by Gasparini, or the simpler mineral theory of the chemists, is the soundest, we may recollect that the power of the roots to absorb from the soil the various substances necessary for the plant is more than a mere mecanical one, as, whether or not they have the power of preparation, they unquestionably have the power of selection, and only select such as are necessary for their purpose, and in a suitable state. They do not absorb indiscriminately all matters they find in the soil in a soluble state—of which the inorganic are, of course, in excess; but appear to have the power of selecting those that are desirable, and of refusing those which are not necessary for their purpose. This power appears to be more developed in some plants than in others; it exists, however, in all, and is controlled, probably, by some difference in the structure and substance of the pores or cells through which the food passes into the extremities of the roots, according to the different orders, or even genera of plants, which exerts an influence upon their general powers of absorption and assimilation.

After the substances have been absorbed by the roots, a chemical power or action is called into play, and a change appears to take place in the matter absorbed (food), as it is carried up by the ascending juices (sap) of the plant towards the stem. Of these changes, and the mode in which they are carried on, we know but very little at present; we only know that they do exist, from the changed character found in the sap.—*Our Farm Crops, by* Professor WILSON.

To be continued.

Deposits of Guano on the Coasts and Islands of the Pacific.

(Continued from page 653.)

The scarcity of rain, like the predominance of the South wind, and the extraordinary abundance of fish and bird-fishers upon the coasts, did not escape the attention of the first Spaniards who trod the Peruvian soil. One of the historians, who was also one of the actors of the conquest, *Augustina Zarate*, wrote in the sixteenth century thus—"Those who have carefully examined the thing, pretend that the natural cause of this phenomenon (the want of rain) is the South wind which reigns during the whole year on the coasts, and in the plains, where it blows with so much violence that it carries off the vapors which rise from the earth and the sea, without being able to rise high enough in the air to collect together and form drops of rain. The same wind is also the cause that makes the waters of the South sea, run always towards the North, which renders difficult the crossing from Panama to Peru."

"In the valley in which Lima is situated adds Zarate, "the stay is very agreeable, because in no season are they incommoded with either cold or heat. During the four months which they have summer in Spain, they feel little more coolness than is felt during the rest of the year; and there falls there towards noon a sort of small dew, something like the fog which are seen at Valladolid.

"All along the coast are found fish of every species, especially sea-calves, which are the pastures of the vultures. There are also birds called *alcatras*, resembling our fowls. They are very common, since we see them everywhere over a space of over 3,000 leagues. These birds feed on sea-fish."

Under so constant a climate, upon a soil not modified by the corrosive action of aqueous meteors, on shores where the tides are scarcely perceptible, where we nowhere see invading downs, the face of nature is unchangeable. In 1832, upon these shores, bathed by the Pacific Ocean, I was present at those same scenes that Ulloa, Fraisir, and long before them, Zarate, had described—alcatras, phenicopterus, ardias, &c., as under the reign of the Incas. At the Piura we still found water, on digging in the bed of the dried torrent. At Checope it had not rained for 88 years The Rio Tumbez enters into the sea with the same calm; and, perhaps, in seeking further, we should have recognized upon its shores the traces left by that handful of intrepid soldiers, who cleared it in 1531, in order to execute, with a brilliant success, the most audacious enterprize that was ever attempted. The bands of Almagro and Pizarro, had passed by there, to go and invade Peru; and not one of those bold companions deigned to cast a look upon those huaneras, the importance of which now exceeds that of the most productive mines of the new world.

The interesting Grodesie works, executed by M. Francisco Rivero, give for the volume of guano, in the huaneras in 1844—

	Square Varas.	Cubic Varas.
Huaneras of the South	713,637	15,852,813
Guano de Punta Grand and Guano already extracted		6,157,185
Islands of Chincha....	1,450,244	34,500,000
Huaneras de Viegas y Caretas Ballesta.....		60,000
		* 58,560,000

* Or 62,259,209 cubic yards.

M. F. de Rivero has found the weight of the cubic varas to be about 1,400 pounds, Spanish, or 645 kilogrammes. This gives us for the existing weight of guano in the huaneras, 378 metrical quintals (or 37,800,000 tons.)

This estimate does not comprise the deposits to the south of the Rio-Loa because they belong to Chili, nor those which are known to the

north of the *Chincha* Isles, as far as Payta, where I have seen them lying on the black argillaceous schist, the summits of which, seen at a distance, appear to be covered with snow.

The deposits of guano are so considerable that we have doubted whether they were very recently formed, by excrements of birds belonging to the present period. Humboldt was greatly inclined to consider them as antedeluvian, like masses of coprolites, having preserved their original organic matter. He went back beyond the age that must be assigned to these deposits, the thickness of which sometimes reaches 30 metres, because he computed that in three centuries, the excreta of the birds frequenting the isles of Chincha would not exceed one-tenth of a metre in thickness.

M. F. de Rivero, on the contrary, thinks that this prodigious accumulation of guano is very naturally explained by the multitude of *guanas* indicated on the coast of Peru under the names of *piqueros, sarcillos, gaviolas, alcatruas, pagurarninos, patillos, &c.* "If now" he says, "in spite of the disturbances the guanas have suffered, and still suffer, we nevertheless see thousands of millions of them resting upon the cliffs or the sharp summits of the islands, what was the case before the occupation of Peru by the Spaniards, when they were, we may say, the only inhabitants of the coast?" He adds that, in order to conceive the formation of the guano of the Chincha Islands, estimated at 500 millions of Spanish quintals, it is sufficient to admit, what is no exaggeration, that one guana, returns each night an ounce of excrement, and that every twenty-four hours 264,000 of these birds frequent the *huaneras*. In 6,000 years—M. F. de Rivero does not go beyond the date of the Deluge—the guano deposited would weigh 361 millions of quintals; and we must not forget that to the excreta, are necessarily added the remains of the birds. 264,000 guanas inhabiting at once the Chincha Islands are a number which no one would hesitate to accept, who has seen in motion those clouds of fowls of which, to use the expression of Ulloa, "we can perceive neither the beginning nor the end," which darken the air, and skimming over the sea, hinder the manœuvres of a ship. This number is, besides, subject to a kind of control. The guanas fish only during the day; at night, they retire into the *huaneras*, upon the hypothesis of M. de Rivero, the Chincha Islands receive 264,000 of them; the question therefore is, whether the place is large enough for them? Now, the surface of these islands is 1,450,224 square veras. A guana might, therefore, occupy 5½ veras, or nearley 4 square metres (4 yards,) on which they would repose perfectly at their ease.

Whether the guano belongs to the present era or that it may have been deposited at a former period, still it represents an enormous mass of organic substances, having belonged to the inhabitants of the ocean; and as the excreta are derived from the aliments—the fish destroyed by the bird-fishers being the first material of them—all the elements buried in the *huaneras* have undoubtedly made part of their organization, and it is not impossible to estimate the quantity of fish that has been consumed. In neglecting what a sea-bird dissipates during respiratory combustion, we are authorized to believe that nearly the total quantity of the azote of the food is found in the excreta, and consequently in the ammoniacal guano, which is only another form of the same substance, preserved by the effect of the particular circumstances on which I have previously insisted. The albumen and uric acid have undoubtedly given place to a production of ammonia, or have experienced other modificatinns in which are azote, which enters into the fæces of the *guanas*, and, of necessity, into the fish digested by these birds. A given weight of ammoniacal guana should therefore have for its equivalent, a certain weight of fish in which will be contained the same amount of azote.

The guano of Peru, when it comes to be extracted, if not injured, contains as we have seen, an average of about 14 per cent. of azote. From researches that I have made some time back, I am authorized to assume that the fish on leaving the sea contain 2.3 per cent of azote.

Thus 100 kilogrammes of guano contain the azote of 600 kilogrammes of sea-fish; and since in the *huaneras*, before we had so actively conducted the working of them, there were 378 millions of metrical quintals of guano, we must have for equivalent 2,268 million quintals (264 million tons) of sea-fish.

