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AGRICULTURAL JOURNAL,

AND

TRANSACTIONS

OF THE

Lower Canada Agricultural Society.

VOL. 2. MONTREAL, OCTOBER, 1843. NO. 10.

We have endeavoured to persuade the friends of Canadian Agriculture how conducive it would be to its improvement and prosperity, to establish Agricultural Schools and Model Farms, under proper superintendence and management, throughout the country. We have done this from a conviction that no better plan can be adopted for the practical instruction of the rural population, and if there is a sincere desire to provide this instruction, we should not be deterred by the dread of the expense of such establishments. They would soon compensate the country generally for the first outlay. We have already submitted an outline of the plan of Model Farms—but we now copy from that excellent work, "Thaer's Practice of Agriculture," his ideas on the same subject, and they should have some weight, as he was a most successful manager of a Model Farm for many years. So far as we are capable of judging, this work of Thaer's is one of the most practical we have seen, and contains most useful information and instruction, and is well calculated to prove the advantages of "Book Farming:"

"The cultivation of the land attached to a Model Farm, or other institution for teaching practical agriculture, ought to be a pattern for agricultural practice, but it is by no means necessary that it should be perfect. It is far better that this model should be advancing towards perfection, without having yet attained it, in order the better to show the difficulties by which it is surrounded. It is also necessary that this cultivation should be carried on in the usual manner, and that it should not possess or imploy any extraordinary resources which might cause it to advance more rapidly than would otherwise be possible. It ought not to imploy in the attempt at improvement any disproportionate or an unusually large capital, nor any resources which would not be generally available. It ought neither to purchase manure from towns in the neighbourhood, nor to take too expensive means of improving the soil, such as an excessive use of the spade, the destruction of perennial crops, or anything of that kind; but the proceedings should be regulated by the strictest economy. Such an establishment ought to possess a complete collection of implements and machinery, and every arrangement necessary for the demonstration of the accessory sciences which would be taught in them. The conduct of the pupils, their intercourse with each other, and their proceedings in every respect, should be directed to the great end of the objects of the establishment; not by means of coercion, or by special rules, but by that interest and charm, which the subject itself necessarily inspires. It is in free and unrestrained conversation where the best interchange of ideas and opinions is effected, where these opinions undergo the profoundest investigation, and where they are best freed from the prejudices by which they may have been enveloped. These conversations ought to be encouraged, and rendered frequent by every possible means, for nothing would contribute more to the discovery and establishment of the truth than the opposition, not of personal feeling, but of legitimate reasoning, and which will naturally tend to a correct conclusion. As scientific education will not from its very nature admit of any external constraint, and can only be consistent with an unfettered spirit—and as it is also to be supposed that those who attend such an institution come to it of their own free will, and with the firm determination of acquiring in the most complete manner, a thorough knowledge of every thing that has relation to agriculture—constraint would be at once prejudicial and useless. On the other hand, those who come or are sent there with any other view should be removed so soon as it is perceived that they are not identifying themselves with the spirit of the institution. Nevertheless in such an establishment there must be certain, definite rules which must be strictly observed, if only to insure the general good, and for the liberty and comfort of every one. However great the advantage, and certainly these social com-

munications may forward the general object of the institution, they must not interfere with private application or diligence; and therefore each pupil should have a chamber to himself, and his retirement should be undisturbed."

We agree with Thaer that there should not be any extraordinary expenditure in the cultivation or stock, upon a Model Farm. Any experiments made should be such only as might be adopted by ordinary farmers upon their own farms. If an expensive system was to be carried on upon a Model Farm, it would be only a model that no farmer could follow out, and would be worse than useless.

The following extract from the "Farmer's Gazette"—of the 19th August, gives a deplorable picture of the state of Ireland, and its future prospects:—

That the potatoe crop is diseased to a very considerable extent, and that it is fearfully extending, there can be little doubt; the grain crops, too, from reports that have reached us, are likely to be under an average. What between the expectation of a diseased potatoe crop—an unemployed—houseless—pauper population, and a destructive, confiscating poor-rate—the prospect before us is not only gloomy—but horrific."

Under such circumstances we can scarcely imagine what is to become of the people. There is one thing in our power to do in Canada, which should not be neglected. We have been favoured this year with a most excellent crop of oats, and as the demand for this grain by distillers is not likely to be great, it should be manufactured into meal for exportation. Oatmeal will be more palatable and better food for our fellow subjects who may require it than Indian-corn meal, and will keep better on the voyage home, provided the oats are *properly* and *sufficiently* dried previous to being manufactured. We have heard of the oat-meal not keeping well on the voyage, but we are convinced that it must have been the fault, or defect in the manufacture or packing, that would cause it to heat. Oatmeal is much the better of being manufactured from oats that have been well dried, but if the covetousness of manufacturers of this article will not allow them to dry the oats sufficiently in order that it may weigh heavy, they must expect the consequence—the heating of the meal in the barrel. The meal should be sufficiently dry, and packed very closely in the barrel, and if it is, it will keep well. No doubt, if meal is attempted to be manufactured from inferior oats that have not come to perfect maturity, it cannot be good, or keep well, however much it may be dried, and such samples of oats are unfit for making meal. If these circumstances are properly attended to, we may manufacture as good oatmeal in Canada as can be found in any country on earth, and it will be more free from mixture of sand, which it is impossible to prevent, where oats are threshed as in Ireland on earthen floors.

Since writing the above, we have been favoured with a communication from our respected correspondent Rusticus, upon the subject of oatmeal, to which we most willingly give insertion. There can be no doubt that, formerly, oatmeal was extensively made use of as food by the people of England. But whether or not, oatmeal is a most excellent food, and particularly for working people. We give in this number, a table showing the amount of nutriment in oatmeal compared with wheat flour, and it appears that it is more nutritive than flour. In Ireland, farm servants scarcely ever had any other than oatmeal bread, when they had bread, and we have often been surprised that they object to make use of such bread in this country, or oatmeal in any shape. This is an objection, which is unaccountable, knowing as we do, that oatmeal is so highly prized in Ireland, Scotland, and in England also, as proved from the quantity constantly imported into that country. Oatmeal, we hope, will come into use here, and it will be the farmers' own fault if they do not bring it into use. It is a good and wholesome food, and it is absurd to object to its use.

OATMEAL, THE BEST SUBSTITUTE FOR POTATOES.

BY RUSTICUS.

Every day's experience shows more strikingly the inexpediency, nay, the impropriety, of placing the whole dependence of a community on any one crop or article of consumption.

When, two years ago, so much misery, want, distress and disease were the attendants of the famine, caused by the failure of the potato crop in Ireland, it was hardly to have been expected that the lesson so forcibly taught would so soon have been forgotten; yet it would seem that this has been the case, for as great if not a greater breadth of ground has been planted with potatoes in that unhappy country, than in '46. The peasantry, encouraged by the partial exemption from disease, of last year's crop, seem to have risked their all and their very lives on the die. In this country, potatoes were planted to a great extent, and to all appearances, the crop will prove nearly a total failure In fact, if we may judge from the reports that reach us from all parts of Canada, there is great reason to fear that next spring there will not be a sufficiency of seed, not alone for planting, but even for preserving the plant.

It is idle to waste time in suggesting causes for the disease, since commissions have been appointed and learned inquiries have been made, and yet, we are far from having arrived at even a probable guess as to its origin. Whether the disease has proceeded from the reproductive qualities of the plant having run out, owing to its having arrived at the term of its natural existence, or whether it has arisen from the influence of atmospheric changes, cannot be determined. Like its mysterious prototype the cholera, which, baffled all the skill of the medical men and stalked on its fearful path, slaying its thousands and tens of thousands without let or hindrance, till its appointed race was run,—so the potato disease seems destined to destroy that valuable esculent. The fact stares us in the face, that no cause can be assigned, and no remedy or even partial alleviation of the disease has been discovered, so that the sooner we make up our minds to the loss and set about procuring a substitute for it, the better it will be for the country. The potato was so rapidly brought into general use, that it had become an indispensable appendage of the table of luxury, while it was often the only food the poor could procure. It will be difficult, perhaps impossible, to procure any substitute to take its place at the table of the wealthy, but that is not a matter of so much importance, since equally nutritious crops can be raised by those who depended upon the potatoe for the means of subsistence. Of all the grains now grown for human food, oats are, in my opinion, the best suited to take the place of the potato in general use, not only in the Old Country but in the New World also. Under any circumstances, oats will in a few years become one of our most valuable staples; they can be grown with, at least generally speaking, a certainty of obtaining a sufficient return for the labour and capital expended. A very large quantity is now grown in Canada, but they have generally been consumed in the country. They have been seldom shipped to any extent, for being a bulky grain they have not paid well when exported in their natural state. As oatmeal, the result is very different, and a considerable quantity is now annually made in Western Canada, for if of good quality a ready market is always found for it. This fall there will probably be large shipments of oats made, as they can now be bought at a low price. The lowness of the price is caused by a diminution of the local demand. In previous years the brewers and distillers in this city, and throughout the country, consumed a very large proportion of the oats grown in this section of the Province. Indeed, this was the only available method of disposing of them at a fair price, open to the farmer, since there are few or no oatmeal mills, and as I have stated before, they are too bulky a grain to pay well as a shipment. The labours of the philanthropic Father Chiniquy have almost put a stop to the consumption by distillers. So widely has the principle of total abstinence from intoxicating liquors been adopted in the rural parishes, that the distillers and brewers cannot dispose of the products of their establishments to any thing like the extent they formerly did. No one who has the good of the country really at heart, but must rejoice at the change thus brought about. The grain consumed, perhaps destroyed would be the better word, was enormous in quantity, some large works requiring 1500 bushels a day. Thus annually a very large proportion of the produce of the

country, which will now be available for export, was sunk in the manufacture of an article, which added nothing to the general wealth of the country, but rather tended to impoverish it. Assuredly, it will be far better to export our oats in the shape of oatmeal, than to consume them ourselves in the shape of spirits of any kind. The more attention and prominence there is given to growing oats, the better it will be for the country, provided we do not neglect those other crops which can be profitably raised. The introduction into general use of oatmeal in this part of the Province would be of very material service to the inhabitants. Below Quebec, for instance, where the seasons are so late and the wheat crop is so uncertain, the loss of the potato will be very much felt, unless oatmeal comes into use among the habitants. A few years ago, the consumption of wheaten-flour in Lower Canada was very large. When the fly first attacked the crop, the potato was the only resource and now that it too proves a failure, the farmers labouring under such a combination of misfortune must fall back upon oats. Measures should be taken to encourage the people to plant oats, that the proprietors of seigniories may be induced to erect oatmeal mills. An example is already, I have heard, been set in this respect by Major Campbell, who is building a mill at his Seigniory. Oatmeal forms quite as nutritious a food as the potato, and has this advantage over that root, that it can be cooked in a variety of ways. So wholesome in fact, is oatmeal, that in the States persons whose digestion has become enfeebled, are often placed upon an oatmeal diet; the result being frequently an entire cure. In Scotland, it is well known, that oatmeal porridge and cakes are the principal food of the farming community, and a more robust and healthy set of men than the Scottish farm labourers are no where to be found. In some parts of England, oatmeal is still used, although a prejudice has prevailed against it in that country. This prejudice was fostered especially among the better classes, in a great measure by the slighting remark of the celebrated Dr. Johnson, that oats were food for horses in England, but for men in Scotland. When the Doctor, under the influence of the national prejudice, made the remark, he must have been ignorant of the fact that oats and oatmeal were very generally used in England before the introduction of the potato, which almost entirely supplanted them. In proof of this assertion, I will now quote from "The Way to get Wealth," published at London in 1637, the copy in my possession being the 5th edition. The 6th chapter of the 2nd book is wholly devoted to detailing the various methods of using oats and oatmeal then in use, and to enlarging upon "their virtues and excellencies," which the author does at considerable length. The chapter opens with the following sentence: "Oats, although they are of all manner of grain the cheapest, because of their generally being a grain of that goodness and hardness, that it will grow on any soil whatsoever, be it never so rich, or never so poor, as if nature had made it the only living companion and true friend to man; yet it is a grain of that singularity for the multiplicity of its virtues, and necessary uses for the sustenance and support of the Family, that not any other grain is to be compared with it, for if any other have equal virtue, then it wants equal value, and if equal value then it wants many degrees of equal virtue; so that joining virtue and value together, no husband, housewife or housekeeper whatsoever has so true and worthy a friend as his oats are." After this warm eulogium on the excellencies of oats, "their virtues as they accrue to cattle and creatures out of doors," are treated of at considerable length; but this I pass over for the present, as I now merely wish to show that oats were held in high favour in England, both before and at the time the work in question was issued. The following passage will be found worthy of particular attention, as it shews in how general use oatmeal then was, and how necessary it was for the maintenance and support of the people. When proceeding to treat upon the use of oatmeal for human food, our author commences with stating, "that there is no grain in our knowledge, answerable unto it for the general support of the family, for the oatmeal, which is drawn from them, being the heart and kernel of the oat, is a thing of rare price and estimation, for truth to speak, it is like salt of such a general use that without it hardly can any family be maintained." It is needless to dwell at length upon the force of the evidence here contained, of the fact, that oatmeal was in very general use at that period in England. As, however, I do not intend to rest the argument upon any isolated passage, but rather upon the whole scope and tendency of the chapter, I will now proceed to

give some of the modes of preparing oatmeal mentioned and recommended in it. After giving instruction for preparing the oats for the mill, our author states, that two kinds of oatmeal are made, which he terms "the whole gretes or kernels, and the small duste oatmeal." "The chaff or hulls," it is also said, were preserved, in order "to be given to plow horses and other cattle." "The small duste oatmeal" corresponded with our oatmeal, for, of it we are told, "are made and thickened all pottage, whether meal pottage or any thick or thin gruel, of whose goodness it is needless to speak, in that it is frequent with every experience." We learn that, "in divers countries, six several kinds of very good an wholesome bread, all finer than another, are made of it, besides thick and their own oaten cakes, which are very pleasant in taste and much esteemed." It was also used in still another way, for our author says, that when "mixed with fine wheat meal, it makes a most delicate and dainty cake, such as no Prince in the world, but may have them served on his table." I was not a little surprised to find, and I doubt not the information will be new to many of your readers, that "the chieftain of the pudding race," that peculiarly Scottish dish, the "haggas or haggees" was such an especial favourite in England, that our author thought it "vain to boast of it because, (and the reason assigned is certainly a satisfactory one), there is scarcely to be found a man *that does not affect them.*" The haggis was made of "the small duste oatmeal, mixed with blood and the liver of either sheep, calf or swine." Besides the haggis, I find that another Scottish dish was made. It is called in Scotland sowens, and is thus alluded to. "From this small oatmeal by oft steeping it in water and cleansing it, and then boiling it to a thick stiff jelly, is made that excellent dish of meat, so esteemed in the western part of the kingdom, which they call washbrew, and in Cheshire and Lancashire, flamery or flumery." In Scotland it is generally eaten with milk, in England it was "eaten with honey, wine, beer or milk." Besides the pottage, bread, cakes, puddings and flumery, which have already been noticed, still another dish was made of oatmeal called girdbrew, which is said to be "a well filling and sufficient meat, fit for servants and men of labour," but its composition is not given.