Such should be, in fact, the enormous quantity of fish devoured in the course of ages by a succession of *uninterrupted generations of guanas*, and the 53 million of quintals of azote which are found there had really belonged to the atmosphere; for the azote as I have announced some time back, has no other primitive origin; here is the proof:

Organized beings have in their constitution, independently of mineral salts, carbon, the elements of water, and azote. Carbon in the Carbonates and graphite belong to the most ancient formations. Pure carbon—the diamond—accompanies gold and platina in the detritus of granite, gneiss, and syenites. Water according to the fine experiments of Mons. de Senarmont and Daubree, has acted an important part in the metamorphosis of the crystalline earths. Of the elements of organism, azote, is therefore the only one that we do not find fixed in the rocks of igneous orign; we see it apparently in the sedimentary deposits where there are vestiges of beings having vegetated or breathed upon the earth; and all induces us to think that it has not penetrated into the tissues of plants, and consequently into those of animals, after having been transformed into nitric acid or ammonia—states under which we continually meet with it in the atmosphere.

Like the coal and peat deposits, the lime diluviums and coprolites, the *huaneras* conceal, by holding these in some respects under sequestration, materials of the old world which man, in his incessant activity, brings out in the modern world. On fertilizing a field with these products, he changes into food, the excrements of seabirds; just as in burning mineral combustibles, we restore to the atmosphere carbon, aqueous vapor, and azote, which the vegetation of the coal period had extracted from it. This is what was expressed with as much intelligence as truth by an illustrious English engineer—George Stephenson—on seeing pass swiftly a train on one of the numerous railways he had constructed: "It is not," said he, "those powerful locomotives directed by our skilful engineers that makes that train proceed; it is the light of the sun—the light which myriads of years since disengaged the carbon from the carbonic acid, in order to fix it in plants, which a revolution of the globe has modified into coal."

The restorations of the old world have not been confined to the aerian ocean only, but have been extended to the soil. The *huaneras* contain mineral substances, among which figures the calcareous phosphates. In the guano containing the most ammonia, from *Angamos* or the isles of *Chincha*, there is not less than 25 per cent.; the earth guanos are almost entirely composed of it, and we may, without exaggeration, estimate the phosphate of lime of those beds at 25 millions of metrical quintals (2,500,000 tons), which is sufficient to form the osseous systems of four billions of men; and yet is not really more than a small portion of the phosphates spread over the several stages of the geological series. In the guano, all the phosphate has necessarily the fish consumed by the *guanas* for its origin, or to go to the extreme source, the earth; which has led M. Elie de Beaumont to say with great justice of observation, that in other organizations "the azote comes from above, the phosphates from beneath it."

Of the materials accumulated in these ossuaries of primitive times, which we meet with in the Jurasic and neocomian chalk in the green sandstones, in the caverns anciently inhabited by generations of flesh-eaters, the coprolites have had since 1847 only a purely scientific interest; but immediately that chemistry had pointed out their value in phosphoric acid, we understood that to a certain extent they should act as guano, and hence they are eagerly sought after. At present, European agriculture obtains these phosphates from the extremities of the globe; from the Islands of the Pacific Ocean, from the Caribbean sea, from the gulf of Mexico, from the coast of Africa, and from Australia. To procure it, the navigators bring away banks of coral, and reefs which were formerly avoided as dangerous places.

May I be allowed, in conclusion, to state before the Academy of Sciences, that this grand commercial movement, the result of which is the diffusion of fertilizing matters, has had its sole origin in an observation made by an eminent geologist, Dr Buckland, and the very remarkable analysis of one of its most distinguished members, M. Berthier.

BOUSSINGAULT,
Member of the Academy of Sciences and of the Imperial and Central Society of Agriculture.

York Township Agricultural Society.

CARROT MATCH—DINNER.

The York Township Agricultural Society have for the past few years been in the habit of giving prizes for the largest and best cultivated crops of carrots in the township. The match for this year having been brought to a successful termination a few days ago, the judges—Messrs. John Gray and Geo. Ward—were entertained at dinner last evening by the president, directors and members of the Society in Mr. Best's Bay Horse Hotel, Yonge Street—the President, Joseph Ross, Esq, in the chair. Among those present were Prof. Buckland, Dr. Ross, Messrs. Rice Lewis, Philip Armstrong, George Severn, James Fleming, Jackes, Lee, McCarter, Palmer, T. H. Bull, and Capt. Snider. After the company had paid their respects to a substantial dinner served up in good style by Mr. Best, the Chairman proposed the toast of "the Queen," and the usual loyal and patriotic toasts, all of which were most enthusiastically responded to. He then called upon Mr. John Gray, one of the judges, to read the following

REPORT OF THE JUDGES ON THE CARROT MATCH OF THE TOWNSHIP OF YORK AGRICULTURAL SOCIETY

To the President and Directors,—

GENTLEMEN.—In accordance with your desire the undersigned judges appointed by your Society, to examine and determine on the best crop of Carrots grown by the competitors in the above match, beg leave to report:

On the morning of the 6th inst., we proceeded to the performance of the duties assigned to us, and having, in the most careful manner, examined the several lots presented for our inspection, we find that they stand in the following order, viz.:—

First,—W. H. Bartlett, Esq., Davenport road: 487 pounds, or 8 bushels and 7 pounds of 60 pounds to the bushel, to the square rod; equal to 1298 bushels and 40 pounds per acre. This crop was grown on low, flat land; a good dark loamy soil, apparently well drained. Cul-

tivated on the flat or garden system ; drills from 16 to 22 inches apart ; crop very regular.

Second,—Robt. Stibbard, Esq., Eglinton ; 408 pounds, or 6 bushels and 48 pounds to the square rod ; equal to 1,088 bushels to the acre The soil on which this crop was grown was of quite an opposite character to the former, being a light sandy soil, considerably elevated. The ground had been heavily manured and cultivated on the garden system. Drills 18 inches apart.

Third,—Philip Armstrong, Esq., Yonge street; 384 pounds, or 6 bushels and 24 pounds to the rod, equal to 1,024 bushels to the acre. Soil a good deep yellow loam; previous crop potatoes; no manure applied to either crop ; drills 2 feet apart. The hoeing of this crop was done with the cultivator, and afterwards landed with the plough ; the roots were large and of very uniform size, and were apparently well managed in the cultivation. If we take into consideration the economical manner in which this crop was cultivated, being strictly field culture, it has produced, in proportion to the labour, the most profitable results.

Fourth,—Wm. Jackes. Esq., Eglington ; 346 pounds, or 5 bushels and 46 pounds to the rod, equal to 922 bushels and 40 poands to the acre; soil a deep loam ; drills 18 inches apart; many of the roots upwards of two feet in length ; a good many blanks in the rows.

Fifth,—Wm. Lea, Esq., near the Don ; 315 pounds, or 5 bushels and 15 pounds to the square rod, equal to 840 bushels to the acre ; soil a deep sandy loam ; rows 21 inches apart ; roots never thinned, consequently they were small.

Sixth,—J McCarter, Esq., Eglington ; 313 pounds, or 5 bushels and 13 pounds to the rod, equal to 834 bushels and 40 pounds to the acre. This crop was grown on both sides of a narrow ravine ; soil a yellow loam ; apparently a good crop ; rows 17 inches apart.

Seventh—James Metcalfe, Esq., Yonge street; 290 pounds or 4 bushels and 50 pounds to the rod, equal to 773 bushels and 20 pounds to the acre. It being dark when we arrived at Mr. Metcalfe's crop, we measured off the first square rod we came to. We may have, therefore, unintentionally done injustice. The roots were large, but stood rather thin on the ground in consequence of having been thinned out with the hoe. We were informed that the best of the crop was gathered up, and was said to be better than what we examined. We regret that our time was so limited, which prevented us from taking more copious notes as to the cost and management of the various crops that we examined. The variety of carrot was in all cases the White Belgian, and was sown in the early part of May. Our information led us to believe that very little manure was applied to any of the crops except Mr. Hibbard's, but on his soil it would be impossible to grow a good crop without plenty of manure. The crops were all clean and apparently well managed.

In conclusion we congratulate the competitors on their success, and hope it will be an inducement to others to follow their example.

We remain, Gentlemen,
Your obedient servants,

JOHN GRAY,
GEORGE WARD.

Only the first three mentioned take prizes.—*Globe.*

Horticultural.

A Green Rose.—The London Gardeners' Chronicle thus describes a novelty among roses, which has been successfully grown in France and England: Conceive a China Rose, with every part bright green, deep on the outside, pallid in the middle; the calyx wholly unchanged; the five natural petals transformed into five small, broad green leaves, and the rest of the center consisting of pale green straps of various degrees of narrowness, spreading evenly round the middle, and forming a green star, with innumerable points. Such is the Rose Bengale verte. It has no scent, and does not show the least inclination to exchange its verdure for a rosy hue. Its quite regular in its form and greenness, no change having been remarked in it since the year of its birth. It is now a well-established five-year old plant, with a fixed habit. Although this has no great beauty in itself, it is considered possible that by hybridizing, new varieties may be obtained, combining the parent colors, red, white and green, and thus new beauty be added to the Queen of Flowers.

Liquid Manure should be applied to plants while their roots are in a state of activity, because then they absorb it readily, and at once; and the clearer it is the better. In this state the plant's food may be said to be prepared for its immediate purpose. When manure is applied in a solid form it cannot be taken up by the spongiolets until it is rendered soluble—that is, reduced to a liquid state. The drainage which so often runs to waste from dung-hills, stables, water-closets, poultry-houses, &c., in its natural state, contains too much insoluble matter, which lies on the surface of the soil until it becomes soluble by rain and exposure, and hence it is a considerable time before the plants derive any benefit from it. Besides, in its natural state, it is too strong, and often hurtful to tender plants. Therefore, all such valuable material should be conveyed to tanks, in which it undergoes fermentation, attenuation, and solubility, before it is in a fit state to be applied to advantage.—*Scottish Horticulturist.*

Veterinary.

Eczema—An Itchy Eruption of the Skin.

During the hot months of summer many horses are subject to an intolerable itching, which becomes much worse when the animals are heated, and, indeed, sometimes renders them perfectly unmanageable. They will rub themselves until the skin is sore and raw, and often become so violent that travest posts and mangers are levelled to the ground. To superficial observation the skin presents nothing remarkable, but closer inspection will discover numbers of minute elevations closely aggregated, and filled with a watery fluid. Soon the skin becomes thickened, red, and angry-looking, and the hair dry, soft, and bristling. The surface is sometimes unusually hot and dry; at other times it is endowed with clear, and sometimes with bloody fluid. Coarsely-bred horses are generally believed to be most subject to this complaint, and the quarters and hind limbs, especially on the inside, are usually first and worst affected. Where once it has appeared it is very apt to recur as soon as the hot weather sets in; and as it returns year by year, each attack becomes more severe than the preceding, and renders the animal for the time worthless. This complaint is perfectly distinct from mange, which is characterised by extreme scurviness, and subsequent bareness of the skin, and has never any of the little vesicles or fiery redness of the eczema. Surfeit may be mistaken for it; but comes and goes more rapidly, consists of tumours about the size of peas or marbles, spreads over most parts of the body, occurs mostly in spring and autumn, and is not necessarily accompanied by itching.

The causes of eczema are very obscure. Rich, generous feeding helps to develope it; whilst on the other hand, plenty of fresh green food greatly prevents it. But there are certain horses that have such an inherent tendency to it that it affects them under every kind of feeding. In such animals the symptoms speedily show themselves if they be smartly exercised even in tolerable cool weather. The eruption appears to be a symptom and consequence of a peculiar state of the blood.

Eczema is probably the most intractable of skin diseases. The sulphur ointment and tar liniments by which, with comparative ease, we can cure cases of mange, are here quite fruitless. Even solutions of chloride of lime or bleaching powder, so highly recommended by some practitioners, are of little avail, and relieve the itching, without removing the disease. Chloride of zinc is more effectual, and may be conveniently used in the form of Sir William Burnett's disinfectant fluid. Diluted with forty or fifty parts of water, it is rubbed into the itching parts with a brush two or three times a day. Two or three applications usually remove the itching, whilst the skin after a few days resumes its healthy appearance. A solution of corrosive sublimate, containing twelve or fifteen grains to an ounce of water, is also often useful The compound solution of iodine, diluted with four or five parts of water, is frequently used with advantage both locally and internally. As in the corresponding complaint in man, alkaline solutions are sometimes serviceable, and the common carbonate of soda may be conveniently applied, dissolved in twenty parts of water. Mercurial and iodine ointments, although frequently recommended, are of trifling value. Besides the local remedies, a mild dose or two of laxative medicine must be given, and the animal restricted to light, digestible, and stimulating diet. Nothing expedites a cure or prevents a recurrence of the attack better than the liberal use of good green food. Whilst, on the other hand, nothing is more likely to develope the disease than the continued use of large quantities of beans and oats, given without an occasional allowance of bran, nitre, roots, or green food. Under careful supervision, a few doses of arsenic may be given internally, and the medicine is best used in the form of Fowler's solution, of which an ounce may be given daily. As in almost every other disease, blood-letting has been frequently tried, but is now properly considered useless. In addition to the medical treatment, strict attention must be paid to cleanliness, want of which always aggravates, and is by some considered a direct cause of the complaint. Particles of dust or sand, and more especially if of an irritating clay or aluminous nature, adhere to the skin, and, if unremoved, are believed to favour the production of the complaint.

Eczema is rather more prevalent amongst dogs than amongst horses. The symptoms, appearances, and causes are analogous, and similar treatment is requisite.—*North British Agriculturist.*

The Provincial Exhibition,

Held at London, September 1861.

Reported by Mr. William O'Brien.

(*Continued from page* 671.)

Grain and Seeds.—With very few exceptions the show of grain was, as has been already stated, a very indifferent one. The discreditable trick of a farmer of the name of Anderson, from Flamborough, who attempted to secure for himself the Canada Company's prize of £25 for the best twenty-five bushels of fall wheat, by placing a small lot at the top of each bag, much superior in appearance to the bulk of the sample, was widely exposed by the newspaper press at the time, and it is unnecessary here

to say anything further upon such a very unpleasant topic. It is to be hoped that the humiliating position in which the perpetrator of this fraud was placed will be a sufficient warning to deter any others so disposed, from attempting to commit a similar act of dishonesty in future. We trust, however, for the credit of our farmers, that there are few amongst them capable of so disreputable a proceeding, although it does appear that, even at London, Anderson was not altogether alone in his guilt, as another man was detected in the commission of a similar offence, in the competition for the two-bushel prize. For the Canada Company's prize, there were only ten competitors, one of them being the Anderson alluded to above, against three times that number last year; and the quality of grain was also decidedly inferior, although one or two samples were as good as could be desired. The falling off in the two-bushel samples was, as compared with last year, about in the same proportion. Of spring wheat, we should certainly have expected a better display, as there is better wheat in some parts of the country than we saw in any of the seventeen bags shown at London. Some of the grain was excellent as regards size, but it was all dark and coarse. The best show, in this department, was that of white oats, of which there were some twenty excellent samples; the grain being plump and bright, The black oats, on the other hand, were very inferior. Of field peas, there were not more than a dozen samples of the small kind, and as many of marrowfats. The former were with a few exceptions, of fair and even quality; but by no means remarkably fine. The latter were by no means above the average.

Field beans made a much better display than peas,. Nine samples were shown of an excellent quality; and both the first and second prizes were taken by farmers in the neighbourhood of London.

The barley shown appeared to us to be of very indifferent quality, both as regards plumpness and color. Among the extras, there was an entry of Winter Barley. Of Rye there were only three samples shown.

The barrenness of this part of the show was somewhat relieved by the Indian Corn, of which there were some fine specimens, especially of the yellow variety.

Among the seeds we noticed some bags of Rye Grass, not the Italian, grown by Mr. McPherson of Westminster. It is a generally received opinion that the common Rye Grass will not stand the winter in this country, but the grower of this seed assured us that he had proved the contrary. The Italian Rye grass answers exceedingly well, as the writer of this can testify, having it in a meadow laid down for four or five years. Of Alsike Clover there was but little shown, but of the other kinds, there was a tolerable display, as well of Timothy seed. Of Millet, there was a good variety; and of Hungarian grass, a kind new to most of our farmers, but very much resembling common Foxtail, there was a number of specimens. Of Flax seed, there was a good display. Of Buckwheat, we saw only three samples. Hemp seed, Carrot, and Turnip seed, were also tolerably well represented.

As far as we could judge, there was a pretty good display of hops, of which thirteen bales were on exhibition, apparently of good quality. The first prize for this valuable article of consumption, was awarded to J. Stevenson of Dundas.

Roots, (field grown.) The least said of the display of field grown roots the soonest mended, for it was in every way unworthy of a Provincial Exhibition, and as little to be compared with that of last year as was the show of grain. With the exception of a few lots of mangel wurzel there was really nothing worth mentioning, quantity and quality being alike indifferent.

The Dairy.—The dairy was well represented, both as regards butter and cheese, the latter in particular; it speaks well for the grazing properties of the London and Western Districts, that most of the prizes in both of these articles were taken by farmers living within their limits. Mr. Thomas Shore, of London, took the first prize for butter, and Mr. Ranney, of Salford, the first for cheese.