The several dishes above enumerated, were all made from the "small duste oatmeal." We now come to the whole greete or kernel oatmeal, which is sometimes mentioned as greetes, and sometimes as corn oatmeal. This larger kind of oatmeal was made by shelling the grain. It is still used in Scotland and is there called groates. The similarity of the two terms, greetes and groates, will at once strike the reader. The greetes were used in making "all sorts of puddings whether black or white." A pudding called "the Good Friday pudding," was made "of greetes, eggs, milk and suet, first boiled in a linen bag and then stript and buttered with sweet butter." The gretes were also used for the stuffing of roast geese, and our author says that when "boiled with water till they burst, and mixt with butter," they are "pleasant and wholesome." The foregoing substantiation of the fact, that oatmeal was in general use in England, previous to the introduction of the potato, and the strong recommendations of the use of oatmeal, which we have now given from the work of an old English author, derive additional value from the fact, that the failure of the potato crop has replaced us in the position that the English of 1637 occupied in that respect, and necessitated the seeking of some substitute for that esculent. The best course, that we can now take, is to revert to the use of oatmeal, and encourage the growth of oats in every possible way. But as this communication is becoming so lengthy, I will terminate it with quoting the conclusion of the chapter, from which I have drawn my information as to the use of oatmeal in England.

"And, to conclude, there is no way or purpose whatsoever, to which a man can use or employ rice, but with the same seasoning and order you may employ the whole gretes of oatmeal, and have full as good and wholesome meat, and as well tasted; so that I may as well knit up this chapter with this approbation of oatmeal, that the little charge and great benefit considered, it is the crown of the housewive's garland, and doth more grace her table and her knowledge, than all grains whatsoever; neither indeed can any family or household be well and thriftily maintained, where this is either scant or wanting. And thus much touching the nature, worth, virtues, and great necessity of oats and oatmeal."

To the Editor of the AGRICULTURAL JOURNAL.

SIR,—I noticed a paragraph, in a recent Montreal paper copied from one of its American exchanges, in which it was stated that immense numbers of the trees from which turpentine is made were dying in some parts of the States. It has occurred to me, that Canadian industry would find a wide field for employment opened up to it if the manufacture of turpentine was engaged in.

The tree from which turpentine is made, is, I understand, the white pine, which as yet is in this country, perfectly exempt from disease of any kind. Our inexhaustible (if managed with the slightest degree of prudence) pine forests have hitherto been only made available in the shape of Timber, the market for which has of late years been very uncertain. The Lumber Trade has in fact resembled a lottery, as prices have ruled alternately high and low, defying all attempts at calculation. Now that to an unusually general commercial depression is superadded the evils arising from a glutted market, and pine timber nets a price ruinous to the maker, would it not be a seasonable opportunity for some enterprising individual to commence the manufacture of turpentine on a large scale? In a small way, it is occasionally made by farmers for their own use, and the plan adopted by them in order to obtain it, is that of cutting a large hole in the tree, of sufficient capacity to contain a quart or two of the resin. There must, I should think, be some other way of obtaining it, less detrimental to the tree, but if this has been the method adopted in the States, it is no wonder that the trees have succumbed beneath the annual drain. The turpentine is, I imagine, the sap or at least is made from the sap, which is essential to the vitality of the tree. The sap holds the same place in the vegetable economy, that blood does in the animal system. If, then, you annually tap or bleed the tree, you cause a deficiency of the circulating fluid, and the tree languishes or dies. A tree (and this applies with equal force to the sugar maple) may remain in a healthy state, although a considerable portion of the sap has been drained off, if it is allowed an occasional period of intermission. If the trees, which are subjected to the tapping process, are every two or three years allowed a breathing time, they will be much more likely to remain vigorous and healthy. There is great reason to fear that the maple trees will become unhealthy, if the present system of annual tapping is persevered in. The annual wounding of the tree must be injurious to it, and to obviate that, I have seen root-tapping proposed, but do not know whether it answers well,—perhaps you can enlighten your readers on the subject. As you justly remark, it is highly desirable to augment our exportable produce, and these hints are thrown out for the purpose of drawing the attention of practical men to the consideration of the subjects glanced at. With our extensive Forests, we might, with any reasonable system of management, supplying the world with timber, and produce sugar enough for our own consumption, and turpentine for consumption and export. Every day furnishes more convincing proof, that we must rely on our own energy and exertions if we expect to prosper as a country. The last remnant of protection will in all probability soon be taken from us, and we will then have a fair field and no favour. The natural capabilities of Canada are vast; it possesses all the elements of prosperity within itself. A rich and fertile soil, valuable forests, mines of iron, copper, lead and other metals, are a few of the advantages we possess in the shape of natural wealth, while the grand chain of inland lakes, connected by large canals, afford every facility for the conveyance of our productions to the shipping port. A prosperous future is before us, if we but use our advantages as we ought, but it should not be forgotten in looking forward to that future, that the interests of all classes of society are indissolubly connected with those of the Farmer; and that one of the main elements of our prosperity will consist in the augmentation of our agricultural productions—There should be no class feeling on this subject, but it should be the aim of all to promote the intelligence and comfort of the farming community, for we may rest assured that their prosperity or adversity will be shared in by all.

Yours, &c.

RUSTICUS.

Montreal, August, 1848.

We have another communication from Rusticus, on dairy management, which shall appear in a future number, as well as some other communications from other correspondents.

HINTS TO GROWERS OF FRUIT.

The following hints as to the causes of fruitfulness amongst fruit-bearing trees will be useful to the fruit-culturist. Whatever tends to a rapid circulation of the sap, and to increase the growth of a tree, causes also the formation of leaf buds instead of flower buds. On the contrary, whatever tends to an accumulation of sap in any part, or to retard its circulation, induces the production of flower instead of leaf buds. When trees are young, and the bark and wood soft and flexible, the sap flows freely and without check; hence, leaf buds and the vigorous growth of branches are the result; but as trees become older, and the bark and other parts more rigid, they appear to offer more resistance to a free circulation, hence the production of flowers and consequent fruitfulness of the tree. This principle enables us to apply artificial means at pleasure for the promotion of the same objects. When trees are young and small, a rapid growth and attainment of size is desirable, which is given by enriching the ground, and thorough and constant cultivation. A neglect of these operations would check free growth and circulation, and cause the tree to bear. This would, however, be at the expense of the future vigour and size of the tree, and of the size and excellence of the fruit. Indeed, it often happens, that with the best treatment, trees will bear as young as their ultimate success requires. There are, however, some varieties, which, in rich soil, continue growing a long time in an unproductive state. Fruitfulness is caused in various ways. 1. By neglecting cultivation, or suffering grass to grow under them, which diminishes their growth. 2. Pruning the roots beneath the surface, by cutting off a part of the larger ones, causing the same result. 3. Ringing the branches, or removing a small ring of bark round them, which prevents the fluids from flowing back or downwards, and consequently induces their accumulation, to the formation of flower buds. 4. Bending the branches downwards, causing a similar accumulation with the like result 5. Grafting on dissimilar stocks, which prevents a free flow of sap and juices at the point of junction. *First*—Suffering grass to grow among trees, though beneficial in some very rare instances, is not on the whole advisable. The loss in the quality of the fruit is too great, and is not balanced by the advantages. The complaint of unfruitfulness has been more frequently applied to the pear; but a selection of many new sorts, originated in the present century, and which bear while yet very young, entirely obviates the difficulty. *Second*—Pruning the roots is of recent invention, and in some instances has proved eminently successful.—*Third*—Ringing the branches is effected by taking out a narrow ring of bark, extending round the branch. By obstructing the downward descent of the juices, and by their accumulation above the ring, it not only causes fruitfulness, but frequently alters the appearance and quality of the fruit. In some cases, it has doubled the size; in others, it has brightened the colours. In the Court Pendu apple, the colours are changed from green and dull red, to brilliant yellow and scarlet. But Lindley says, "If performed extensively upon a tree, it is apt, if not to kill it, to render it incurably unhealthy; for if the rings are not sufficiently wide to cut off all communication with the upper and lower lips of the wound, they produce little effect, and if they are, they are difficult to heal. For these reasons, the operation is but little employed." *Fourth*—Bending the branches downwards, by changing their natural position, as well as causing a partial obstruction where bent, is said eminently to promote their fruitfulness. In all these modes, it must be remembered that the desired result will not be produced at once, as the first year is occupied in the formation of flower buds; and the next in their growth into fruit. This delay, however, will not take place, where the difficulty consists merely in the fruit not setting, the buds being already formed. *Fifth*—The influence of the stock, when it differs in nature from the graft, is often of importance. The more widely they differ, the greater will be the effect. Thus, when pears grow upon pears, the effect is the same as when not grafted at all. But pears on quinces are attended with an increase of fertility. Hence the quince stock is adopted for some otherwise sterile varieties. Such trees, however, are short lived. These artificial modes of inducing fruitfulness are not to be recommended for general practice. It is true that trees will yield fruit sooner; but heavy crops from young trees are not desirable, as stunting the tree, and inferior fruits are often the consequence. Let them grow freely for a few years, and the amount ultimately obtained from them will be the greater. Indeed the period of fruitfulness is often hastened by cultivation, and retarded by neglect. Except for the sake of experiment, the preceding modes are not to be applied until trees are large, when most varieties

will bear sufficiently without them. When fruit is thick upon the branches, both size and flavour are diminished. Many kinds are rendered nearly worthless by overbearing. It is often observed, that early apples and peaches, remaining last on the tree, are much more delicious than the earlier portions which ripened on crowded limbs. With some varieties, the effect of productiveness is so great as wholly to alter the character. A tree of the heath cling, before unknown to the person who raised it, bore the first year a very abundant crop; and the fruit, which had been recommended as of great size and excellence, was small, green, with only a disagreeable, bitter state. In the warmer and longer summer of the following year, the fruit, which had been thinned by the frost, was three inches in diameter, very handsome, and of sweet and excellent flavour. The importance of understanding these influences, before deciding on the quality of a new fruit, is hence at once evident. The advantages of pruning are to be ascribed in part to the same cause.—*Thomas's Fruit Culturist.*

THE MANAGEMENT OF HEDGES.

We have heard objections stated to beeches being mixed with thorns, on the ground that, from retaining their brown leaves till Spring, they had an unsightly sombre appearance during the Winter. This may be particularly objectionable to people of very refined taste, or peculiar fancies, who cannot look upon anything but evergreens; but we hold that the very objection is a qualification of no small moment; as any one at all conversant with country matters can vouch for the great amount of shelter afforded by a close well-kept hedge of half beech half thorn, during Winter, compared with one composed entirely of thorns. On all thin soils particularly, the planting of beeches should never be omitted, at least one of beech and two of thorn, if not plant about. We have invariably observed, that, when the thorn plants became stunted, and were covered with moss to the tops, the beech would be most healthy, and sending forth shoots of the greatest apparent luxuriance, completely hiding the other plants from the casual observer, and forming a thorough fence which, had it been composed of thorns alone, would have been sickly and useless. A mixture of hornbeams will grow equally well as beech, on thin cold soils, but, from their creeping nature, are particulaly objectionable; for, if not kept in check, they will soon overrun a whole field, by sending up shoots from the roots, and the lowest branches also taking hold of the ground, if allowed to come in contact with it. Not so with the beech, however; for, with one strong parent stem, the well-feathered branches, lying close to the ground, preclude the possibility of any weeds or foulness getting up; so that the ground beneath is always bare and clean, and from the large quantity of leaves annually deposited there, its fertility is also kept up. The plants for a hedge—of whatever description—should never be taken from a nursery in a dry, early situation, to a late, cold, exposed one, but *vice versa*, if possible; and if that cannot be done, they should be removed from the nursery, and transplanted for a twelvemonth in the situation where the hedge is to be made, so that they may be naturalised with it.

The cutting of hedges is a very particular operation, and when done as it ought to be, by a master hand, is perhaps one of the greatest ornaments which can adorn a rural neighbourhood. There are, however, many who attempt it, perfect tyros in the art, and who, from want of proper tuition in the early part of their lives, never will be proficients, let their practice be ever so extensive; like all other trades, if not acquired in youth, it is seldom if ever afterwards.—The switching, as it is termed—that is annual cutting—is not a difficult matter; at least, where the hedge has formerly been properly shaped, close cutting to the old form being all that is necessary. That, however, must be rigidly adhered to, or the hedge will soon become loose and unmanageable; and, where such is the case, the only remedy is cutting close into the stems, and forming it anew,—which should be about three feet wide at the bottom, and sloping gently on both sides, terminate with a sharp point at a given height, two and a-half, three, or four feet high, as the case may be. The most difficult part is the proper cutting of old overgrown irregular hedges. We have often seen this operation performed in the most slovenly style, by cutting the plants downwards, splitting the stems to the very root, and leaving them in the most zig-zag state imaginable.—We have long been of opinion that premiums might be well disposed of, to the most proficient in the art, and cannot see why the principles of any one, famous in the trade, should not be quoted, the same as Mechi, Parkes, Smith, &c., in the art

of draining. It is a great error, although a very common practice with many, to cut over hedges during severe frost. It no doubt is a time—if protracted—when the farmer may have difficulty in finding work for his servants, or those employed by him, without having recourse to such. It will be found, however, that they had better be idle altogether than doing mischief; as we have seen hedges not recover the treatment for the next half-dozen years, and for two or three at first, it was difficult to know whether their vitality had not entirely fled. The best season for the operation is in the opening Spring, when the sap is ascending; the young shoots will then be vigorous, and often attain a height of four feet, with a corresponding thickness, in one season.

We have often seen much annoyance occasioned by a decay in hedges on light soils, and have heard it frequently erroneously attributed to the effects of lightning; but these blanks, which too often meet the eye, proceed from a very different cause. One plant becomes affected in the midst of a thriving hedge,—it ultimately dies, is removed, and the blank filled up with young plants of thorn or beech.—These grow away with vigour, but the latent seeds of disease have already taken hold of the old plants right and left of the one removed, and gradually but surely work their way, adding, yearly, two or three plants to the number on each side. We are of opinion the disease is canker, produced by fungi on the roots, as it seldom occurs in good alluvial soils, or even in clays, but in in different subsoils of pernicious sands. Foulness, and the want of sufficient supply of moisture, we hold to be the primary cause, as the plants invariably die during the heat of the Summer months. It is very annoying to see a fine hedge destroyed in this manner; and we are of opinion, that the only way to cut off the evil is to go several yards in advance of the disease, grub out the plants, however healthy they may appear to be, remove the soil in which they have grown, and supply fresh mould, free of contamination. By such means the consumption may be averted, whereas, by the usual method of removing the plants after they are dead—we can speak from experience—it never can. In all such soils, the necessity of cleaning and manuring is very great, in order to preserve hedges from decay.—*The Ayrshire Agriculturist.*

MANAGEMENT OF CALVES.