Honey.—The show of honey was remarkably good, both of clear, and in the comb. The first prize for the former was awarded to Mr. G. Miller, Markham, and for the latter to Mr. McKee, of Norwich.

HORTICULTURAL PRODUCTS.

Garden Vegetables.—The show of garden vegetables may be summarily dismissed along with that of the field-grown roots. It spoke very little for the Association, and not much more for the good gardeners who we may presume to abound in the vicinity of a town like London. They at any rate were

the principal exhibitors, and to them the credit or discredit must belong.

FRUIT.—The show of fruit was considered very fair, though by no means equal to the magnificent display of last year. Its most important feature was the steady advance shown in the cultivation of the grape, in reference to which, as well as to the show of fruit generally we have taken the liberty of copying from the London *Free Press* the following remarks from the pen of a gentleman well qualified to pronounce an opinion upon a matter of so much interest to our farmers and agriculturists:—

"It is evident, on a very casual inspection of the contents of the exhibition, that the western portion of Upper Canada has passed far beyond the stage of development in which the people are occupied in producing articles of necessity. The horticultural department displays fruits that would do credit to any country at any stage of existence; but one branch of culture deserves especial notice, from the ingenuity, and aptitude of the gardener as well from the success he has attained, as from the promise of future wealth both to himself and the country, clearly discernable through what he has already accomplished. We draw attention to the grapes exhibited by "Mr. Read, of Port Dalhousie," who has confined his efforts entirely to those varieties suitable for out door unprotected cultivation. By a judicious and careful system of crossing the best American vines with the most promising species of Europe, he has produced some highly valuable grapes, which will endure the rigours of our winter climate, and ripen fruit of an appearance, size, and flavour quite equal to many, and superior to some, of the dessert grapes of the old world. The variety he has, called "Ontario," a hybrid between the Isabella and Black Hamburgh, is a handsome, large, and excellent grape, retaining a slight flavour of the Isabella murkiness, and growing in bunches of two or three pounds weight, and of the size of the hot-house fruits of England. Another variety, the "Prince of Wales," promises, after a few more years of cultivation, to excel the Ontario, and it is without the murkiness of the Isabella. There are others wanting only perseverance in cultivation to become valuable, not only for dessert, but as wine producing fruit. Some have the roughness of the Oporto grape; others have the sweetness of the Constantia; nearly all of them would have been improved by one more fortnight on the tree. It is obvious that if the ripening could be accelerated a fortnight the value would be largely increased, and the chance of injury from rain and frost of late Septembers avoided; we think this would be accomplished by a different mode of cultivation. At present the vines are trained on trelisses or on trees, a mode of growth suited to countries with long warm summers, and followed in Italy and Spain; but in more northern regions with short hot summers, the plants are usually pruned like currant bushes and freed from many of their leaves, to allow the sun full access to the fruit and *also to the ground*, a most important point, as the heat reflected from the warm soil contributes largely to the speedy ripening of the grape and this mode of cultivation compensates for the greater severity of northern climates. Care has to be taken when the fruit is intended for wine making, that the branches do not touch the soil or receive the mud splashed up by the Autumn showers, for if such branches are carelessly thrown into the vat, the wine will have that horrible earthy flavor characteristic of bad Cape wine. If Mr. Read will try this method of pruning his plants, he will gain a fortnight in the time of ripening and add greatly to the flavor, by ripening in the warm sun of August instead of the cooler beams of September. We hope his success will encourage the people of this part of Canada to plant many favorable aspects of their lots with vines, and by so doing add as much to their profits as to their luxuries.

"Dr. Beadle of St. Catherines, an old and experienced raiser of fruit trees, was a competitor for the prize awarded for the best six of each kind, twenty varieties of apples. They were all very excellent. The following were some of the varieties on exhibition:—Northern Spy, Maiden Blush, Gravenstein Swa.., Hubberston Nonsuch, Seek no Further, E. Spitzenburg, Pomme de Neige, Greenings, &c. Pears, including the best varieties, as Vicar of Wakefield, Glout Morceau, Stevens' Genessee, Louise bonne de Jersey, &c. Dr. Beadle's varieties of fruit are very beautiful. The Dr. has the largest display of fruit of all kinds—three of each variety. His display of grapes was also good.

"Mr. Alexander Leslie, Proof Line, Township of London, whose nursery is only six years old, shows well. His apples and pears seem excellent. Mr. Leslie has to make his

status, which he seems well qualified to do. His nursery is on high ground, well exposed, and his fruit trees no doubt will be well suited for transportation to other parts of this western section of country. Mr. Leslie is a competitor for the best twenty varieties of apples, and exhibits the following:—Duchess of Oxenburg, Fameuse, Baldwin, Greening, Northern Spy. Many of these look well, and are of good flavor. Mr. Leslie is one of those who pays particular attention to his graftings, that every tree may be true to its kind. This is the great object to be kept in view by fruit raisers, and if farmers and nursery men will only be at the trouble to pay strict attention to this important branch of horticulture, they will ultimately reap the full benefit of their care and discrimination."

Messrs Elwanger & Barry of Rochester, by R. Blair, agent, have on show sixty-two varieties of apples of very superior quality, and eighty varieties of pears, with eight specimens of native grapes. Amongst the latter are the celebrated Delaware and Rebecca sorts, which looked very superior. Not being raised in Canada, the fruit was ineligible for prizes. Six bottles of white grape currant wine were also shown by this firm; and 200 varieties of roses and other flowers, all of which elicited much well deserved commendation. Messrs. Elwanger & Barry are celebrated nurserymen, and their reputation for growing trees true to their kind is well established.

"Mr. Arnold, of Paris, an old exhibitor, has also a beautiful display of grapes. His plums are superior to anything exhibited.—Mr. Arnold has also a specimen of wine, made from grapes without the addition of sugar or alcohol. Mr. Arnold's varieties of grapes, Concord, Diana, and Rebecca, are indeed beautiful."

The first prize for the best display of fruit, not more than three specimens of each sort, was awarded to Mr. G. Leslie, of Toronto, whose collection was, indeed, of the choicest character.

Besides the exhibitors above mentioned, there were a number of amateurs from different parts of the country who succeeded in carrying of several prizes. Among them we may especially mention Mr. J. D. Humphreys, of Toronto, Mr. H. J. Brown, of Niagara, and Mr. J. Freed, of Hamilton.

PLANTS AND FLOWERS.—This part of the show is seldom equal to exhibitions intended especially for the display of horticultural productions. Parties at a distance do not like to export their choicest things to the risk of a journey in a crowded train, to say nothing of the trouble of transporting such delicate articles as green-house plants in any considerable number. The display is therefore generally meagre, and in this instance there was no exception to the rule, as the gardens at London are not sufficiently advanced to make very much of a show out of their own resources. The principal exhibitors were, Messrs. G. Leslie, J. M. Hirsefelder, and J. Fleming, of Toronto; J. Pegler, G. Haigh, and D. Kemster, of London; and Bruce and Murray, of Hamilton.

AGRICULTURAL IMPLEMENTS.

The show of agricultural implements was all that could be desired. In several of the articles exhibited we noticed manifest improvements, and in all a steady advance in workmanship and general adaptability. Portable engines for farm use, threshing machines, mowers and reapers in great variety, clover threshers, straw cutters, cultivators, seed drills, turnip drills, liquid manure drills, ploughs of all descriptions, draining implements, and a number of minor articles,—all proved in the most satisfactory manner how well our mechanics have learned to provide for the wants of the farmer, and how largely our farmers have found it to their interests to avail themselves of the ingenuity of the mechanic. In this part of the exhibition the mechanics of London appeared to great advantage. Among them we may notice Mr. Murray Anderson, with his well-finished ploughs, cultivators, horse rakes, &c.; Mr. Elliott, of the Phœnix foundry, with a large display of similar artices; Mr. Leonard, with an improved mower and reaper; Pavey & White, straw cutters, cultivators, and horse-shoes; and Mr. Wade with cultivators and scarifiers. Many others of the flourishing towns and villages of the West also sent mechanical representatives who did them infinite credit. From Paris, Messrs. Maxwell & Connell came with some excellent straw cutters, a seed drill, and a liquid manure drill. From Brantford, Ganson Waterous & Co. brought a very valuable and extensive collection of implements. Mr. Watson, of Ayr, displaying a capital threshing machine of well-proved excellence. Mowers and reapers there were of every pattern, and

from a number of places, chiefly west of Hamilton; but as there was no provision for testing their comparative merits, any mere description of them is of little value. We may remark in conclusion, that apart from the value of this part of the show as proving a general advance in the application of mechanical skill to agricultural purposes, it was also important as showing how generally this progress has been made, as the articles exhibited were almost entirely made in the district lying west of Hamilton,—several Eastern makers of great repute not being exhibitors at all.