Every farmer within the suckling district for the supply of veal to London, keeps from six cows to upwards of a dozen, and employs all their milk in the feeding and fattening of calves. He sell cows which cease to give milk, and buys others which are far advanced in pregnancy; and thus contrives to have a constant and nearly uniform flow of milk. If his cow-house be single, it is fitted up with a range of calf-pens behind the cows; and if it be double, it is occupied with pens, from end to end, along the middle. The pens are boarded enclosures, merely large enough to allow the calves to turn themselves, four feet high, floored with pierced boards, raised at least one foot above the earthen floor, and provided with a small box or manger, to contain some chalk as a remedy against fever. The stages used in Gloucester for pail-fed calves are pronounced, by Mr. Marshall, to be of "an admirable construction," and described as follows: "The house or room-stead in which a stage is placed measures twelve feet by eight. Four feet of its width are occupied by the stage, and one foot by a trough placed on its front, leaving three feet as a gangway, into the middle of which the door opens. The floor of the stage is formed of laths, about two inches square, lying lenghtway of the stage, and one inch asunder. The front fence is of staves, an inch and a-half in diameter, nine inches from middle to middle, and three feet high; entered at the bottom into the front bearer of the floor (from which cross joists pass into the back wall), and steadied at the top by a rail, which as well as the bottom piece, is entered at each end into the end wall. The holes in the upper rail are wide enough to permit the staves to be lifted up and taken out, to give admission to the calves, one of which is fastened to every second stave, by means of two rings of iron joined by a swivel, one ring playing upon the stave, the other receiving a broad leather collar, buckled around the neck of the calf. The trough is for barley-meal, chalk, &c., and to rest the pails on. Two calves drink out of one pail, putting their heads through between the staves.

The best method of treating a calf, with the view of fattening it, is to feed it entirely on milk fresh from the cow, either by allowing itself to suck her, or by drawing off the milk and administering it in a pail. The allowing of the calves to suck was at one time the general me-

thod and is still the prevailing practice of some districts; and it is frequently vindicated on the ground of its causing a free secretion of saliva, and, in consequence, occasioning a readier digestion and a more rapid growth. But the abundant secretion of saliva can easily be promoted, in the pail-feeding method, by placing an artificial teat in the calf's mouth, while feeding, and by preventing him from taking up the milk with unnatural haste. The fixing a piece of clean leather, about three inches in length, to the bottom of the pail, the placing of the dairyman's finger in the calf's mouth, or any other similar contrivance to act in the manner of a teat, will cause a perfect and sufficient flow of saliva simultaneously with feeding; and by keeping a lump of chalk constantly within the animal's reach, he will, at all times, by licking it, be induced to swallow much saliva, which would otherwise drop from his mouth and be lost. Even though the sucking method were considerably the best for the calf, it acts very injuriously on the lactiferousness of the cow, and occasions a great ultimate loss. A good cow yields more milk than can be consumed by a young calf, and she soon becomes so fond of the calf, that she will not yield her milk to the dairymaid; and, unless her udder be completely emptied at every milking, she suffers a gradual diminution in the lactic secretion, and will necessarily and somewhat rapidly yield less and less till she becomes quite dry. But, in the pail-feeding method, every cow is made to produce milk as amply and prolongedly as possible; every calf receives enough of milk for its sustenance, and no more. A feeble calf does not occasion a dimunition of milk in one cow, and a strong calf can be fed partially or wholly with the milk of a second cow; and any calf, reared for stock, may be weaned by degrees, or have other food slowly and increasingly substituted for milk, so as to prevent injury to its stomach from a too sudden change of food.

A singular practice, which prevails in some great suckling districts, renders the first stage of pail-feeding somewhat critical. Multitudes of calves, which are fed and fattened in the suckling districts, are brought to them, by professional calf-dealers, from the dairy districts; and the animals are, in many instances, carried from so great a distance, and in so injurious a manner, as to be half-dead on their arrival. They are conveyed on flat, shallow carts, three or four tied together, with their heads hanging over, and their stomachs, for whole days, unrefreshed with food or drink, and, when they arrive, some die, and most require to be carefully nursed, and very gently treated. "If they are allowed to satisfy their appetite at first," says Mr. Rham, "they invariably *scour*, that is, purge violently, and die. If the strong astringent medicine, sold in the shops for the scouring in calves, is given to them in this weak state, it only accelerates their death. The best remedy is to boil the milk for them, and give them little at first; to mix some starch or arrow-root with it, and to give them a raw egg beat up in milk. This restores the strength of the stomach, and generally cures them. When the calf begins to thrive on the milk which he sucks, or which is given him warm from the cow, nothing more is necessary than to keep him extremely clean and dry, to give him plenty of air, but not too much light, and never to disturb him between his meals."

Some calf-suckling farmers give two meals of milk in the day, and others give three. Some give the milk sparingly at first, in order to whet the appetite, and prevent a loathing of food; and others give a plentiful supply from first to last, and merely use care not to allow a surfeit. Some, in order to produce superior flesh and a high degree of fattening, feed the young calves on the first drawn milk, which contains a larger proportion of serum than the last-drawn milk, and feed the more advanced calves increasingly on the last-drawn milk, till they receive, for a time, that of two or even three cows; and a few, in order to prevent scouring, and economize the profits of feeding, feed all calves on artificially heated milk, and rear calves on heated milk deprived of its cream. An extraordinary instance of the latter, in the vale of Gloucester, is mentioned by Mr. Marshall:— "In the practice of the first breeder in the vale," says he, "the milk was given to the calves scalding hot,—as hot as the dairy girl could bear her hand in it. The lips of the calves were not unfrequently injured by it. His reasons for this practice were, that the heat of the milk prevented the calves from scouring, made them thrive, and enabled him to put his rearing calves to skim milk, immediately from their being taken from the cow, or at most two or three days old. They never tasted 'best milk,' after they were taken from the teat at that age."

Some calf-feeders mix eggs with the milk given to advanced fattening calves, others mix meal with it, and others try different though

similar methods of increasing the amount of assimilated nourishment; and not a few, when milk is scarce, give wholly or partially, as substitutes for it, a mixture of warm milk and meal and water, a mixture of linseed jelly, hot water, and hot milk, a mixture of powdered oil-cake and warm milk, or even so monstrous a medicament as balls of meal and water with a little gin. But all such artificial methods are at once unnatural to the animal's habits, deteriorating to its flesh, and unprofitable to the owner. Whenever thoroughly good milk is not quite abundant, some of the largest and best fattened calves ought immediately to be sold, and all the rest fully fed on milk. "The whole secret of fattening calves for veal," says Mr. Aiton, "is to give them, after they are three or four weeks old, abundance of milk; keep plenty of dry litter under them in their stalls, let them have the benefit of good air, moderate warmth, and be nearly in the dark."

Calves acquire the condition of prime veal in the course of from eight to twelve weeks, or, on the average, in about ten weeks. A good fattened calf usually weighs from 17 to 20 stones, of 8lbs. each, and usually sells, in Smithfield market, at about 4s 6d per stone. Yet the largest and heaviest does not always fetch the most money; for a calf of 14 or 15 stones, if of the proper age and thoroughly fat, often sells for a shilling or two more per stone than a calf of from 20 to 30 stones. Some farmers, however, are of opinion that, as a calf grows and fattens faster and requires less milk, after ten weeks of age than before, one calf of 25 stones will really yield a larger clear profit than two calves of each 15 stones; especially as the former case involves only one prime cost and one sale commission, while the latter involves two prime costs and two sale commissions. But both the absolute and the comparative profits are greatly modified by the manner of feeding, the distances from market, and the particular breed to which the fattened calves belong. The profits in the vale of Strathaven are far superior to those of the Liverpool and the London districts; and they appear to be effected, partly by the quality of the breed, and chiefly by the method of fattening; the profits of the hither side of the London district are necessarily greater than those of the further side; and the profits of a breed, which produces whiteness as well as firmness in the veal, are always greater than those of inferior breeds, —butchers always giving the best price for the white flesh, and being in the habit of judging of the colour from the inspection of the interior of the mouth and the white of the eyes.

When calves are intended to be reared as stock, all males which are not well formed, and all females which have not a broad pelvis, and a perfect udder and teats, ought to be rejected; and, at the end of a month, all the selected males, not designed to be reared as bulls, ought to be castrated.—Wherever milk is in low request for the market or the dairy, all calves will be reared in the best possible manner by being allowed to run, during a year, with their dams; but wherever milk is valuable, they must be sooner or later weaned,—in some districts at the end of a few days, and in others, at the end of a few weeks,—yet they ought in all circumstances, to suck the dam till her milk becomes fit for the dairy, and afterwards to receive as much congenial nourishment as if they were allowed to grow up by sucking.—A cow's milk is the natural provision for the rearing of a calf, and contains a large proportion of highly nutrient principles; and any calf which is not reared, either on the milk itself or on food similarly and equally nutritive, is certain to become an ill thriven and ungainly adult. A common method, in districts where milk is but of moderate value, is, for about a month, to feed the calf wholly with the cow's milk from a pail; for another month, to withhold a portion of the milk, and substitute linseed or thin watergruel; for the third month, to substitute a portion of skimmed milk for the cow's milk; for the fourth month, to substitute skimmed milk wholly for the cow's milk and after the close of the fourth month, to feed wholly on the most tender kinds of herbage, or other provender adapted to the general stock. But, in districts where milk is highly valuable substitutes for a portion of it must be early and constantly given; and, among the most approved of these, are watergruel, hay-tea, linseed jelly, turnips sliced in skim milk, and turnips and carrots boiled with cut hay and given warm. The treatment of calves, subsequent to weaning, necessarily depends on the nature of the farm: or the particular kinds of food which it supplies.—*Rural Cyclopedia.*

Dairy Shelves.—For Dairy Shelves, slates have been found to be much the best material. Fishmongers find that slate preserves fish 24 hours longer than marble.

AGRICULTURAL CHEMISTRY.

In all attempts to acquire a knowledge of any science, it is perhaps the best to commence our inquiries as if we were entirely ignorant of the subject. Let us therefore suppose, that a native of the arctic regions, or of some other district, where vegetation is equally unknown, was brought into into a field of corn, and shewn, for the first time, a growing crop of wheat;—and further imagine that he began to inquire into the chemistry which belongs to the phenomena of this, to him, novel vegetation;—what would be, under these circumstances, the probable result of his observations, enquiries, and easily-performed experiments? and to what conclusions would these reasonably lead him?

In the first place, he would be speedily led to suspect, and his suspicious would soon ripen into certainty, as he proceeded with his observations, that the plant of wheat, originating from a seed, and by a mysterious and wonderfully-arranged system of evident contrivances, all adapted, not only to the present, but to the *future* circumstances in which it would be hereafter placed, finally attaining to maturity, and producing other seeds, like that which originated the plant, and possessing the same power of reproducing other plants; these, and similar facts, would, I say, speedily lead him to the conviction, that the hand of some great, some Divine Architect, was clearly apparent in its construction. By no arguments, however apparently learned or pausible, would he be led to believe, after observing some of the mysteries of vegetation, that the plant of wheat was placed there instead of a lump of clay, or a block of marble or ice, by mere chance.

But further let us suppose, that such a discoverer of a growing plant began to examine some of its chemical properties; what experiments could he make, without much difficulty, to increase his knowledge of its composition, its habits, and its food?—He would observe, amongst other things, that the plant upon being separated from the soil, speedily died; that when it was burnt, earthy and saline ashes only remained. Earth and salts, then, he would perceive, were necessary to the growth of a plant, for they not only mechanically supported the growing plant, but they entered into its very composition. Upon continuing his observations, he would as readily find that a plant would not grow, even in earth, without a certain portion of heat, for that all vegetation ceased at the freezing point of water; that the plant lost it colour when deprived of light, and died when moisture and air were withheld from it. Hence a few of the primary results to which such an enquirer would readily arrive, are apparent; he would be convinced that earth, salts, air, (the gases of the chemist), water heat and light are all essential to the perfect vegetation of a plant.—Now in furtherance of these conclusions, and to increase our knowledge on these heads, let us proceed to examine these primary observations more in detail, and they will therefore be the subject of the following sections.

And let me here remark, that if, in following me through the following pages, the young farmer should meet with a chemical term which he does not exactly comprehend, he will find an attempt at an explanation of it, by referring to the brief notes at the end of this little volume. Each section will be preceded by a few questions and answers, relating to the facts of which it treats; and these, in schools, it might perhaps be well to commit to memory before proceeding to the notes and subsequent observations.

HEAT—LIGHT—GRAVITY.

Does heat or caloric influence the vegetation of plants?—Very essentially. Without the presence of heat, plants could not vegetate; their sap would become solid, all their fluids remain in the state of ice.

What effect has heat upon the natural habits of plants?—It influences their susceptibility. Plants exposed to high temperatures are but slowly effected by an increase of heat; those which are subjected to a very low temperature have their sap set in motion by a very inferior increase of the temperature of the atmosphere in which they are placed.

What is the effect of elevation in the vegetable productions of a country?—The same effect as an alteration in the latitude of a district. As we ascend from the sea shore to the highest elevations, the same plants gradually make their appearance, as, by only slower degrees, present themselves when we travel from the equator to the poles.

What effect do extensive plantations, forests, &c. produce upon the temperature of a district?—They render a country colder; they retard the escape of the drainage waters; they supply an extensive evaporation in summer,—and all evaporation carries off heat.

What effect does heat produce upon animals?—Its presence is as essential for the existence of animals as vegetables. Animals, however, can withstand greater extremes of temperature than vegetables. For man can exist in rooms whose temperature is raised to 222° Fahrenheit, or the boiling point of water. In travelling towards the poles, we find the natives of the arctic regions inhabiting a land of ice and snow, where vegetation is nearly, if not quite, unknown.

What effects have different degrees of heat been noticed to produce upon live stock?—It has been found that the lower the temperature in which animals are placed, the greater is the proportion of food they consume. And it has been determined that by an increased consumption of food, the temperature of their bodies is increased.

What effect has light upon vegetation?—It is the cause of the green colour of plants. A growing plant placed for some time in the dark loses its colour; a fact well known to every gardener.

It influences their absorption and emission of the gases of the atmosphere, and even varies their chemical composition.

What effect has gravity or attraction upon plants?—It has a very material influence, not only in causing the chemical combination of their essential constituents, but it is probable from the experiments of the late Mr. Knight, that they owe the peculiar direction of their roots and branches almost entirely to this property of matter.