Trial of Ploughs.—As it is utterly useless for any set of Judges, however competent, to attempt to decide upon the relative value of different specimens of any class of agricultural implements without actual trial, we were glad that the ploughs entered for exhibition were to be regularly tested and their draft ascertained. For this purpose a nice piece of sod was obtained a little way out of the town, to which the judges and competitors repaired shortly after noon on Thursday. The method adopted for testing the ploughs was as follows:—each competitor was called upon to plough two rounds with a man and team of his own selection, with the expectation, of course, that the quality of the work of which the plough was capable would be thus shown to the best advantage. The judges then applied the instrument to each plough in succession, turning four furrows with each by a man and team employed by them for the job, carefully measuring the draft, and also noting the quality of the work. Six inches was the depth required, and nine the width of the slice, and the draft was only measured when these conditions were strictly fulfilled, and we mayhere mention that the ploughman employed, James King, of Toronto, did his share of the work in the most satisfactory manner, and as may be supposed, it was no easy task to change thus from one plough to another, and yet do fair justice to their respective merits. The result of the experiment will no doubt have been disappointing to many of the competitors, who never having proved the draft of their ploughs, were unaware of their real defects, and judged of them merely by the excellence of their finish, and their general reputation among their customers.

The following is the list of the competitors, giving the draft of each plough, and the remarks of the judges upon its performance:—

Iron Ploughs.—J. Mahaffy, Brampton, draft 364 lbs., work very superior.

John Gray, Egmondville, Huron Co., draft 441 lbs., work good.

G. Morley, Thorld, draft 444 lbs., good work.

J. McSherry, St. Davids, draft 481 lbs., work very good.

—— Holton, draft 271, but bad work and under depth. [Note by the Reporter—When this plough was first tried it seemed to do pretty well, but an alteration in the irons by the maker threw it altogether out of order.]

W. Alexander, Falkirk, draft 351, work inferior.

G. Morley, Thorold; draft 382, work passable.

J. McSherry, St. Davids; draft 494, work passable, false cut.

George McSherry, Brownsville, Oxford; draft 479, work passable.

George Grey, Stratford; draft 428, work fair, but rather light in depth.

Wooden Ploughs.—J. Mahaffy, Brampton; draft 366, work very good.

James Walker, Westminster; draft 377, work good.

G. Morley, Thorold; draft ——, work good.

James Wright, London; draft 388, work indifferent.

Murray Anderson, London; draft 447, (furrow 6½ by 9½,) work bad.

John Elliott, London; draft 416, (furrow 6½ by 9½,) work bad, mouldboard crushed furrow.

John Elliott, London; draft 425, work ordinary.

Thomas Deland, Port Hope; draft 359, work indifferent.

George Jackson, London, draft 429, (furrow 5½ by 8,) under depth.

G. Modeland, Brampton; draft 394, (furrow 5½ by 9,) work good, but false cut.

J. McSherry, St. Davids; draft 383, work very fair, square furrow

McLaren, Lowville; draft 408, work good

The first prize, therefore, both for wood and iron plows, was awarded to J. Mahaffy of Brampton, and it is remarkable that there was only two pounds difference in the draft of his two plows, the one of wood and the other of iron, and both from the same pattern.

the utmost draft being only 366 lbs. The plows, both for light draft and good work being far in advance of any of the rest. The second prize for iron plows was awarded to John Gray, of Egmondville, with a draft of 441 lbs., and the third, to G. Morley, of Thorold, with a draft of 444 lbs.

The second prize for wooden plows was awarded to Jas. Walker, of Westminster, draft 377 lbs., and the third to G. Morley, Thorold.

CONCLUSION.

Of that part of the exhibition which comes under the head of Arts and Manufetures, we can say but little, the pressure of work outside preventing much notice of those articles within the building, not especially interesting to the farming community. This, however, is of less consequence, as the Board of Arts and Manufactures have now a journal of their own, in which we presume they will give full details of that portion of the exhibition under their particular control. The proceedings wound up as usual with the annual meeting of the Association, at which that distinguished agriculturist, F. W. Stone, Esq. was elected President, A. A. Burnham, Esq., of Cobourg, 1st Vice-President, and J. Johnson, Esq., of Middlesex, 2nd Vice-President, Toronto was fixed upon as the next place of meeting for the Association. The retiring President then delivered the very excellent address, which has appeared in a previous number, and to which we beg to direct the especial attention of our readers.

[The Prize List will appear in our next, fully revised and corrected.—EDITOR.]

Miscellaneous.

INFORMATION ABOUT HYDROPHOBIA.—No person who has seen a case of hydrophobia can ever forget the painful scene. Of all the maladies to which human beings are exposed, this is perhaps the most mysterious, and it is surrounded with a dreadful interest. As there is a great deal of popular fallacy afloat respecting it, every item of reliable information and every gleam of light which can be thrown upon the subject deserve to be collected and placed before the public.

In the last number of *Blackwood*, there is a very profound essay on rabies, in which current ideas on this malady are shown to be not only inaccurate, but dangerously wrong. For example: it is commonly believed that rabies in dogs is peculiar to the warm months—the "dog days"—and in July and August great precautions are taken, which no person thinks of in November and December. "But" says the writer, "the dog days have no more to do with rabies than the moon with lunacy." In the veterinary schools of France, the records kept respecting the cause of hydrophobia show that a majority of cases have occured not in the hottest, but *wettest* months. In April, November and December, double the number of cases occured as compared with July and August. M. du Chaillu, the late African traveller, states that the most of the West African villages are crowded with dogs, but hydrophobia is unknown to the natives. In Cyprus and Egypt, which are also very hot and dry countries, the disease is unknown, thus showing that it is not at all produced by heat or dryness of atmosphere.

It is also supposed that all mad dogs foam at the mouth, and that they run about snapping at man and beast, manifesting great ferocity. There is only one stage of rabies in dogs in which they foam at the mouth, while healthy dogs foam frequently. Gentle dogs when affected with rabies, are generally gentle to their masters, but they will then snap at other dogs; it is only the ferocious dog that shows very great fierceness when rabid. It is also a popular belief that dogs attacked with rabies are afraid of water; hence, the name *hydrophobia* (horror of water) has been given to the malady. This is a misnomer, and the popular notion respecting it is a dangerous error. A burning thirst is one of the characteristic symptoms of rabies in its earlier stages, and when a dog laps water, and plunges into it, it is no sign, as some suppose, that he has not the disease. In man, during the latter stages of the disease, there is an undefinable dread of water, and hydrophobia is not inappropriate when applied to him; but in dogs, a dread of water does not show itself in one out of fifty cases. An acquaintance of ours once pursued a mad dog which had bitten some of his hogs in the barn-yard, when it plunged into a river of considerable breadth; it was then followed in a boat, and shot a distance from the further shore. This was in the early part of December, and there was snow upon the ground at the time. The weather, as it regards heat, had nothing to do with this case, and no fears of water were shown by the animal, thus disproving the two popular notions respecting the disease.

The writer in *Blackwood* states that it is as yet undecided whether rabies now occurs spontaneously, or is only the result of direct innoculation by biting, and it is not certain that every man and animal bitten by a mad dog will take the disease; but when it is once completely developed in a man, "the physician that cures is *Death*." Man or beast once infected with the poison is doomed to a certain and horrible death."

Mr Youatt the greatest authority on rabies in dogs, thinks that it does not now occur spontaneously, and he believes it may be extirpated everywhere if a thorough quarantine could be established on dogs. It appears to us that at least eighty out every hundred dogs in every community are of no use, and that it would be well to destroy just about this proportion of them.

The essayist says:—"All who are in charge of a dog may, by a little attention, discover the early symptoms of rabies, and prevent any mischief by sequestrating the animal in time. Is he fidgetty and sullen? Does he, when first ill, manifest importunate affection? Is he affected with hallucination? Does he exhibit aridity thirst? Does he scratch his ear violently? and does he paw the corners of his mouth without keeping the mouth permanently open? Does he refuse his natural food, and exhibit a depraved appetite? Is he insensible to pain, and his voice strangely altered? Any one of these symptoms should awaken suspicion, and a close observation will soon discover the true state of the case. We advise all our readers to commit this information respecting the symptoms to memory, as it may be of paramount importance at some future period."