It is a correct conclusion of the farmer, that the grass and hay of water-meadows is not so nutritious as that of permanent pasture lands. The difference, however, is not so great as is commonly supposed. The late Mr. George Sinclair determined this experimentally, and he is no mean authority with regard to all that relates to the grasses. He obtained from the rye-grass (*Lolium perene*), at the time of flowering, taken from a water-meadow that had been fed off with sheep till the end of April, of nutritive matter, 72 grains; and from the same weight of this grass, taken from a rich old pasture which had been shut up for hay about the same time, 92 grains. From the same grass from the meadow, that had not been depastured in the spring, 100 grains; and from the same grass, from the pasture which had not been fed off, 120 grains. All the grasses, in fact, when their growth is forced by the application of either liquid or solid manures, are found to contain nutritive matter in diminished quantities. This, too, was determined by Mr. Sinclair. From four ounces of a very rankly luxuriant patch of rye-grass, on which a large proportion of cow-dung had been deposited, he obtained of nutritive matter 72 grains from the same quantity of the same grass, growing on the soil which surrounded this luxuriant patch, he obtained 122 grains. And in a second trial, the same species of grass, on a soil entirely destitute of manure, afforded of nutritive matter 95 grains. On the same soil, excessively manured, the grass afforded only 50 grains. In these experiments, the plants were of the same age, and were examined at the same stage of their growth.—(*Hortus. Gram.* 384.)

Remedy for a Cow giving Bloody Milk.—Bleed the cow pretty freely, and give from a pound to a pound and a half, according to her size and strength, of Epsom salts, dissolved in warm water; wash and foment the udder with lukewarm water, and milk her three or four times a day very gently, and rub thoroughly into the udder, after the morning and evening milking, the following ointment:—Rub down one ounce of camphor in about half a wineglassful of spirits of wine, and add to it half a pound of elder ointment, wash this off before milking, with a sponge and some warm water and soap. If a change does not take place for the better in a day or two, you must add to the above ointment half a pound of mercurial ointment.

The Pea and Bean Crops: their value in a rotation.—We have already given, at p. 261, the analysis of the ashes of these crops by Professor Way; and the same able chemist has (J. R. A. S., vol. viii., p. 202) given the amount of inorganic substances commonly withdrawn from the soil per acre by these crops, as follows, calculating the pea and bean seed to be each one ton, the pea straw 2,989 lbs., bean straw 2,270 lbs.—all being grown on clay soil:—

	Peas.	Beans.	P. straw	B. straw
Silica	0.42	0.22	4.62	2.95
Phosphoric acid	14.43	15 23	2.93	0.55
Sulphuric acid	2.93	1.62	5.38	1.58
Lime	2.28	2.75	86.80	22.25
Magnesia	3.48	3.66	13.62	2.85
Perox. of iron	—	—	1.74	0.69
Potash	20.75	27.40	30.18	36.96
Soda	2.51	0.20	0.57	3.13
Common salt	2.15	—	23.00	13.88

Several matters suggest themselves from the result of this analysis, as being explanatory of the advantages of growing beans on certain soils, and before wheat. "A crop of peas," says Professor Way, "will require more lime and magnesia, but less alkali, than beans. Peas, therefore, should flourish on a light calcareous soil—beans on stiff clay. The trifling quantity of alkali removed in these crops is the all-important point. A crop of wheat is in no way more exhausting to the soil than in requiring a great quantity of silica, which peas and beans do not want." Thus there is removed by a crop of wheat per acre (estimating the seed at 28 bushels, at 61 lbs., and the straw and chaff to be 2,109 lbs.) (*Jour. R. A. S.*, vol., vii., p. 674)—

	Seed.			Straw.		
Silica	1 lb.	0 oz.	6.10	83 lbs.	8	oz.
Phosphoric acid	12	13		7	3	
Sulphuric acid	0	1	5.10	3	12	
Lime	1	0	3.10	7	1	
Magnesia	3	8	3.10	2	13	
Perox. of iron	0	3	6.10	0	10	
Potash	8	15		13	15	
Soda	0	12	3.18	0	13	

Beans, indeed, are known to be a good preparation for wheat, and they seem to follow it with equal advantage. "It appears to us," adds the Professor, "that this may in a great measure be due to the alkali contained in beans. In explaining the benefits of rotations on chemical principles, it is usual to say that one crop may follow another with advantage, because it requires a different kind of mineral food. That is, a plant which contains but little alkali would best precede or follow one that drew largely upon the soil for potash. This, no doubt, is true; but something more may be added to this statement. One crop may really not only dispense with mineral nourishment required by another, and therefore leave it for the benefit of its successor, but it may be active in the preparation of such food for the following crop. This, we believe, is the case with beans in reference to wheat or barley. A crop

of beans or peas requires nearly as much phosphoric acid, and a great deal more potash, than wheat; but it must be remembered that the potash of clay soils exists in them as silicate of potash, derived from the felspar, &c., of the disintegrated rocks, to which the clay owes its origin. The silicate of potash, in felspar is composed of silica and potash in tolerably equal quantity; but a crop of wheat takes off 83 parts of silica for every 14 parts of potash; so that, to obtain all the silica it requires, it liberates more potash than it has any need of. A crop of beans just reverses this process. It removes from the soil 70 parts of alkali for every 5 parts of silica. It is then almost indifferent which of the plants comes first. The one which follows in the rotation finds potash (if it be beans) or silica (if wheat) ready prepared for it. We incline to the conclusion that this may in great part be the reason why wheat and beans follow each other without either appearing to suffer from exhaustion produced by the crop preceding it. It will be seen that, weight for weight, beans require more potash both in the straw and grain. This is partly, perhaps the reason that they thrive on stiffer land than is necessary for peas." It is also worthy of notice that, in other crops which are so advantageously followed by wheat, the same excess of potash and deficiency of silica is found.—*Farmer's Magazine.*

In considering animal power, the farmer will naturally revert to the plough. Here, in all our enquiries, the chief questions which present themselves are—1st, the extent of the resisting power of the soil, or its *firmness;* 2nd, its adhesive power to the surface of the implement; 3rd, its surface draught—that is, the draught which the plough requires in merely passing over the surface of the ground, or along an empty furrow; and, 4th, the whole draught which the plough requires in turning over the ground The "firmness" in the second column of the following table, indicates the weight required to force into dry specimens of the earth a light blunt spade, of steel, 1-36 part of an inch in thickness, and 1-3rd of an inch broad, (*Jour. R. A. S.*, vol. i., p. 188).

Kinds of earth....	In the dry state. Firmness; that of clay being 100.	In the wet state. Adhesion to Implements, on a surface of one square foot; with iron.	wood.
Siliceous sand.....	0	3.8 lbs.	4.3 lbs.
Calcareous sand.....	0	4 1	4.4
Gypsum powder.....	7.3	10.7	11.8
Sandy clay.....	57.3	7.9	8 9
Loamy clay.....	68.8	10.6	11.4
Stiff clay, or brick-earth.....	83.3	17.2	18 9
Grey pure clay.....	100.0	27.0	29.2
Garden-mould.....	7.6	6.4	7.5
Arable soil.....	23.0	5.8	6.4
Slaty Marl.....	23.0	4.9	5.5

In some trials of Mr. Pusey, (*Jour. R. A. S*, vol. i, p. 230) the *surface* draught of various ploughs was found to be—

	stones.		stones.
Ferguson's swing, weighing	15	draught	12
Clark's swing..... "	15	"	12
Hart's wheel..... "	12	"	8
F. F. wheel..... "	13½	"	8
F. F. swing..... "	10½	"	10
King's swing..... "	8	"	8
King's wheel..... "	10	"	6
Old Berk's wheel. "	0	"	8
Rutland wheel..... "	15	"	8

That this surface draught, as we have elsewere remarked, (*Modern Agri. Improvements*, p. 41), should bear so considerable a proportion to the whole task of the horse is remarkable; for, after deducting this surface draught, there remained, in ploughing a furrow on a sandy field at Hatford, 9 in. broad by 5 in. in depth, only the following amount of draught:—

Ferguson's.....	7	stones.
Clarke's.....	5	"
Hart's.....	9	"
F. F. wheel.....	5	"
F. F.....	6	"
King's swing.....	7	"
King's wheel.....	12	"
Rutland	8	"
Old Berkshire.....	13	"

The young farmer must not suppose that the amount of the draught increases in exact proportion with the depth and breadth of the furrow. In several trials made with various ploughs, at different depths, the following results (in stones) were obtained on a free, brown, loamy sand:—

Ploughs.	Furrows. 4 by 9	5 by 9	6 by 9	7 by 9
Ferguson's Scotch swing...	18	19	19	22
Clarke's ditto.....	17	17	18	21
Hart's 1 wheel.....	11	12	16	18
F. F. Ransome's 2 wheels..	12	13	18	21
F. F. Ransome's swing.....	16	16	18	21
King's swing.....	15	15	18	20
King's 1 wheel.....	16	17	21	23
Rutland, N. S., 2 wheels...	16	16	18	20
Old Berks,.....	21	21	24	31

It appears, from Mr Spackman's work on the "Occupation of the People" that the annual agricultural produce of the United Kingdom may be fairly valued at 242 millions of pounds sterling, according to the table following:—22,000,000 quarters of wheat, £66,000,000; 34,000,000 quarters of all other grain, £51,000,000; hay, green crops, and seeds, £30,000,000; 2,000,000 head of cattle, £30,000,000; 10,000,000 head of sheep and lambs, £15,000,000; potatoes, £25,000,000; wool, £18,000,000; butter, £5,000,000; cheese, £5,000,000; poultry, milk, eggs, fruit and vegetables £3,000,000; pigs, £2,000,000; other animals £1,000,000; hops, £1,000,000; total, £242,000,000.—*Farmer's Gazette.*

How to Manure a worn-out Farm.—It is an undeniable fact that in some places lime has been used to an injurious extent, but this is an abuse; the farmers in those districts have depended on lime (*almost*) alone, and by repeated doses, have quite exhausted the land, without alternating with a sufficient quantity of putrescent matter to keep up its fertility; but although this is the case, it does not, therefore, follow, that by a judicious use of lime in making up compost for the renovation of worn-out, exhausted that it must also be injurious. On all such farms here are to be found old ditches to be levelled, neglected dykes to be cleaned out, headlands upon which the plough has been turning and bringing out, and there depositing the richest and best of the soil, where it has been accumulating for years, and growing nothing but coarse, rank weeds. Such things as the above, will present themselves to the industrious, improving farmer, as auxiliaries lying on the premises, to assist him in improving and fertilizing the exhausted, barren soil. They are full of decaying vegetable matter, but so closed up and hidden from the beneficial influence of the atmosphere, that they have become crude and sour, and not fit for the food of plants till they are sweetened and rendered so by art. How, then, is this to be done? By digging and turning that portion which has been excluded from the ameliorating influence of the atmosphere, and exposing it to it. The application of quick-lime will decompose and rot the vegetable fibre, and, by frequent turning, will render the whole mass sweet, friable, and fit food for plants. This is quite distinct in its effects from the application of quick-lime to the whole field. In the latter case, it dissolves the vegetable fibre remaining in the land, which, of course, gets less and less every year, and its effects are quick and stimulating; but in the case of making compost, the lime itself gets decomposed or *effete*, and so dead that it can have no injurious effects on the general mass of the *field*, its dissolving powers having been exhausted in the compost heap, and the gases that it engendered are caught up and retained by the other component particles of the compost, rendering them sweet, rich, and friable. We, therefore, found the application of urine, as detailed above, of the greatest possible benefit in renovating worn-out, exhausted soils. Should bog earth be within easy distance, it makes a valuable addition to the compost, or the scraping of roads, cleaning out of ditches, ponds, or the collecting corners of water-courses; in short, all vegetable or animal matter. Such compost, made now and during the winter and spring, will grow good turnips, mangels, and carrots, with the addition of 2 or 3 cwt. of guano, or 4 bushels of dissolved bones per Irish acre, provided always that the land is well and *deeply* ploughed or dug, and drained and subsoiled, if necessary, and thoroughly cleaned of all roots of weeds; the application of such a heap of compost will be of infinite value to meadow land. But let us not be misunderstood: we look upon the above as auxiliaries, great and powerful assistants, but farm-yard manure is far and away beyond all and every one of these for increasing the fertility of the soil.

Sheep.—During the past year, a valuable prize paper, "On the Management, of Sheep," by Mr. Robert Smith, of Bruley, an eminent breeder, has been published (*Jour. R. A. S.*, vol. viii., p. 1). Writing with the just confidence of one who has long attained no small degree of success as a breeder, he feels "that the production and general management of sheep claim to be treated as the foundation of good and profitable husbandry." He remarks, when speaking of the practice of the Leicester breeders in setting their flocks, "they select those ewes which possess the best form, quality of flesh, propensity to fatten, and lightness of offal, with fine long wool. So decided are the best breeders in favour of a symmetrical appearence in the flocks, that many exceeding good animals are *drafted* in consequence of some little want of uniformity in their general outline, or owing to their possessing some line of blood which has proved injurious. The rams are commonly turned to the ewes about the 1st of October. According to a daily register kept for seven years, Mr. Smith finds that the ewes usually go with young upon an average 21 weeks, varying slightly from 20 to 22 weeks, and that they go with male lambs rather longer than with ewe lambs. The use of rock salt he deems very advantageous, either placed in the turnip-field, in iron troughs, or given to them with chaff. In cases where the ewe loses her lamb, and refuses to take to another, a little gin rubbed on the nose of the ewe and the skin of the lamb, at once effects the desired object. In difficult cases when the ewe is lambing, gruel and treacle are given as support; in cases of pain, a small quantity of laudanum and linseed oil. When ewes appear to be swelling, the following recipe has been found of great value: 2 oz. of roach alum, 1 oz, white copperas, mixed in a pint and half of rain water, kept well corked: two table spoonsful are a sufficient embrocation for one dressing; when bound or loose in their bodies, or even apparently unwell, two teaspoonsful of castor oil, with a little ginger, are given.—*F. M.*

Green Manure.—In such cases when not able to procure manure, we have sown rape and buck-wheat which we have ploughed in when five or six inches high. This we have done twice in the season, and if possible have had the second crop of rape eaten off with sheep; we have been enabled to grow corn the next year of a tolerably good quality, which, by its yield of straw, has enabled us to winter stock and make farm-yard manure for the next season. Tares might also be ploughed in as green manure; we have tried rape and cabbage stalk as a manure for potatoes, and always with the best results.—*Farmers' Gaz.*

Agricultural Journal

AND

TRANSACTIONS

OF THE

LOWER CANADA AGRICULTURAL SOCIETY.

MONTREAL, OCTOBER, 1848.

In the present number we copy some further remarks from "The York Herald" on the great Agricultural Meeting that took place at the City of York in July. We do this to show in what estimation agriculture is held in England, that is the greatest manufacturing country on earth. The great majority of the people of Britain are well convinced that agriculture is the main stay of their prosperity, which never can disappoint them, and they value it accordingly. In Canada, however agriculture may be neglected, it is perfectly certain that the general prosperity of her people is, we might say, entirely dependent upon it. We may, and we ought to encourage manufactures, but this can never be any more than a *secondary* means of our prosperity. We must first produce before we can manufacture to an extent that would be advantageous. At present we suppose that all the wool we grow is manufactured in the country. There may be a good prospect this year to manufacture oat-meal for exportation, and should potatoes be a total failure, this might turn out to be a permanent and profitable business for us. We do not see why we should not export our wheat manufactured properly into flour rather than in grain. If the flour was carefully and properly made, it would go to England safer, and more free from damage in that state, than it generally does in grain, and it would leave us all the profits of manufacture and packing. There are other manufactures, which we might introduce extensively, and to great advantage—that is—beef, and pork, cheese, and butter, for exportation. These articles are always in demand, if manufactured properly, and would be likely to pay us better than any other we may engage in. This is the work of summer and fall, and our severe winters would not interfere with it. Of course, we would not stall-feed for exportation, nor make butter or cheese in winter for that purpose. We could very readily manufacture from one to two million pounds worth of these articles annually for exportation, not immediately, but in a very few years, if we were now to commence to prepare our land and stock for it. The manufactures that could be directly made from our agriculture, are in our power whenever we choose to commence them, and we believe they are the most profitable manafactures we can have for many years yet to come. But our having these will not prevent us from having other manufactures also. The augmentation of our cattle will enable us to produce more grain for flour and meal, and the manufacture of flour and meal will leave us considerable offal to feed cattle. Thus one business will assist the other. It will not do to export any but good beef, butter, and cheese, and there is nothi[illegible] to prevent us having all these articles good, if we adopt the means in our power, or that may be in our power to make them so. Every part of Canada may not be suitable for pastures for the fattening of cattle, but there is an ample proportion of them that may be converted into excellent pastures. It is not because we now see pastures generally poor and bare of grass, that they could not be otherwise, by laying them down properly, and not overstocking them. They should also be allowed to continue in pasture. We cannot have good crops, without sufficient cattle, and we can only make our cattle profitable by keeping them well, and making beef, butter, and cheese, not only to supply our own markets, but for an extensive exportation, and this we are convinced may be done. It will be a long time before this country could arrive at that perfection of manufactures that she could manufacture all the goods imported in their great variety. There is no question, however, that in a very short period comparatively we could

augment our exports by the means we have suggested, to a much greater amount than the whole of our present importations. We fear this proposition may be questioned, but we recommend those who would be disposed to do so, to consider well the capabilities of this fine country for production, and its present, *comparative*, unproductiveness. It is quite manifest that her present productions, might without much difficulty, be doubled, and this would be immensely above the value of our annual importations. The improvement of our agriculture is so generally necessary, and the extent to which this improvement is required, and is capable of, is so vast, that we cannot pretend to estimate it exactly. It may be estimated, however, by taking a farm, and improving it judiciously, and ascertaining to what extent the annual produce may be augmented. The expenses will of course be increased, but these should be paid from the production.

In England a clover lay, with a good growth of clover upon it and ploughed well in the fall, is found an excellent preparation for wheat. We cannot adopt the same plan exactly, as fall wheats do not answer well in Lower Canada. We might, however, plough clover lay in the fall for wheat in spring, but if such lands received three, instead of one ploughing, we think it would be all the better. One ploughing in the fall, and two ploughings in the spring before the wheat is sown. This, we conceive, particularly necessary on strong clay land. There is ample time as the wheat is not sown until the end of May. Strong clay lands require to be thoroughly broken up to ensure their producing a good crop of wheat. Indeed it is impossible that the wheat plant can obtain the nutriment necessary to perfect the grain in stiff hard soil, where the roots cannot extend. The short time the wheat is in the ground, (only three months), renders it the more necessary that the soil should be well pulverized, and offer no obstruction to the tender fibres extending so as to find nutriment to bring the crop and straw to perfection. The placing the seed at a sufficient depth in the soil is another essential point to be observed, and we have no doubt that if seeds were more evenly and sufficiently covered when sown, we should have stronger straw, and more, and better grain. Sowing in drills to obtain this better covering cannot be effected without a better and more perfect cultivation and pulverization of the soil. Drills cannot be made in land that is rough, stiff and hard. Sowing in drills admits also of weeding out the useless plants that are so injurious to grain crops. If we pretend to advocate a perfect system of agriculture, it is our duty to state what would be the most perfect whether farmers will adopt it or not. The system or management that, as is often said, "will do very well," will not generally be found the best or most profitable. We wish to show the advantages of producing good crops, and the most certain means to adopt for their production. We cannot and will not have very excellent crops from the ordinary modes of cultivating for them in this country, and if we are not prepared to adopt a better system of cultivation, we must rest satisfied with the "do very well system," and the usual results that are obtained from it. A more abundant and valuable annual production can be obtained only from a better system of husbandry. There is another circumstance that considerably influences the produce of wheat, that is, sowing it frequently in soils that are not the best adapted to its growth in perfection. Light and sandy soils are unsuitable for wheat, and will generally pay better with other crops. Wheat is more liable to injury from insects and disease on light than on strong soils. In very favorable seasons crops may succeed in soils that are not exactly the most suitable for them, but the farmer should endeavour to be prepared for casualties, and for seasons that might be unfavorable. The strong clay soils of this country, if properly drained and judiciously cultivated, would produce abundant crops of wheat, but we regret to say they are not properly drained or judiciously cultivated. Po-

tatoes have, heretofore, been considered a good preparatory crop to fit the soil for wheat, but the best English farmers have never considered it to be so, and our own experience in the old country, was decidedly against the practice, seldom having succeeded in growing a good crop of wheat after potatoes, we found it liable to rust and lodge. On very stony or limestone soil, good crops of wheat have been raised after potatoes, but very rarely on any other sort of soil. As regards potatoes, we believe there is no great probability that farmers will venture to cultivate them very extensively after the general destruction of the crop this year. It becomes our duty now, to make preparation to grow crops next year that will be likely to succeed, and to suit the crop to the soil, and the cultivation to the crops. Any manure the farmer has now at his disposal should be ploughed in this fall for spring crops, as it will be found better to apply the manure now than in spring, provided the soil is sufficiently drained, and should not be applied in large quantities. The experience of this year should stimulate farmers to exertion, to endeavour to grow crops next year that will make up for the loss of potatoes, and we can tell them it will require all their exertions. Potatoes in this as in most other countries, constitute a large proportion of the food of man, and of domestic animals for man's use, and it will require a greatly increased produce of other crops to make up the deficiency of potatoes; one acre of the latter being equal to from four to six acres of grain in the production of food.

The Annual Show and Fair of the New York State Agricultural Society, took place at Buffalo in the beginning of September, and is reported to have been very numerously attended. A great number of cattle and other animals were exhibited, and the show of Agricultural Produce and Implements, was very creditable to the great and flourishing State of New York, and clearly proves how much the community feel interested in the improvement and prosperity of agriculture.

The young men who have been sent from Ireland to Flanders to be instructed in the cultivation of flax, have written a letter which we shall publish in next number, in which it is stated that they had not seen while in Flanders as many weeds in the crops of that country, as they would find in one acre in Ireland. We may conclude from this that the crops are indeed carefully weeded in Flanders, and this is one cause that their agricultural system is so highly commended, and their crops so good. How desirable it would be that our crops were equally free from hurtful weeds. We may assure ourselves that we shall never be able to have good or profitable crops, while we allow weeds to grow in them, and rob the useful plants of the nutriment necessary to bring them to perfection. To destroy weeds effectually, we should endeavour to clean the land previously to sowing the seed. This can be much better done than by pulling or cutting them out of growing crops of grain. Even for root or hoed crops of any kind, the land should be made as clean as possible.

It is one of the "Rules for competition at the Cattle Shows" of the Royal Irish Agricultural Improvement Society, that "all fat cattle fed on distillery or brewers' wash or grains, are to be excluded from competition. Breeding, too fat for service, to be discountenanced by the judges, who are instructed to give a decided preference to such as shall appear in a healthy, vigorous condition, and not overfed."

In the Annual Reports, and Transactions of the Royal Agricultural Improvement Society of Ireland, the beneficial effects produced by thorough draining, and by the application of lime to some soils, would afford ample encouragement to farmers to give a fair trial to these modes of improvement. Of course, the application of lime will produce more favourable results on one description of soil than upon another, but we believe its application to arable land in Canada, generally, would prove beneficial, applied in moderate quantity.

We have endeavoured to show the necessity of introducing here, the plan of apprenticing boys to farmers, in order that they should be instructed in the various works upon a farm; while this plan is not adopted, we shall seldom have competent farm laborers, and we shall be subject to a heavy tax in paying laborers that do not understand their business in all its branches. A man who is not accustomed to plough or drain, cannot execute the work properly for any wages you may pay him. It may not be his fault, because he was never instructed. Hoeing is another work that requires experience, or a man cannot earn any reasonable hire at it, and do the work as it should be done. There are many other works to be done on a farm, that require men regularly accustomed to execute them, or it is impossible they can do them advantageously for their employer. A man that can do all the works upon a farm expertly, efficiently and without constant superintendence, is entitled to more than double the wages of a person who is ignorant of all these works. The system of apprenticeship would remedy all this very soon.

The County of Montreal Cattle Show took place at Viger Square on the 19th ultimo. The show of stock was numerous, and several fine animals were on the ground, although intermixed with very inferior ones. Moses Hays, Esq., the President of the Society, had a very large bull of the Durham breed at the Show, that was much admired. Several good horses and brood mares were shown, but we regret to see that the stallions exhibited do not appear to be of pure Canadian breed. There are particular characteristics of the pure Canadian breed of horses that cannot be mistaken, and the slightest cross or mixture with other breeds shows itself. We shall never possess a better or more suitable breed of horses for this country than the real Canadian of good size, and this size can be readily brought to be sufficient for agricultural purposes.

The Horticultural Exhibition, which took place at St. Antoine Hall, the residence of John Torrance, Esq., on the 11th ultimo, was highly creditable to the members of the Society, and most interesting to admirers of Holticulture. The day was beautifully fine, and the grounds of Mr. Torrance were admirably suited for such an exhibition. Indeed it is only upon such grounds that these kind of exibitions appear to advantage, and quite at home. The flowers, fruits and vegetables at this exhibition prove that Canada is most favourable for their production in the greatest perfection. The Society, though very lately established, appears to be well supported, and we wish it all possible success.

We had an opportunity of seeing the County of Chambly Cattle Show, which took place at Longueuil on Monday last, and we were rejoiced to observe a numerous attendance of farmers, and a very creditable show of horses, neat-cattle, sheep and swine. We admired, particularly, some mares, of pure Canadian breed, and we conceive there can be no better recommendation of this breed, for Agricultural purposes, than comparing them with horses of mixed breed. We never noticed a more clear and decided superiority in the pure Canadian breed of horses, for farming purposes, over those of mixed breed, than at the Longueuil Cattle Show; and it appears most extraordinary that farmers should have injured manifestly the native breed of horses, by persisting in crossing them with breeds that were very inferior. The high prices paid for the pure breed of Canadian horses, by strangers, is a proof of the high estimation in which they are held by others, who would not purchase the mixed breeds. There are certain points necessary for horses to possess to make them suited to the purposes for which they are to be employed, and if they do possess these essential points, they will always be found the best for these purposes, while they are sound and healthy. A Canadian horse, of good size and form, can-

not fail to have both strength and endurance, if we are to estimate horses by their make and appearance, which we might say are nearly perfect. The Canadian horse, of pure breed, (and we believe some of the mares we saw at this Show to be of pure breed,) possess more of the highly valued points and general form, that are considered best for Agricultural purposes, than any horses we have seen in this, or any other country. In judging of the comparative merits of horses or other animals, the proper method to enable us to arrive at a just decision, would be to count the several good points of excellence in each, and to give the preference to that one that has the greatest number of good points; and if this plan was adopted by competent judges, we believe that few horses of mixed breed would be awarded a prize, in competition with horses of pure Canadian breed, for farming purposes. The Canadian breed of neat-cattle are also susceptible of great improvement, by judicious selection, and crossing with bulls of other breeds, of moderate size. We have no hesitation in saying that it will, in most cases, be found better, and more profitable, to improve a native breed, than introduce a new breed altogether; and particularly in the present circumstances of our Agriculture. Canadian cattle generally, never had due attention given to their breeding or feeding, and if they had, farmers would not have much occasion to desire a change now.

The Highland and Agricultural Society of Scotland, and the Royal Agricultural Improvement Society of Ireland held their great annual meetings the latter end of July, the first at Edinburgh, and the latter at Kilkenny. Both were numerously attended, but at Kilkenny it was observed that the great landed proprietors were not so numerously present as might have been expected; perhaps, however, the great excitement that existed at the time in the neighbourhood of Kilkenny might be the cause. At the dinner, in Kilkenny, Earl Clancarty made an excellent speech. One observation of his might apply very properly in Canada,—that he heard of one who, being applied to for his subscription, refused on the ground of the scarcity of money, who would spend fifty times as much unprofitably in London. We believe we might venture to say that many who do not subscribe to the Lower Canada Agricultural Society, spend fifty times as much unprofitably, both for themselves and for the country generally, in the course of a year.

AGRICULTURAL REPORT FOR SEPTEMBER.

Though the month was changeable, it afforded many fine days for harvesting crops that were out, and we hope not much injury has been done by rain in September, as the weather was cool. It is difficult to form any accurate estimate of the general produce of the crops, reports are so contradictory. Many superficial observers, in passing through the country, if they see heavy crops of long straw, conclude that the grain is equally full, and heavy in proportion; but we believe that few of our grain crops can be correctly estimated by this rule this year—the straw being, in almost every case, in undue and greater proportion than the grain. To an experienced eye there can be no mistaking a bad for a good crop of grain, however long and abundant the straw. A sheaf of good grain can be known from one that is light in grain, without handling either, and from what we have seen this year, we fear the produce from the threshing floor will not be so great as is expected, with the exception of oats, which we believe to be an excellent general crop, and the best we have had for a long time. We have seen late wheat look very well previous to its being ripe, except that in the ear, you might observe some of the glumes appear quite ripe, while others were green, and on examining those ripe looking glumes, or chaff, the grain was quite hard, shrivelled and worthless, before the good grains were ripe. This defect was not produced by the fly, but rather, we would imagine, by rust and blight in these

particular grains,—and in some instances, the defective grains were fully half of those in the ear. Wheat affected in this way cannot yield a large produce. We are thus particular in stating the grounds of our Report. It is absurd to attempt reporting the state of the crops, without endeavouring to ascertain what this state really is. It is not necessary in order to report the general state of the crops that every field should be inspected. If defects are found to exist in crops under ordinary circumstances, in some situations, we may conclude that similar defects are likely to exist under similar circumstances, in other situations; soil and cultivation will of course have a great effect, but all this must be taken into consideration by any one who pretends to write a correct Agricultural Repc ' In addition to this blight, we have discovered in some of the latest sown wheat, the portions of the crop which become lodged, and beaten down previous to being ripe, have scarcely any grain in it. All these causes will doubtless diminish the produce from the threshing floor in numerous instances; but we hope, notwithstanding these drawbacks, the whole produce of wheat will exceed that of the last year. The barley crop will also return much more to the acre this year than last, but we do not believe there was so great a breadth sown as usual. As to oats we suppose the quantity and quality produced this year, will be equal to double, or more, the last year's crop. Peas were most luxuriant and abundant, but suffered some damage by heavy rains,—to what extent we cannot say. Indian corn has not been a better crop, perhaps, for many years, and a large quantity was sown. These are our principal crops of grain, and we have reported, as fairly as was in our power. As to the potato crop, from what we have seen and heard, we look upon it as nearly a failure, that is not likely to yield as much for storing, as was made use of as seed for planting; at least it is so in the neighbourhood of Montreal. In our Agricultural Report for last October, we warned farmers not to be induced to venture on planting a large quantity of potatoes this year, by their partial success last year The disease had commenced last year, and it was only the extremely dry weather in August and September, that checked the disease, and saved the crop. It has been recommended to pull up the tops when the disease first appears, as a means of cutting off the communication between the tubers and the atmosphere, supposing that it is in this way the disease is communicated to the tubers. We have no confidence in this remedy, except that by pulling up the stalks the growth of the tubers is stopped, and if the weather is dry they will become dry and hard, and less liable to be affected by the disease.