The poison of rabies is not communicated by contagion, but innoculation with the saliva. One mysterious feature connected with this poison, is that after being bitten it may remain in the system for nearly a year before it developes itself. How it thus remains inert is unknown. When a person is bitten by a dog supposed to be mad, the only course to pursue is to cauterize the wound at once. It is a consoling fact that only one out of every three persons bitten by mad dogs have become affected with hydrophobia; still, the malady is so terrible and treacherous that every precaution should be used at all seasons of the year to prevent it.—*Scientific American.*

A Ten Mile Army of Ants, and their Exploits—We take the following description of the "Bashikouay"—or reddish brown African ant—from Du Chaillu's account of his African travels. "It is their habit to march through the forest in a long and regular line, about two inches broad and often ten miles in length. All along this line are larger ants, who act as officers, stand outside the ranks, and keep this singular army in order. If they come to a place where there are no trees to shelter them from the sun, whose heat they cannot bear, they immediately build underground tunnels, through which the whole army passes in columns to the forest beyond. These tunnels are four or five feet underground, and are used only in the heat of the day or during a storm. When they get hungry, the long file spreads itself through the forest in a front line, and devours all it comes to with a fury which is quite irresistible. The elephant and gorilla fly before this attack. The black men run for their lives. Every animal that lives in their line of march is chased. They seem to understand and act upon the tactics of Napoleon, and concentrate with great speed their heaviest forces upon the point of attack. In an incredible short space of time the mouse, or dog, or leopard, or deer is overwhelmed, killed, eaten, and the bare skeleton only remains. They seem to travel night and day. Many a time have I been awakened out of a sleep, and obliged to rush from the hut and into the water to save my life, and after all suffered intolerable agony from the bites of the advance guard, who had got into my clothes.—When they enter a house they clear it of all living things. Roaches are devoured in an instant. Rats and mice spring round the room in vain. An overwhelming force of ants kill a strong rat in less than a minute, in spite of the most frantic struggles, and in less than another minute its bones are stripped. Every living thing in the house is devoured. They will not touch vegetable matter. Thus they are in reality very useful (as well as dangerous) to the negroes, who have their huts cleared of all the abounding vermin, such as immense roaches and centipedes, at least several times a year.—When on their march, the insect world flies before them, and I have often had the approach of the bashikouay army heralded to me by this means. Wherever they go they make a clean sweep, even ascending to the tops of the highest trees in pursuit of their prey. Their manner of attack is an impetuous leap. Instantly the strong pincers are fastened, and they only let go when the piece gives way. At such times this little animal seems animated by a kind of fury, which causes it to disregard entirely its own safety, and seek only the conquest of its prey. The bite is very painful. The negroes relate that criminals were in former times exposed in the path of the bashikouay ants, as the most cruel manner of putting them to death. Two very remarkable practices of theirs remain to be related. When on their line of march they must cross a stream, they throw themselves across and form a tunnel—a living tunnel—connecting two trees or high bushes on opposite sides of the little stream. This is done with great speed, and is effected by a great number of ants, each of which clings with its fore claws to its next neighbour's body or hind claws. Thus they form a high, safe tubular bridge, through which the whole vast regiment marches in regular order. If disturbed, or if the arch is broken by the violence of some animal, they instantly attack the offender with the greatest animosity. The bashikouay have the sense of smell finely developed, as indeed have all the ants I know of, and they are guided very much by it. They are larger than any ant we have in America, being

at least half an inch long, and are armed with very powerful fore legs and sharp jaws, with which they bite. They are red or dark brown in colour. Their numbers are so great that one does not like to enter into calculations; but I have seen one continual line passing at good speed a particular place for twelve hours. The reader may imagine for himself how many millions on millions there may have been contained here."

TEACHING HOGS TO DESTROY THISTLES.—A writer in the *Southern Homestead* says: I will give a method of exterminating thistles which I have tested and found effectual, and which costs nothing. It consists in teaching hogs to eat the roots of the plant. Tramp on the buds of a goodly number of the largest plants in the spring, and place on each bud a teaspoonful of salt; then turn your hogs on them. They will eat the roots of the salted plants first, and will thus acquire a fondness for the roots, and will continue to eat them daily as long as any can be found. If but one hog be educated in this way, he will teach the whole herd to eat them, and they will exterminate all on the farm."

MAD DOGS.—All who are in charge of a dog may by a little attention, discover the early symptons of rabies, and prevent any mischief by sequestering the animal in time. Is he fidgety and sullen? Does he, when ill, manifest importunate affection? Is he affected with hallucination? Does he exhibit ardent thirst? Does he scratch his ear violently? Does he paw at the corners of his mouth, and not keep the mouth permanently open while doing so? Does he misconduct himself in the room, and pertinaceously lick at the corners where he has done so? Does he refuse his natural food, and exhibit a depraved appetite? Is he insensible to pain? Is his voice strangely altered? Any one of these symptons should awaken suspicion, and a close observation will quickly discover the true state of the case. We advise all readers to commit these symptons to memory; to learn them as a lesson is learnt, which in after life, may be of permanent importance.—*Blackwood's Magazine.*

POWER OF A HORSE'S SCENT.—There is one perception that a horse possesses that but little attention has been paid to, and that is the powe of scent. With some horses it is as acute as with the dog; and for the benefit of those that have to drive at night, such as physicians, and others, this is invaluable. I have never known it to fail, and I have driven hundreds of miles on dark nights; and in consideration of this power of scent, this is my simple advice: never check your horse at night, but give him a free head, and you may rest assured that he will never get off the road, and will carry you expeditiously and safe. In regard to the power of scent in the horse, I once knew one of a pair that was stolen, and recovered mainly by the track being traced out by his mate, and that after he had been absent six or eight hours.—*Homestead.*

ORIGIN OF LIFE.—Starting from this point, we may fairly enquire how and by what means this earth became the "procreant cradle" of organized existences? Was it by some process of secondary causation, or directly and at once by the fiat of the Creator? Alas for the impotence of science, and the scope of our finite intelligence Science cannot even indicate the line of inquiry—our highest philosophy is the humble recognition of the fact The chemist and the physiologist may resolve the vital organism into cells, and granules, and nuclei, but here their efforts stop; they cannot endow these cells and germs with life, or cause them to assume the lowliest form of vegetable or animal existence. The "slime that mantles o'er the stagnant pool"—the simplest arrangement of cell growth that spreads over the surface of the decaying rock, are results beyond the proudest achievements of science. And even could we in any way connect these manifestations of life—lowly as they are—with the subtile agencies of heat, light and electricity, this would be only bringing us a little nearer, but not within the precincts of that mysterious shrine which science may not unveil, and before which the proudest philosophy can only humble itself and adore.—*Pages Past and Present Life of the Globe.*

WISDOM FOR WINTER.—Never go to bed with cold or damp feet.

In going into colder air, keep the mouth resolutely closed, that by compelling the air to may circuitously through the head and nose, it may become warmed before it reaches the lungs, and thus prevent those shocks and sudden chills which sequently end in pleurisy, pneumonia and other serious forms of disease.

Never stand still a moment out of doors, especially at street corners after having walked even a short distance.

Never ride near the open window of a vehicle for a single half minute, especially if it has been preceeded by a walk; valuable lives have thus been lost, or good health permanently destroyed.

Never wear india rubber boots in cold dry weather.

Those who are easily chilled on going out of doors should have some cotton batting attached to the vest or outer garment, so as to protect the space between the shoulder-blades behind, the lungs being attached to the body at that point; a little there is worth five times the amount over the chest in front.

Never begin a journey until breakfast is eaten.

After speaking, singing or preaching, in a warm room in winter, do not leave it for at least ten minutes, and even then close the mouth, put on the gloves, wrap up the neck and put on a cloak

or overcoat before passing out of the door; the neglect of these has laid many a good and useful man in a premature grave.