We have always found the tubers diseased the moment the stalks exhibit the symptoms of disease, and it has not yet been satisfactorily proved whether it is the tubers or the stalks or vines that are first affected. We frequently mistake the effects of a disease as being the cause of it. Potatoes will be found perfectly rotten before the stalks have more than a few black spots on the leaves,—and we do not believe that these black spots would *produce* this effect upon the potatoes growing in the soil. The whole matter is a mystery. If the disease was the effect of something extraordinary, and unusual in the state of the atmosphere, why should the crop of potatoes be less affected in one place than another, or why should any tubers of a crop attacked by disease be safe, when exposed to the same atmospheric influence? We cannot perceive any difference in the atmosphere this year from that of last, except that we have more rain this year, and heretofore, previous to the disease appearing, we have had many wetter seasons than this, without doing any injury to potatoes, except when flooded. We cannot say positively, that the disease is not produced by some atmospheric influences, but we have never seen any satisfactory proof of it, but on the contrary, we have heard of potatoes covered from the external air, very much diseased. Some crops this year are said to be altogether destroyed,

while others have more or less sound,—and this extraordinary difference is found, where the soils are similar, and with the same varieties of potatoes, manuring and cultivation. We have found potatoes on the same stalk perfectly sound with others quite rotten. The former red potatoes of Canada, so much esteemed, appear to be most liable to disease, and the larger the size of the tubers the more certain they are to be destroyed. How could atmospheric influence produce disease in large potatoes and not in those of smaller size? The only varieties we should attempt to cultivate now are those that are the most hardy, and do not grow to a large size, and in no case should they be forced by farm-yard manure, or in soil that is too rich and fertile. Salt, charcoal and lime should be applied to check their extreme luxuriance, and otherwise act beneficially upon the crop, as we know them to do. With these precautions, early planting, and always on dry light soil, potatoes might, we hope, still be grown to a certain extent, to give a supply for the table, but to plant large fields of them is incurring a great risk, that does not appear to be necessary; although we do not pretend to say that the crop might not escape again as it did last year. The destruction of a large potatoe crop, upon which so much labour, and manure, is expended, is a great general loss, and must diminish materially the annual produce of food, and therefore we conceive it would be better to substitute other crops, than to plant large quantities of potatoes, while their success is so uncertain. This must necessarily cause a great change in our system of husbandry, as potatoes were almost the only root crop cultivated. We shall have to clean our lands by summer fallow, and by drill crops, such as carrots, parsnips, beets, beans, and peas, and also, to endeavour to sow some of our grain in drills so as to enable us to use the hoe. Applying dung to grain crops in spring, is very subject to produce much weeds, and more straw than good grain in proportion. To expect to carry on any system of husbandry that would be creditable or profitable, without root crops, summer-fallow, or hoed grain crops, would be ridiculous, as we would very soon find the weeds more abundant than the useful plants. Sowing wheat and barley in drills may be considered too expensive cultivation for us, but we have no doubt, if the system was properly established, and horse and hand hoeing properly understood, we should find it to be much more profitable than the present system, that yields only half crops. By sowing in drills grain is more evenly covered, the crop less liable to lodge, and the ear of larger size, and better filled. The after-grass is more abundant this year than we have seen it for a long period. It must afford ample food for cattle. For fattening cattle, however, we should not depend upon the after-grass, although it may answer an excellent purpose as a fresh supply and a change for cattle that are already nearly fat. It is upon good pasture during the first four months of summer that cattle must be fattened in perfection. After-grass may keep them in condition or perhaps advance them something, but it will not fatten them properly, or give them much tallow. We hope the time will arrive when we shall be able to have a large supply of well fattened beef for exportation at this season of the year, and we have no doubt it would be as profitable farming as the growing of uncertain and scanty crops. The prices of butchers' meat in the British Isles is generally high and has constantly a tendency to advance, and is likely to do so. This offers us a favourable opportunity to make beef and pork for the English market, but we must introduce it to a considerable extent, and make a business of it. For this, good pastures will be necessary, suitable stock of cattle, and a total change in the general management of them from the time of their birth, until they are fit for the butcher. They must be constantly kept in a progressive state of improvement, not allowing them to waste in one season of the year, what they have gained in another season. Cattle have been considered unprofitable,

hitherto, in this country, but under the present state of the law there is no cause they should be any longer so, and if they are so, it must be our own fault, and mismanagement of them. But be this as it may, we cannot have good crops, without a due proportion of cattle, so that it is a necessary part of an improved system of agriculture to have them. An improved and prosperous system of agriculture, includes the raising and keeping of cattle, and sheep, in due proportion to the quantity of land we keep in cultivation under crops. We cannot report what effect the late law for the "Inspection of Butter" has had upon the manufacture of butter. We are convinced, however, that so long as country merchants purchase butter from farmers in small quantities and pack this in casks, without any regard to quality or colour, Canadian butter will not have a very high character in the British market. Farmers are blamed for this, without, perhaps, any grounds. Farmers may be to blame for packing butter of bad and unequal quality in the same cask, when they do so, but there is no necessity for them to do this, if their dairy managers have any pretensions to understand their business. Butter might be a most abundant and profitable article of export from this country, if farmers would give proper attention to it. Flax grown even for the seed, might pay the farmer well. We have written so much in commendation of the cultivation of flax and hemp without any success, that we almost give up the matter without hope of ever seeing either cultivated to any profitable extent. The weather is very favourable for ploughing and this work should be proceeded with most diligently, and the drains all put in good order. Now is the time to put the land in a good state for future crops. It will not answer to defer any work to the spring, which may be done now, and every farmer should understand the work that ought to be done now. We beg our subscribers to excuse any incorrectness which they may discover in this Report.

September 29th, 1848.

We beg to acknowledge a valuable present of books to the Lower Canada Agricultural Society, from J. P. Johnson, Esq. Secretary of the New York State Agricultural Society. The books consist of seven volumes, being the Transactions of the latter Society, from the year 1841 to 1847 inclusive, and contain most interesting and valuable agricultural information. This is as it should be, a free interchange of information on a subject in which the whole family of man are deeply interested—and we think it is the duty of all the great national Agricultural Societies of the civilized world to exchange their published Transactions with each other, if they can thereby advance the general improvement of agriculture and augment the supply of food that is necessary for the constantly increasing human family. This Society has been promised the Transactions of the Highland and Agricultural Society of Scotland, and of the Royal Irish Agricultural Improvement Society, but owing to some mistake, neither have yet been received, which is much to be regretted, as these works would be a most valuable acquisition to our Society. An application has been made to the Royal English Agricultural Society for their Transactions, and we hope they will also be forwarded to this Society. The Mother Country would surely rejoice that this Province of the Empire would follow in her steps in the improvement of agriculture,—we who are "bone of her bone, and flesh of her flesh"—and constantly receiving and giving a home to her sons and daughters. We require instruction in the art that is to provide food for our increasing population, and it is to the Mother Country, famed throughout the world for the excellence of her agriculture, that we should most naturally look for it. This Society will most cheerfully exchange their Transactions, when they are of sufficient interest to make them acceptable to other Societies,—and until then this Journal will be forwarded.

We would remind our subscribers of the great Agricultural Meeting which is to take place at Cobourg on the 3rd, 4th, 5th and 6th of October. We have no doubt it will be well attended, and that the Exhibition will do credit to the Agricultural Association of Canada West.

In Ireland they are about to establish throughout the country Agricultural Model Schools, under the supervision of the National Board of Education, who are to elect an Agricultural Inspector for superintending the schools. We cannot do better than copy that part of the Annual Report of the Board of Education to the Lord Lieutenant, which refers to this subject, as it may assist us in forming some plan for the establishment of Agricultural Schools and Model Farms in Canada. The plan that would be suitable for Ireland may not, however, be exactly suitable for us, so far as regards the size of the farms. We would require a large farm here to give an opportunity for practical instruction to farmers' sons, who would subsequently have to manage large farms. Model Farms in Ireland are more particularly intended for the instruction of small farmers, who rent only a few acres of land. In this country farms are generally about one hundred arpents or more, and any Model Farms we may establish would require to be of that extent that would admit of such cultivation and management of stock, &c., as would be suitable for the adoption of farmers upon their own farms. If we desire agricultural prosperity, it would be purchasing it cheaply for the amount required to establish a few model farms. The time is fully come that our agriculture should be the first and principal object of our care and attention, and while we withhold the attention that should be devoted to its improvement, we need not expect the country to be permanently prosperous. We never can provide or pay for what we consume generally in Canada, but by a produce annually created. Our lumber certainly assists in paying for our imports, but we suppose its value does not amount to more than an eighth or tenth part of our imports, and in the advantages of lumber, farmers have very little share. All we can write, however, to prove the importance of agriculture, is so much time wasted, unless we are able to convince or persuade others to regard it in the same light that we do, but circumstances may at no distant period, effect what we have so long attempted in vain :—

"We have had under consideration the propriety of adopting measures for the extension of agricultural instruction, in connexion with our national schools, and of increasing our grants towards their establishment and support. Upon this subject we received towards the close of the year a letter from Lord Monteagle. This document, of which we highly approve, and which we have republished in the appendix, contains various suggestions for the establishment and government of agricultural schools. We have resolved to embody many of those suggestions in our plan for diffusing more widely the benefit of agricultural instruction.

"We issued a circular to our inspectors, at the close of last year, directing them to ascertain whether there were any national schools, in their respective districts, favourably circumstanced for combining literary with agricultural instruction, and whether eligible sites could be procured for the erection of model agricultural schools, to be conducted on the plan of that at Larne. We also instructed our inspectors to inform us what amount of local co-operation might be expected from the clergy and landed proprietors of the country. The answers to this circular were, upon the whole, of an encouraging nature ; and the inquiries instituted by our inspectors will, no doubt, be the means of increasing considerably the number of applications for grants to agricultural schools.

"From the information thus obtained we have come to the following conclusions ;—That we ought to increase our grant towards the building of model agricultural schools, with a teacher's residence, and the necessary farm buildings attached to each, from £2000 to £3000, upon a local expenditure of at least £150. We propose that from six to eight acres of land shall be annexed to each of these schools, and the premises vested in us in our corporate capacity, for a term of at least three lives and 31 years. To the teachers of the model agricultural schools we propose to give a salary of at least £30 a year, besides a suitable residence and accommodation for a limited number for agricultural pupils. We propose also, that a portion of the grant shall be applied to assist in the purchase of stock, and the necessary farm implements. It is intended that the advanced boys attending model agricultural schools shall receive instruction, during school hours, in the theory of agriculture, by means of the series of books to be provided, and be required to assist, before or after school hours, in the labour of the farm.

"We are desirous of increasing the number of ordinary agricultural schools to which, as we have already explained, only two or three acres of land are attached. From the inquiries we are making, we have no doubt that many managers of existing national schools in country districts, will avail

themselves even of the limited assistance we give to these schools.

"In a limited number of large national schools situated in rural districts, we intend to introduce agricultural instruction, subject to the following conditions:—

"If the manager of a national school of this description, or any respectable person of whom he approves, shall annex to it a farm of eight to ten acres, and erect the necessary farm buildings thereon, without requiring any grant from us towards building or repairs, the purchase of stock, or the payment of rent, we propose in such cases to pay the agricultural teacher a salary not exceeding £30 per annum.

"We shall leave the appointment of the teacher and the superintendence of the farm to the proprietor of the land, or to the manager of the school, should he also be the owner of the land. All we shall require will be, that the teacher be competent, in the opinion of our agricultural inspector, to manage the farm according to the most improved system; and that he shall instruct daily in the theory and practice of agriculture a sufficient number of advanced boys, who shall be in attendance at the adjoining national school. Our agricultural inspector will be required to report half-yearly whether the farm has been conducted to his satisfaction, and whether the regulations which we shall prescribe for the agricultural instruction of the pupils have been strictly adhered to.

"By a recent Act of Parliament, 10 Vic., cap. 31, power is given to the poor-law commissioners to purchase land for the purpose of providing a system of agriculture and other industrial training for pauper children. This plan will afford ample facility for engrafting a system of agricultural instruction upon many of the workhouse schools.

"We shall be anxious to co-operate in carrying out this beneficial project; and for this purpose we propose, as already stated in our suggestions to your Excellency for the improvement of workhouse schools, in cases where a sufficient number of acres of land are attached to workhouse schools, under our board, to give annual gratuities, not exceeding £15 each, to such of the teachers as shall distinguish themselves by their zeal and skill in the management of the farms.

"We shall not make grants of salaries to such teachers. The sums proposed to be given by us are to be considered as gratuities only; and the payment of them will be contingent upon a satisfactory report being received by their agricultural inspector as to the efficiency and good conduct of the agricultural master; and upon the further condition, that an adequate income be paid to the teachers by the authority of the local guardians.

"The plan we have now explained cannot be effectually worked by our ordinary inspectors. It will be necessary, therefore, that our agricultural schools, including our model farm at Glasnevin, should be under the superintendence of a person practically conversant with agricultural operations, with plans of farm buildings, and the best method of keeping farming accounts, and who shall be competent to examine and report on the system of agricultural instruction adopted in schools of this description. We have, accordingly, determined upon appointing an officer to discharge those important duties. With his assistance, we shall in future be able to make full and satisfactory reports to Parliament of the agricultural branch of our system.

"We have included, in our estimate for the present year, the sum which we consider necessary for carrying out the foregoing important objects.

"In order to supply the demand for the persons qualified to conduct farms and agricultural schools, we have resolved upon increasing, from 12 to 24, the number of agricultural pupils, who compose the free class, at our model farm, Glasnevin; also upon increasing, to the same extent, the number of agricultural teachers at our training establishment there. We shall thus have a total of 48 pupils and teachers, who will be all under instruction at the same time.