Never speak under a hoarseness, especially if it requires an effort, or gives a hurting or painful feeling, for it often results in a permanent loss of voice or a long life of invalidism.—*Hall's Journal of Health.*

HORSE-STEALING IN ALGERIA.—The Arab who is projecting a master-stroke, and intends selecting the handsomest out of a thousand steeds usually comes in the course of the day to inspect the bivouac, although he is obliged to make his preliminary observations from a distance—from a very considerable distance, it may be. The natives, in fact, are allowed to penetrate easily into the middle of an encampment; but they are almost always people of the neighbourhood who form part of the expeditionary columns, such as camel-drivers, herdsmen, and pack horse leaders, who have been hired for the transport of provisions. In the latter case, the Arab thief will be mistaken for one of the men employed; he will take good care that no one shall see him enter. His choice made the rogue disappears till night. In order to return to the middle of the bivouac, he habitually divests himself of every item of clothing, and retains no other arm than a well-sharpened knife in a leather sheath slung with a strap across his body. He is also provided with a long rope of camel's hair, which is twisted round his head, like a turban. As soon as he has passed the first sentries the thief is metamorphosed into a serpent; he crawls on continually, without hurry, without noise, without any perceptible rustling. With his eyes fixed on the living objects whom he wishes to avoid, he stops short if he perceives in the sentinels the slightest sign that their attention has been attracted. He will take three hours, if need be, to clear a distance of a hundred yards. At last he gets near the coveted object, the horse intended to be stolen. There, his movements are more deliberate than ever, in order not to frighten the animal, who must not be allowed, for several minutes, to perform any but very natural motions, capable of deceiving the eye of the most vigilant sentinel. At first he cuts the shackels with which the horse's fore feet are tied together, he fastens his rope to one of the horse's feet and retires, crawling all the while, as far as the length of the rope allows him. The distance between himself and the animal then varies from twelve to fifteen feet. If, during these preparations, the horse keepers appear to have heard any noise, the thief again remains motionless; the horse remaining quiet, and the sentinels resuming their former tranquility, the process of stealing is continued. The Arab slightly pulls the rope; solicited by this mute appeal, the horse rises and sets a step; but the movement is so perfectly similar to that which the animal is in the habit of making when he wants to reach a wisp of hay or a blade of grass a little way off the stake to which he is fastened, that, by night, nine sentinels out of ten would be deceived. The robber repeats the same manœuvre as long as possible. As he has carefully studied the ground, he will continue it while no alarm is given; but generally, once out of the immediate reach of the men whose duty it is to keep special watch over the stolen horse, he leaps on the animal's back, and sets off at a full gallop, well knowing that gun shots by night are only dangerous for the comrades of those who fire them. Sometimes the thief covers his entire person with leaves, but he will commit no such foolish act in a country denuded of shrubs and bushes. On naked ground, he is as naked as a snake; in a bushy country, he transforms himself into a living bush: in short, he assimilates his person to the aspect of the country he is traversing.—*All the Year Round.*

FOSSIL TREE.—Dr. Nichol gives the following particulars of a remarkable fossil plant, the impression of which upon the sandstone has just been discovered:—"Geologists, and especially those taking an interest in the coal flora of our district, may be gratified to learn that an impression of a gigantic fossil plant may be seen, exposed by the blasting of the sandstone, in a quarry between Richmond Villas and Fynone, in the immediate vicinity of Swansea. The portion of the fossil uncovered measures no less than 6 feet 3 inches in width, in the line of its flutings, and 5 feet 6 inches in height at one of its sides. Its structures, so novel and singular, does not seem to be referable to any of the known vegetable types of the carboniferous era, and there is but one form hitherto figured to which it bears any resemblance; but the specimens of this plant, which are likewise rare, measure only about an inch and a half in width.—*Welshman.*

A GIANT STONE TREE.—The Maysville (California) *Democrat* gives an account of the most gigantic vegetable petrifaction ever discovered. It was found by Captain J. Stephens in a desolate district near "Hugh Rock Cannon." It is a tree, partly buried in the soil, which measures 600 feet in length and about 60 feet in diameter. There was a complete forest of petrified trees found in the vicinity, evidently the remains of antediluvian ages. The tree lies were it fell centuries ago, the upturned roots are in the position they would naturally be, and the trunk has not been disturbed. Specimens of the tree, chipped off at 200 feet from the base, are exhibited at Maysville.

A SAGACIOUS DOG.—A celebrated surgeon named Livois, who was in the French Army took compassion on a dog whose leg had been fractured by a shot during the siege of some place or another. He set the bones, and cured him. Some time afterwards he found waiting at his door the same dog, with a companion who

had broken a leg, and whom he evidently wished to introduce to him. The surgeon cured this second dog also, and mentioned the circumstance to the Countess du C., who repeated it to me.—*Miss Knight's Autobiography.*

WONDERS IN A SPIDER'S WEB.—It was recently remarked by the *Builder* that a spider's web furnishes a better plan for the laying out of new cities than any which has yet been devised by surveyors and engineers. Anyone who can find a distinct and complete web unbroken will see how beautifully regular it is, and how perfectly adapted for the quickest passage from any one point to another. The concentric rings are not circles, but polygons, the radiating exquisitely regular and straight.

THE RIGHT OF GLEANERS IN FRANCE.—Many of the French farmers imagine that it is an act of generosity on their part to allow gleaners to enter their fields after the crops have been cleared off; but the fact is that they cannot do otherwise, as the Court of Cassation has decided that a farmer has no right to turn sheep into his own field till two days after the crops have been carried, so that the gleaners may have time to exercise their rights. Nor can the farmer legally let the gleaning to a third party for a consideration. This same jurisprudence is equally applicable to gleaning in vineyards, and any municipal regulations to the contrary would not be held valid by the tribunals.

MERIT AND SUCCESS.—Extreme popularity in this country and age appears a very arbitrary thing. I defy any person to predict *a priori* what book, or song, or play, or picture is to become the rage, to utterly transcend all competition. I believe, indeed, that there cannot be popularity, for even a short time, without some kind or degree of merit to deserve it; and in any case there is no other standard to which one can appeal, than the deliberate judgement of the mass of educated persons. If you are quite convinced that a thing is bad, which all such think good, why of course you are wrong. If you honestly think Shakspeare a fool, you are aware you must be mistaken. And so if a book, or a picture, or a play or a song, be really good, and it be brought before the public notice, you may as a general rule predict that it will attain a certain measure of success. But the inexplicable thing, the thing of which I am unable to trace the law, is extreme success. How is it that one thing shoots ahead of everything else of the same class, and without being materially better, or even materially different, leaves everything else out of sight behind. If twenty novels of nearly equal merit are published, it is not impossible that one shall dart ahead of the remaining nineteen, that it shall be found in every library, that Mr. Mudie shall announce that he has 3,250 copies of it, that it shall be the talk of every circle, its incidents set to music, its plot dramatized; that it shall count readers by thousands, while others count readers by scores; while yet one cannot really see why any of the others might not have taken its place. The will of the sovereign people has decided that so it shall be. And as likings and dislikings in most cases are things strongly felt, but impossible to account for even by the person who feels them, so it is with the enormous admiration, regard and succes which fall to the lot of many to whom popularity *is* success.—*Country Parson.*

PHSIYCAL EDUCATION.—The importance of a larger amount of physical education, and of less time devoted to purely mental training, is well emphasised by Mr. Edwin Chadwick, in papers contributed to the recent Blue Books on Education.

Mr. Chadwick states that the present practice of long hours of teaching is a wide cause of enervation predisposition to disease, and induces also habits of listlessness and dawdling. The half-time system is found to give nearly, if not quite as good education as the whole time; and common sense tells us that a boy who acquired the same amount of knowledge in half the time of another boy, must have obtained a proportionately superior habit of mental activity. It is his alertness, combined with the bodily aptitudes created by drill, that gives the comparatively stunted boys of the town a pre erence over the strong, robust lads from the coast. Good schoolmasters say that about three hours a day are as long as a bright, voluntary attention on the part of children can be secured, and that in that period may be taught as much as they can receive; all beyond the profitable limit is waste. Hence it is urged that part of the present long school hours be devoted to gymnastic exercises or drill, as part of the system of education, or that the half time system be more adopted. Drill is very strongly recommended by many eminent men, who give their testimony in these papers. It improves the health, the carriage, the manners, even the character; sharpens the attention, gives habits of obedience, promptness, regularity, and self restraint. "I should consider a youth of double value," says Mr. Whitworth, "who has had training of the nature of a drill; he attends to commands; he keeps everything he has to do with in a high state of cleanliness; defects are corrected, and special qualifications brought out." "We find the drilled men very superior," says Mr. Fairbairn. "They are constantly in readiness for the protection of the country," writes Lieut. Gen. Shaw Kennedy. "Men are frequently required," says Mr. R. Rawlinson, C. E, "to use their strength in concert, for which they must have confidence in one another. I have frequently seen trained men weed out unskilled men where heavy lifting has been required, because they dare not risk the danger arising from unskilled strength."