"Our agricultural pupils are selected from the best qualified of our pupils attending our several agricultural schools throughout Ireland; and our agricultural teachers, who come up to be trained, are chosen from among the masters of ordinary national schools. This arrangement is calculated to accelerate the diffusion of agricultural instruction throughout our schools, and generally amongst our teachers.

"Though convinced that by means of these and other arrangements, we may become instrumental in promoting the cause of agricultural education in Ireland, we feel bound to state that we can accomplish little unless our efforts be cordially sustained by the co-operation of the landed proprietors of the country. The agricultural schools must, in almost all cases, be created by them, and conducted under their directions. It will be necessary for them to expend much money and bestow constant care upon them. The salaries, training, and inspection furnished by the state are indispensable; but they will be unavailing if local expenditure and exertions do not supply the groundwork upon which the assistance of government is to be brought into operation."

October.—In this month, as is truly observed by Mr. Miller, there is indeed "a change in the aspect of nature, a furrowing of deep thought upon the woods, a silent spirit walking abroad, which speaks only to the heart, passes over the still harvest fields without an audible word, and only shows us the falling leaf with the motion of its fingers; or brings to our minds the majestic grandeur of the Scripture where it is written, "we all do fade as a leaf"—"as the leaf falleth off from the vine"—"as an oak whose leaf falleth"—"as oaks when they shed their leaves." How beautiful are these similes, and hundreds such are scattered over the Bible."

AGRICULTURAL IMPROVEMENT.

Much has been done by the cultivation of the soil to improve our country; but there is still much land to possess, which must be subdued by the skilful application of the spade and the plough.

Dr. Dalton has calculated the quantity of water which falls from the air in rain and dew in one year in England and Wales only, at 115,000 millions of tons; of this immense amount, about one-third is carried off by the rivers and subterraneous cavities. The same philosopher infers that 75,000 millions of tons are yearly evaporated into the atmosphere from the surface of England and Wales only. This quantity surprises us by its amount; but Dr. Thompson, in his outline of heat and electricity, nearly doubles the amount.

Farmers and others have much in their power to prevent such an evaporation from taking place on the surface of the soil, and they have also much in their power to improve the climate of our country by means of draining the land properly. It is now pretty well known that where land is wet, a great amount of moisture must be taken from it before the land is in a proper state for working; and where this is done by means of evaporation, the temperature of the soil and air will be much lower than if the water had been removed by means of drains. In a climate like ours, a few degrees of heat is of great importance to the farmer; and the following extract may be worth reading by all who have land to cultivate.

The salubrity of a district is greatly promoted by cultivation. England was not always the same healthy country as it now is—once periodical diseases, agues, and low fevers were prevalent throughout the island; they are now comparatively but little known, except in the yet uncultivated fens of Lincolnshire and a few other similar spots. Under the blessing of Providence, the labours of husbandry have chased away diseases and famine familiar to our forefathers, and largely contributed to our present degree of national health and wealth.

Indolence is the mother of mischief, both morally and naturally. While the flowing river produces wholesome food for man, and sweetens the air he breathes, the stagnant lake or pond engenders noxious reptiles, and exhales unwholesome vapours destructive to health. Throughout all nature the cessation of motion seems to be the signal for the work of corruption, and corruption is diffusive. The heavens are in constant motion, and declare the upholding power of the Creator, and his unwearied interest in the works of his hands. The sea is in constant motion, else it would soon become putrid and destructive to the life of all animate creation. The earth is kept in motion by the immediate agency of God in those things which are beyond the reach of man, as its annual and diurnal revolutions, waters and winds, &c.; but with regard to its mission, it is "given to the children of men," and they are invited by the example of nature, and the instructive motions in themselves, both to be in action and to keep in action their little domain. From unhealthy surfaces of motionless water and low uncultivated land arise many of the infectious diseases which afflict mankind. These effects have sometimes aroused men to exertion in the removal of their causes; and whenever draining, ploughing, and other branches of agriculture have been diligently pursued, the result has uniformly been a gradual improvement in climate, and freedom from local diseases. Soils of a cold retentive clayey nature, being in a degree impervious, derive comparatively little advantage from states of the atmosphere, which purify and renew lighter soils. They generate chilly unwholesome damps, and are ill adapted to produce vigour and healthy vegetation. Land of this kind, if it has a good body, will be materially improved by a thorough draining; this, at the same time, manures it, and pulverisation renders it susceptible of the salutary influence of frost in the winter, and opens it for free absorption and evaporation in the summer. Stagnations cause impurities; agriculture, by preventing these stagnations, tends to produce a healthy climate.—*P. M.*

The advantages of fallowing chiefly consist in the destruction of weeds, grubs, and other vermin, and in the accumulation of decomposing organic matters. Liebig contends, too, that during a fallow a quantity of ammonia is collected from the atmosphere, and a proportion of potash disengaged, from its combinations, in the soil. Davy describes the theory and objects of fallowing, with his usual clearness, when he says, (*Elm. of Agr. Chem. p.* 23.) "The chemical theory of fallowing is very simple; fallowing affords no new source of riches to the soil, it merely tends to produce an accumulation of decomposing matter, which, in the common course of crops, would be employed as it is formed, and it is scarcely possible to imagine a single instance of a cultivated soil which can be supposed to remain fallow for a year with advantage to the farmer; the only case where this practice is beneficial, seems to be in the destruction of weeds, and for cleansing foul soils."

In many foul soils the use of a few bushels of common salt per acre materially accelerates the destruction of the weeds, and their seeds; from 15 to 20 bushels per acre is the ordinary proportion. To most insects, grubs, slugs, worms, &c., salt is also very destructive. Lime, to a considerable degree, produces the same results, but it must be used in much larger proportions than the salt. The salt, or lime, therefore not only helps to kill the vegetable and animal matters of the fallow land, but it converts them into decomposing matters, which serve as the food of growing plants, and this I take to be one cause of the advantage which, in some soils, attends the application of salt, or lime, as manure.

AGRICULTURAL SOCIETIES.

We now shall turn to the *vast importance*, not only of Agriculture generally, but also of great public bodies like the present, and even of minor local societies, for the promotion and improvement of the culture of the soil. When we look at the necessities of man, and when we consider that the proper cultivation of the soil is the ordained means of providing for those necessities, the great importance of husbandry then becomes apparent. Its chief worth, however, is not fully developed, until an increasing population brings with it an augmented demand. Then, and not till then, is ingenuity put to the test; and the cultivator of the earth calls to his aid the acuteness of the mechanic, and the wonder-working science of the chymist. To direct their operations in one powerful and combined progression, and to extend the requisite information far and wide, requires sacrifices and an energy which cannot be expected from solitary individuals. Hence the great importance of Agricultural Societies of every description; but more particularly of *National Societies*, such as the one to which we are alluding; for they give life and influence to minor bodies, and rouse to active usefulness even the drowsy rustic of modes and years gone by. SOCRATES seems to have thought Agriculture very important, for he termed it "the nurse and mother of all the arts." SULLY, one of the ablest statesman of his time, has used a similar figure of speech. And GIBBON has declared husbandry to be the *foundation* of all manufactures, because *Art* is provided, by *Nature*, with its *materials*. In short, so great an importance has been attributed to Agriculture, that the total neglect of it in Ireland, has been deemed one of the principal causes of all its miseries. Scotland, also, was not much better than Ireland, 50 or 60 years ago: but the Agricultural movement in England has now extended across the Scottish Borders, and it is greatly improving its march in this truly important science.

The present *rapid progress*, and the *certain duration* and continued improvement of Agriculture, *to the end of time*, shall now, in conclusion, be briefly noticed. A very few years have passed away since the British Farmer was a mere automaton, moving as if by instinct in the beaten track of his "*rude forefathers*." The modern progress we have named, however, through the power of Agricultural associations, broke upon his vision with renovating effect. He saw, he wondered—and, finding nobles and heroes of the land engaged in the movement, he soon welcomed its advantages, and advocated its cause. He thus became intellectually exalted far above his predecessors; and, to the eternal credit of *The Royal Agricultural Society*, that intelligence increases, as years roll on, wherever they assemble and exercise their renovating influence. To the members of that useful and prosperous society, we would, therefore, respectfully urge increasing efforts to aid the cause of British Agriculture. The success of the past prompts to an onward course—a course of usefulness to the whole population, and which will secure to them the grateful acknowledgments of millions of the human race yet unborn, and confer honors upon them, far more pure and lasting than all the empty distinctions of proud potentates, and the boasted titles of blood-stained conquerors.

We have thus traced the origin, progress, and great improvement of Agriculture to the present time, and we are authorized, by Scripture, to look forward to a period, when the latter days shall be so far influenced by religious principle, that the people "shall beat their swords into *ploughshares*, and their spears into *pruning-hooks*." War shall then give place to the peaceful arts, and Agriculture, with all its improvements, will become even of greater importance than it has ever been in departed ages.

The present meeting has been one of the most brilliant, in every respect, which the Society has ever held; and, we understand that so far as regards the rank and numbers of the individuals who have been present, it has never been equalled. There has been one general desire amongst our fellow-citizens to promote the success of the meeting, and it has passed off in a manner that will be long remembered. With regard to the stock, we do not feel called upon to make any critical remarks, especially after the highly favorable opinions expressed by those, much more competent of judging of the merits of the animals exhibited, than ourselves.

Of the great utility of this and kindred institutions, we have already spoken. We may, however, be allowed here to observe, that they awaken a wholesome competition amongst Agriculturists generally. The breeders of one particular locality are also enabled, through their instrumentality, to witness the improvements which other farmers have effected. Experience thus becomes concentrated into one focus, and a general improvement is the result, which is participated in, not by the farmers alone, but also by the public generally. Another important feature of these associations, is the encouragement they hold out for the improvement of Agricultural implements, of every description. One of the principal features of the present exhibition, has been the display of steam-engines for Agricultural purposes. For some time the prizes offered by the society under this head excited little attention. There was only one exhibited at Newcastle, and only three at Northampton; but, at the present meeting, no less than thirteen engines were entered for the Society's prize, and their comparative strength was tested scientifically by the use of a dynamometer.

The application of mechanical science and skill thus not only meets with reward and encouragement through their institution, but greater facilities are provided for the more full development of

the capabilites of the soil. Viewed in this light, and estimating the many advantages which may be diffused around, Agricultural associations are worthy of the highest encouragment, and, under similar judicious management to that which distinguishes the Royal Agricultural Society, they will do much to place the science of Agriculture in that exalted position to which it has so many claims, from its own essential importance, and to confer upon it that reward and encouragment to which it is fully and indisputably entitled.—*York Herald.*

CARROTS.

Sir—We have now arrived at a period when it is necessary to make this crop available (by the small and middle classes of farmers) as an article of food for man. It is much to be regreted that the accounts in the *Gazette* show the blight in the potato crop almost in all localities; and from the experience we have now had, for years in succession, we are led to belive our future exertions will be as fruitless as they have been, and that it is improper to follow up the old system, and depend, as we have hitherto done, on the potato as the staple article of food. On this account it would be a desirable object if the persons alluded to could have been prevailed on to study their own interests beter than they have done in this respect for the last season. I am aware that much has been done to forward the introduction of certain green crops as a substitute for the potato; still there is a deficiency, owing partly to old prejudices and the wish we have to attempt rearing our favourite crop; but this should not prevent persons who are competent to discharge the duty of continuing to support the opinion that it is unwise to depend entirely on it, and advance as much as possible the propriety of growing other green crops this year. In many parts of the south, the farmers have, I may say, altogether neglected to grow green crops, and it is only now, when too late, they find out the error. The potato is planted to nearly the same extent as formerly, in many instances, and now all are regretting the loss they have sustained by the epidemic. Last season the loss was also extensive, but not so severely felt as this year, owing to the large quantities of ground last year bearing green crops; not that the farmers in general were desirous to grow them, but because necessity compelled them to do so, otherwise a very large portion of land would be idle. I hope all have sufficiently experienced the error of past practices, and that next year the often-taught lesson of growing carrots, parsnips, peas, beans, &c., with a small quantity of potatoes will be carried out effectually, and with the energy due to so desirable a system.

As this scroll may happen to fall into the hands of some of the small farmers, it may not be amiss to mention the general cultivation of the carrot. A good piece of land should be fixed on for the purpose, and worked deeply in the winter, casting it well up that it may receive more effectually the action of the atmosphere. In this way it may remain winter and spring, when another ploughing or digging should be given, bringing it to as fine and clean a state as possible; but if this should not be accomplished, a similar operation must be gone through.—*Farmer's Gazette.*

Oats.—"The following table will show the quantity of meal that is usually extracted from certain weights of this grain; and, though different results may be obtained by various qualities and seasons, yet the progressive ratio of the produce will generally be found nearly similar:—

Wght. per bush.	lbs.	oz.		lbs.	oz.
42 lbs. produce in meal	25	2	ditto in husk	16	14
40 "	23	6	"	16	10
38 "	21	12	"	16	4
36 "	20	3	"	15	13
34 "	18	11	"	15	5
32 "	17	5	"	14	11
30 "	16	1	"	13	5

"The grain, of each species, produces, when ripe (*vol. ii., p.* 137), nearly the following quantities of meal, or household flour, and bread, per bushel, namely,—

	lbs.		lbs.		lbs.
Wheat, if weighing	60	Of Flour	48	Of Bread	64
Rye, do.	54	do.	42	do.	56
Barley do.	48	do.	27½	do.	50
Oats, do.	40	do.	22½	do.	30

The remarks upon the flour of wheat are practical and valuable (*Vol. ii., p.* 154)—

"The *flour of wheat* which is cut before it is quite ripe is whiter than that which is allowed to come to maturity, and bears a higher price in the markets. The grain which is intended for the miller should therefore be reaped before it has reached its perfect growth; but that which is meant for seed should be allowed to stand until the last moment at which it can be cut with safety. The corn is ground into meal of various degrees of fineness; and a bushel of 60 lbs. weight generally yields, when dressed, about the following quantities, namely:—

Fine flour	25½ lbs.
Household ditto	22½ "
Pollards,	8 "
Bran	3 "

"Dr. Madden found that a gallon of water "clear as crystal" issuing from the base of the Pentland hills, contained before passing over the meadow, 10 grains of common salt, and 4 grains of carbonate of lime, but after passing over the meadows, a gallon of the same water contained only 5 grains of common salt and 2 of carbonate of lime. This will account for the good effects produced by irrigation."—*Trans. High. Society.*

COMPOSITION OF THE CROPS WHICH THE FARMER REAPS.

Of what substances do the different kinds of grain usually consist?—They consist chiefly of three substances, starch, gluten, and oil or fat.

What proportion of each of these usually exists in wheat?—100 lbs. of wheaten flour contain about 50 lbs. of starch, 10 lbs. of gluten, and 2 or 3 lbs. of oil.