A Beautiful Picture.—The man who stands upon his own soil—who feels that by the laws of the land in which he lives—by the laws of civilized nations—he is the rightful and exclusive owner of the land which he tills, is by the constitution of our nature under a wholesome influence, not easily imbibed by any other source. He feels, other things being equal, more strongly than another, the character of a man who is the lord of an inanimate world. Of this great and wonderful sphere, which, fashioned by the hand of God, and upheld by his power, is rolling through the heavens, a part is his—his from the centre to the sky. It is the space on which the generation before him moved in its round of duties, and he feels himself connected by a visible link with those who follow him, and to whom he is to transmit a home. Perhaps his farm has come down to him from his fathers. They have gone to their last home; but he can trace their last footsteps over the scenes of his daily labours. The roof which shelters him was reared by those to whom he owes his being. Some interesting domestic tradition is connected with every inclosure. The favourite fruit tree was planted by the father's hand—He sported in boyhood beside the brook which still winds through the meadows. Through the fields lie the path to the village school of earlier days. He still hears from his window the voice of the Sabbath-bell which called his father to the house of God; near at hand is the spot where his parents laid down to rest, and where, when his time has come, he shall be laid by his children. These are the feelings of the owners of the soil. Words cannot paint them; gold cannot buy them; they flow out of the deepest fountains of the heart; they are the life-springs of a fresh healthy and generous national character.—*Edward Everett.*

How Weeds Multiply.—It has been calculated, at even a low average, that a single plant of the four following kinds will produce as many as 16,400 seeds, and consequently the same number of plants:

1 plant of	Dandelion	produces	2,740
1 "	Sow Thistle	"	11,040
1 "	Groundsel	"	2,080
1 "	Spurge	"	540

—seed enough to stock three acres and a-half with plants at 3 feet apart.—*Scottish Farmer.*

Death to the Bugs.—The following is said to be infallible: Take two pounds of alum, bruise it, and reduce it nearly to a powder; dissolve it in 3 quarts of boiling water, let it remain in a warm place till the alum is dissolved. The alum water is to be applied hot, by means of a brush to every joint and crevice. Brush the crevice in the floor of the skirting board if they are suspected places; whitewashing the ceiling, putting in plenty of alum, and there will be an end to their dropping from thence.

Flowers.—The body and the spirits are alike improved by the cultivation of the garden. It offers an enjoyment for which no one is too high or too low. More grows in the cottar's plot than flower's; the cultivation of pansies may tend to his heart's ease, the bed of thyme may speed a dull hour, and kind thoughts spring up while watering the clump of forget-me-nots.—Everywhere the heart of man blesses flowers: the child seeks them in the hedges, the old man finds in their culture and study soothing recreation and delight; Pagan and Christian have used them in their rites; flowers deck the bride, and are strewn on the grave. In every country they smile around us; to every grade they offer enjoyment; they give additional beauty to the new palace; they lovingly shroud the decaying ruin. Babylon had its hanging garden; Greece its roses and lilies—"Lilia mista Rosis;" and Rome its boxtrees cut into the figures of animals' ships and letters, to say nothing of its violets and crocuses.

The Best Wine Grapes.—Dr. Mosier, of Cincinnati, the vine grower and wine maker, thus writes to the *Horticulturist*—"Within the last twenty years I have had under cultivation and trial not less than thirty varieties of American grapes, for vineyard culture, and to furnish wine for the million. I think it will be a long time before we find a grape in all respect better adapted to the purpose than the Catawba. When properly cultivated and well ripened it makes a good dry wine, superior to the generality of Rhine wines, and a sparkling wine comparing favourably with the champagne of France. "For making a deep red wine, to take the place of the clarets or Bordeaux, no grape that has been tried hereabouts is equal to the hardy and prolific Norton's Virginia seedling. For choice fancy wines, of a superior grade, I would first place the Delaware, the Herbemont, the Venange, or Minor's Seedling, and the Diana, in the order named. Either of these grapes yield a wine for aroma and delicacy of flavour superior to Catawba, and in my humble judgment equal to any of the best wines Europe can produce; but as they have not as yet been tested for extensive vineyard culture, will remain some time in the hands of amateurs only."

The Beef Eaten in New York City.—It is printed in a metropolitan exchange that the Annual Cattle Statistics show the capacity of the people of New York city to swallow annually over 150,000,000 pounds of beef alone, at a cost to the butcher of at least $12,000,000.—The number of beef cattle received during 1860 was 226,747 head; the average weight, dressed, was 7 to 7¼ cwt. The average price was $8.15 per cwt., which is at least one cent per pound cheaper than in 1859, and one cent and a half less than in 1858. The total number of live stock slaughtered this year in this city was 1,107,882 head. If they were placed together compactly on a road of 15 feet in width, the mammoth drove would cover 220 miles.

FREAKS OF THE FUNGI.—The fungus is a kingly friend—a fearful foe. We like him as a mushroom. We dread him as the dry rot. He may be preying on your roses, or eating through the corks of your claret. He may get into your corn-field. A fungus has eaten up the vine in Madeira, the potato in Ireland. A fungus may creep through your castle, and leave it dust. A fungus may banquet on your fleets, and bury the payment of its feats in lime. Fungi are most at home upon holes of old trees, logs of wood, naked walls, pestilential wastes, and damp carpets, and other such things as men cast out from their own homes. They dwell also in damp wine-cellars, much to the satisfaction of the wine merchant, when they hang about the walls in black, powdery tufts, and much to his dissatisfaction when a particular species, whose exact character is unknown, first attacks the corks of his wine-bottles, destroying their texture, and at length impregnates the wine with such an unpleasant taste and odour as to render it unsaleable; more still to his dissatisfaction when another equally obscure species, after preying upon the corks, sends down branched threads into the precious liquid, and at length reduces it to a mere *caput mortuum.—Athanæum.*

TAKE CARE OF LITTLE THINGS.—The following extract contains the substance of many sermons on the importance of little things. Mr. Irving in his "Life of Washington," says that great and good man was careful of small things, bestowing attention on the minutest affairs of his household as closely as upon the most important concerns of the Republic. The editor of the Merchant's Magazine, in speaking of the fact, says:—"No man ever made a fortune, or rose to greatness in any department, without being careful of small things. As the beach is composed of grains of sand, as the ocean is made of drops of water, so the millionaire's fortune is the aggregation of the profits of single adventurers, often inconsiderable in amount. Every eminent merchant, from Girard and Astor down, has been noted for his attention to details. Few distinguished lawyers have ever practiced in the courts who were not remarkable for a similar characteristic. It was one of the peculiarities of the first Napoleon's mind. The most petty details of his household expenses, the most trivial facts relative to his troops, were, in his opinion, as worthy of his attention as the tactics of a battle, the revising of a code. Demosthenes, the world's unrivailed orator, was as anxious about his gestures or intonations as about the texture of his argument or the grandeur of his words. Before such great examples, and in the very highest walks of intellect, how contemptible the conduct of the small minds who can despise small things."

CURE FOR WOUNDED TREES.—Take two parts of cow manure, one part lime rubbish, old plaster preferred, one part of wood ashes, and one part of clay. Let these ingredients be sifted (save the clay,) spread the mortar one quarter of an inch thick over the wounded part, first cutting away the edges of the bark and the dead wood with a sharp knife, afterward sprinkle the whole with a powder of wood ashes and burnt bones.

TO PREVENT WATER PIPES FROM BURSTING—There exists so simple a mode of preventing water-pipes in houses from bursting by frost that we suspect that the plumbers must be aware of it and keep it carefully out of sight. It is to have a small spherical cistern of thin copper attached to the lower part of the water-pipe and a gas burner fixed below it. If when the frost is on the gas be lighted, the effect will be that the cistern will become a boiler on a small scale, circulating sufficient warmth through the pipes to prevent the action of the frost either in stopping the supply or in bursting the pipes.

INSTINCT OR REASON?—A spotted flycatcher had built its nest in a grape-vine trained to the wall of a house. By some chance the leaves which screened the nest had died or been removed, and the young brood were, in consequence, much distressed by the heat of the sun, increased as it would of necessity be by the reflection. The parent bird was observed fluttering for a very long time together during the hottest part of the day, so as to interpose herself between her fledgings and the sun.—*Atkinson's Sketches in Natural History.*

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