In what proportion do they exist in oats?—100 lbs. of oats contain about 60 lbs. of starch, 18 lbs. of gluten, and 6 lbs. of oil.

What do potatoes and turnips principally consist of?—Their principal constituent is water.

How much water is contained in 100 lbs. of potatoes?—100 lbs. of potatoes contain about 75 lbs. of water.

How much water is contained in 100 lbs. of turnips?—100 lbs. of turnips contain about 88 lbs. of water.

What quantity of starch do potatoes contain?—100 lbs. of potatoes contain from 15 to 20 lbs. of starch.

Are these proportions of starch, gluten, &c. always the same in the same grain or root?—No. Some varieties of wheat contain more gluten than others, some varieties of oats more oil than others, and some varieties of potatoes more starch than others.

Have the soil and climate any influence upon the proportions of these ingredients?—Yes. The wheat of warm climates is said to contain more gluten, and the potatoes and barley grown upon light or well-drained land more starch.

When corn or potatoes are burned do they leave any in-organic matter or ash?—Yes. They all leave a small quantity of ash when burned.

Of what does this ash consist?—It consists of the phosphates of potash, soda, lime, and magnesia, of common salt, and other saline substances.—*Johnston's Cathechism of Chemistry and Geology.*

USES OF THE CROPS IN FEEDING.

What natural purposes are vegetables intended to serve?—They are chiefly intended for the food of animals.

What substances must an animal derive from its food, that it may be maintained in a healthy state?—It must obtain starch, gluten, oil or fat, and saline or in-organic matter.

Do you recollect what starch consists of?—Starch consists of carbon and water.

For what purposes does an animal require starch in its food?—It requires starch to supply the carbon which it throws off from its lungs during respiration.

Do you recollect how much carbon a man throws off from his lungs in a day?—Yes. He throws off from six to eight ounces in a day.

What quantity of starch must he eat, in order to supply the quantity of carbon given off from his lungs in a day?—He will require to eat nearly a pound of starch in a day.

In what form is the carbon given off from the lungs of animals?—It is given off in the form of carbonic acid gas.

What becomes of the carbonic acid gas thus given off?—It is diffused through the air, and is afterwards absorbed again by plants, in order that new quantities of starch may be produced from it.

For what purpose does an animal require gluten in its food?—An animal requires gluten for the purpose of repairing the daily waste of the muscles or lean part of its body.

Are the muscles of an animal really subject to waste?—Yes. Nearly all the parts of the body suffer a certain waste every day.

What becomes of the part that thus wastes away?—It is carried through the body, and forms part of the dung and urine of the animal.

How can the gluten repair the waste of the muscles or lean part of the animal?—Because the gluten of plants is almost exactly the same thing as the muscles of animals.

Why does the animal require oil or fat in its food?—To supply the natural waste of fatty matter which takes place.

Does it serve any other purpose?—Yes. When more is given than is necessary to supply the waste it may make the animal fat.

Is food that contains much oil, then, the best for fattening?—Yes. Of two samples of food that which contains the most oil will *generally* fatten most quickly.

Is this one reason why oil-cake is so good for fattening stock?—Yes. It is one reason.

Why must the food of animals contain phosphate of lime and other in-organic matters?—To supply the daily waste of the bones, of the salts in the blood, &c.

Do not the gluten and the saline matter serve a further purpose when the animal is growing?—Yes. When the animal is growing they not only supply the daily waste, but are daily adding to the weight of the animal's body.

Will a growing animal on this account require a larger supply of these kinds of food?—Yes. A growing animal of the same size will require more of these kinds of food than a full-grown animal.

Suppose an equal quantity of food given to a growing and to a full-grown animal, which of them will give the richer dung?—The full-grown animal will give the richer dung.

Why so?—Because the growing animal extracts and retains more of the substance of the food.

Why does it do this?—Because it has both to supply the natural waste of its own body, and to add to its size, while the full-grown animal has only to supply the daily waste.

Why is the dung of fattening stock richer than that of growing stock or of cows in milk?—Be-

cause fattening stock extract and retain chiefly the oil and starch of their food, and reject nearly all the remainder.

How would you convert a ton of oats or turnips into the largest quantity of beef or mutton?—I would keep my cattle or sheep in a warm or sheltered place, where they might have wholesome air, and but little light, and I would disturb them as little as possible.

If you wanted merely to fatten a full-grown beast, what would you do?—I would keep it warm, disturb it little, and give it oil-cake or oats, with a good supply of turnips.

If you wished only to convert a large quantity of hay, straw, or turnips into manure, what would you do?—I would put my stock in a cool and less sheltered place, and I would make them take a good deal of exercise.

If you wished to make a cow give you the largest possible quantity of milk, how would you feed her?—I would give her rich juicy grass, turnips with their tops, green rye, brewers' grains, warm mashes, or other food containing much water,—and I would supply her with drink when she would take it.

But to obtain milk of the best possible quality, would you do so?—No. I would then give her as much dry food,—oats, beans, bran and clover hay,—as she would eat.

If you wanted milk particularly rich in butter, what would you give?—I would give her the same kind of food as I would to a fattening animal,—oil-cake, oats, barley, Indian-corn meal, and some turnips.

But if you were going to make cheese of your milk, would you give the same kind of food?—I would then prefer beans, peas, vetches, and clover, or clover hay, all of which make the milk richer in curd.

Why do they make it richer in curd?—Because they contain a very large proportion of a substance which has nearly the same composition and properties as the curd of milk.

As a general rule in fattening of milk cows or pigs, would you give the food sweet or sour?—To pigs I would give it slightly sour, to fattening cows and bullocks I would give it fresh and sweet.

Why would you give it sour to pigs?—Because it has been found that much more pork is obtained from green vegetables, or from bean-meal, or boiled potatoes when mixed with water and left to sour, than when given fresh and sweet.

Is there any thing else you would do to make your stock feeding more profitable?—Yes. I would keep my cow-houses well ventilated but warm, and my sheep and pigs clean; I would curry my cattle occasionally; and I would feed them at regular intervals, and at least three times a-day.—*Ib.*

Preserving Fruit.—The inventor of the mode, M. Paquet, of Paris, has received from the Royal Society of Horticulture a medal. He presented on the 12th of June one hundred pears and apples, which it is stated had not only preserved their beauty, freshness and flavor, but even their perfume. His fruit-house is described as a circular building, with an outer and an inner wall—the size of the building being whatever is convenient. The distance between the outer and inner wall is about three feet six inches. There are windows in both walls, a diffused light being preferred to darkness. The inner room, which is the depository of the fruit, is kept at a constant temperature of about 50 degrees (Fahr.); as low as 39 would not be injurious, but 66 to 73 destructive. Boxes are made with drawers of oak; that wood being easier to be cleaned from the remains of fruit which might decay. "In these drawers," says the account, "the fruits are placed with small intervals between each, on a slight bed, one-sixth of an inch thick, of saw-dust, (not pine, which would communicate an unpleasant flavour,) highly dried in an oven, eight parts, and one part of very dry pulverized charcoal, and with this mixture the interstices between the fruits are filled to about two-thirds of their height, leaving one-third exposed." This mode is deemed greatly preferable to keeping fruits in moss, cotton, paper, or other substances. The fruit should be gathered with the greatest care, and not in the least bruised; the fairest and finest specimens selected. It should be gathered ten days before it is ripe. After it is gathered, it is directed to leave it in an open airy situation for about fifteen days to sweat, and on no account be wiped previous to being deposited in the fruit-house.—*Farmers' Herald.*

Treatment of a Diseased Cow.—"Will you have the kindness to give directions for the treatment of a cow of mine, now four years old, affected in the following manner, since, I may say, November last:—A falling away of flesh and milk, loss of appetite, and a crippling of her legs, so that it is with difficulty she can either walk or stand. I can trace it to no other cause than that the bull she got last year was similarly affected. the country people here call it by the name of "crippling." Is this the proper name of it?—Your cow is affected with rheumatism, which is very prevalent in low, humid, sour pastures. Change of pasture is no doubt good; but the cure by that means is too slow, and not always sure. Take her and put her into a clean, comfortable house, and keep it so; give 12 or 14 ounces of sulphur, with 2 ounces of ginger, on a quart of ale; sheet her, and rub the loins and parts affected with spirits of turpentine; let her keep be good and generous—good, warm, bran meshes, and good fresh soil, which should be cut three or four hours, so as to allow some of the watery juices to evaporate.

THE FLOWER GARDEN.

On Striking Cuttings of the Monthly Blooming China Roses.—Making a call on a friend a few months since, who had standing in her parlour window some monthly China roses, and plants of the fuchsia that were rather overgrown, she requested me to trim them a little, which I did, and was collecting what was cut off to throw away; she said, "Perhaps you will take them home and strike them." I replied, "The roses are too much trouble, but not having the variety of the fuchsia, I will take them." She immediately said, "The roses are no sort of trouble, I struck all these in water in a glass bottle last year"

Hearing this I took part of them home, and the first thing I met with was a doll's China sugar basin, belonging to one of my little girls. I put into it about half an inch deep of earth, and filled it up with water, put in the cuttings, and placed it in an attic window, used as a lumber room. About a month since I went into the room, all the cuttings looked well, and had made wood. On taking them out of the water, the fuchsias had made splendid roots, and each of the roses had made three or four roots an inch long; I planted them in pots, and they are doing well.

I have for some seasons struck a quantity of cuttings of different things by the following easy method:—Take a pot of any size, large or small, then a smaller one, stop up the hole of the small one with a cork, and make it water tight; place drainage in the larger one, and put the small one one it, and fill up the space around the small one inside the large one, with some light soil mixed with a little sand. So that there may be about two inches of soil all round the pot; this may be filled with cuttings, and a good-sized pot will hold a great many; then fill the smaller one with water, and keep it so. The porous nature of the pot will keep the earth continually in a state of moisture, and in about ten or fourteen days, if the pot is kept in a warm window, the whole will be well rooted and fit to plant out either in pots or beds.—*Flor. Cabinet.*

Dahlias.—Disbudding the different varieties must now be carefully attended to by the cultivators of these flowers. In order to increase the size of the blooms—which is a great object to parties who are desirous of obtaining prizes at public exhibitions—great care is required in performing this operation. All small and imperfect buds should be pinched off, leaving only those to expand that are considered the most perfect. As soon as the buds begin to show colour, they should be protected with muslin bags to preserve the blooms. This is of the utmost importance to exhibitors, as it allows the blooms to expand in perfection. In protecting them, it is necessary to have two sizes of bags, so that when the buds are in a young state, they can be covered with small bags, and, as they increase in size, the small ones should be removed, and larger substituted. A muslin bag made 6 inches by 8 is sufficiently large to preserve a full-sized flower. They should be drawn over the buds, and tied tighly to the footstalks of the blooms. After the buds are enclosed, they require to be examined occasionally, to ascertain if all is going on right. In windy weather, the bags are apt to press tightly on the blooms, which must be seen to frequently, in order to prevent the flowers from being cramped in their florets. The side branches require to be well secured to strong stakes, to preserve them from violent winds, which are continually destroying them if left neglected. The ground may be loosened round the stems of the plants, and a good top-dressing of half-rotted horse-manure placed round them. This is of great benefit to the plants, particularly in a hot season.—*Gardeners' Journal.*

Treatment of House Plants.—Water, air, heat, and light are the four essential stimulants to plants; water, heat, and air to promote growth, and light to render that growth perfect. Water, heat, and air, man can command at pleasure by artificial means; but over light, as an element of the perfect growthof plants, we have less control. To be beneficial to plants, light must come directly from the sun; and, therefore, plants should be so placed that it may act upon them with as little as possible of that refraction and decomposition which it suffers when it passes through glass or any other medium except the open air. Plants grown in the open air, and with such free exposure to the light as their habits require, not only develop all their parts in their proper form, but their and leaves flavours. Plants excluded from light have not their natural colour, odour, nor flavour; they make little or no charcoal in the woody part, the leaves are not green, and if they do flower and fruit, which is rarely the case, the flowers are pale and scentless, and the fruit is insipid; this has been proved by many experiments, of which the blanching of celery and endive by earthing-up, and that of cabbage, by the natural process of hearthing, are familiar instances. A geranium placed in a dark room becomes first pale, then spotted, and ultimately white, and if brought to the light it again acquires its colour. If plants kept in the dark are exposed to the action of hydrogen gas, they retain their greencolour, though how this gas acts has not been ascertained. Some flowers, too, such as the crocus and the tulip, are coloured, though grown in the dark. Light seems to be fully as essential to plants as leaves; it appears to be injurious to the under surfaces, at least of some plants; for in whichever way a plant is placed, it contrives to turn the upper surface of its leaves to the light. Plants in rooms turn not only their leaves but their branches to the window at which the light enters, and a plant may, by turning it at intervals, be made to bend successively to all sides; but such bendings weaken the plant, and spoil its appearance.—*Floricultural Cabinet.*

BEARDED WHEAT.—At the weekly Council of the Royal Agricultural Society, Mr. Halcomb, of Poulton, near Marlborough, reported to the Council the success with which he had cultivated a new variety of bearded spring wheat, adapted for soils not suited to barley, or for late sowing after turnips, from seed furnished to him by Mr Elliot, of Jedburg, in 1843, originally obtained from Mr. Dickson, of Hawick, by whom it had been introduced into Scotland from Russia. Mr. Halcomb put a portion of this seed into the ground on the 18th of March, and the remainder into an adjoining piece of the same land on the 3rd of April, after a crop of turnips fed off by sheep, and ploughed for seed early in March. The earlier sown was reaped on the 15th August, and the later sown on the 18th of the same month, having begun also at the latter date to reap his autumn-sown wheat. Apparently there was no difference in these crops; but on threshing them the produce of the autumn-sown proved to be only 33 bushels per acre, while that of the spring-sown was forty bushels.—He had sown his new spring variety every year since, and had generally the same quantity per acre as from the autumn-sown wheat. He had never found the crop deficient, excepting when he had been unable to get a fine tilth, after feeding off turnips with sheep, with a subsequent dry summer. In a trial last spring, Mr. Halcomb grew in the former case, from 2 bushels of seed per acre, 32 bushels; and in the latter, from 3 bushels of seed per acre, on the adjoining ridge and sown at the same time, 40 bushels of grain, which proved, to his surprise, of superior weight by 7lb. per sack. He had never grown more than 41 bushels per acre of this wheat, but he had been told by other parties of their having grown, on superior land, 48 bushels, and, in one instance, 56 bushels. The price of this new variety in Devizes market was usually rather above that of the autumn wheats. Mr. Halcomb conceived that its greatest advantage would be found in its suitableness for soils subject to blight. The last season, on land where the autumn wheats were scarcely worth cutting, the "April" wheat, to which Mr. Halcomb then called the attention of the council, was esitmated at 40 bushels per acre. He thought, also, that from its early maturity it would be found serviceable for making good deficiencies of plant in the autumn-sown. The council ordered their thanks to be returned to Mr. Halcomb for the favour of his communication.

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