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AGRICULTURAL JOURNAL,

AND

TRANSACTIONS

OF THE

Lower Canada Agricultural Society.

VOL. I. MONTREAL, AUGUST, 1843. NO. 3.

With pleasure we give insertion to the communication of Rusticus on "Our Forest Trees." We have ever looked upon the indiscriminate destruction of forest trees by settlers as a crying evil, and a great injury as well to the settler as to the country generally. It is a well ascertained fact, that a total destruction of trees has proved very injurious to countries where they have all been destroyed, and in Ireland and Scotland, every effort is being made now, and for several years past, to replace the trees that have been destroyed, as well as planting them where they have never been. A country without trees, however well cultivated, can never have the beautiful appearance of one that has a sufficiency of trees. Scattered trees, and some along the line of fences, are very ornamental, as well as useful to cattle, and clumps reserved in corners of farms and other places, answer for fire-wood, fencing, shelter, and ornament. There may be difficulty with the new settler in saving trees when preparing the land for cultivation, but, we think, by adopting proper precaution, the fire might be prevented from injuring trees wished to be preserved. Where there is a *will* to preserve the trees, a *way* will be found to do so. We do not expect, however, that they will be effectually preserved unless there is some regulation enforced upon those who obtain wild land, that they shall reserve a proportion of trees. It is nothing less than spoliation that all the beautiful trees that naturally ornament the country should be cut down and burned, not sparing one. The subject is entitled to the consideration of the Legislature. If destroying all the trees is an injury, it is one that cannot be repaired in one or many years. We know, and have heard, of cutting down trees along fences, where they were no injury to the lands or crops, and most beautifully ornamental trees in fields, that were a most useful shade to cattle, cut down merely for the wood for fire. It is impossible to see such destruction of the greatest ornaments of our country without wishing there was some law to prevent such acts. In the United States they wish to introduce trees into all their towns and villages, and along the road sides, and they certainly are a beautiful ornament to their towns. Why should we be less civilized than our neighbors of the same family? All admit our country is naturally beautiful, but if we deprive it of its trees, one of its most beautiful features will be destroyed.

We had occasion, a few days ago, to call at the Bookstore of Mr. Lay, agent for the sale of books and periodicals published in the United States, and he very kindly presented us with the following works on Agriculture and Gardening: "Domestic Animals," by R. S. Allen, "Gardener's and Farmer's Dictionary," and "The Complete Gardener and Florist," which are all excellent works on the particular subjects to which they refer. The first work gives a very good history and description of domestic animals, with several well executed wood cuts of the various animals described, and we can recommend it to agriculturists. The second work, "The Gardener's and

Farmer's Dictionary," is exceedingly well got up, with a great number of illustrations of plants, animals, and implements. It is edited by Dr. D. P. Gardner, and is entitled to every recommendation we could give the book. The third, "The Complete Gardener and Florist," should be in the possession of every one who has a garden or is an admirer of flowers. The prices of these books are very reasonable, as all American works are, and publications of the present year. Mr. Lay, very generously, invited us to the use of his books, should we at any time require to refer to them on any subject connected with Agriculture. This is as it should be—every man interested and offering his aid to advance the science and practice of an art upon which the very existence of the human family depends. We heartily wish Mr. Lay every success in his agency.

According to "Thaer's Principles of Agriculture" the proportion of grain to straw varies as follows:—

Rye, from 38 to 42 in 100; wheat, from 48 to 52 in 100; barley, from 62 to 64 in 100; oats, from 60 to 62 in 100; peas, from 32 to 36 in 100.

Thaer says again:—

That for feeding cattle, the following proportions will be found to be equally nutritious and beneficial:—100 lbs of hay, 200 lbs. of potatoes, 460 lbs. beet-root, 350 lbs. ruta-baga, 266 lbs. carrots, 600 lbs. white cabbages, and 50 lbs. oats.

In order to discover the quantity of dung produced by pasturing animals, that evacuated by a cow fed on excellent pasture land has been weighed, and it was found that, on an average, she produced 37 lbs. in a day and night: that is, 5,661 lbs. in five months, or one hundred and fifty-three days. The dung evacuated during the day was also weighed separately from that which was produced during the night, and it was found that the former amounted to from 21 to 23 lbs, and the latter to from 15 to 15½ lbs.

Sheep, if fed on the same quantity of provender will produce dung which goes further, but the action of which is not so durable. These animals, however, appeared to be decidedly the most advantageous for the manuring of pasture land, the dung which they evacuate over the meadows is not only more equally diffused, but also amalgamates more freely with the soil, and acts more promptly on the vegetation. If the sheep are brought up from the pastures at night, and confined in a paddock or sheep fold, they will produce a propottionally larger quantity of manure than cattle, supposing that each species has been allowed the same extent of pasturage. This reason causes the meadow and pasture lands in England, where it is customary to leave the sheep out night and day, gradually to become ameliorated and improved, and to be capable of feeding an increased number of these animals every year; when these lands are broken or ploughed up they are found to have acquired a much greater proportion of nutritive matter than those on which cows have been fed: indeed these latter usually decrease in fertility about the third or fourth year, particularly when the soil is of a dry hot nature.

We know that pasturing sheep constantly on land will greatly augment its fertility, and very much more than any other animals would do. A few sheep, however, kept with other stock, cannot be expected to produce this benefit.

The following extract, from a speech of Mr. Baker at a late meeting of the Council of the Royal Agricultural Society, is worthy the attention of farmers:—

He had nothing novel in farming to communicate; indeed, he was one of "the old jockies," as Mr. Mechi called them; but he would mention that he had happened for the last ten days to have been riding over two parishes, for the purposes of tithe commutation, and he was forcibly reminded of the want of capital; and was not of Mr. Mechi's opinion, that folks could go to the corner of the field and dig up capital. It was certain it must be found before it could be applied. It behoved us to look back and see if capital had not been applied to the land. If they looked back to this and the adjoining counties, and the kingdom at large, for 15 or 20 years, they would find it had been applied to the soil to bring it into that productive state in which it now was.

Hoeing.—When you use the hoe, strive to do the work well; do not try to draw it over much ground at one stroke, but always strive to make good work, so as to cut up all the weeds as you go along. The best plan is to hoe to the depth that will kill the most of the weeds, which is best done on most soils by drawing the hoe as near to the top of the soil as you can. When you leave your day's work, wipe your tool until it is dry, and then put it in a dry place: by this plan your hoe will keep free from rust. A bright clear tool is always the best to work with.—*Rural Spelling Book.*

OUR FOREST TREES.

BY RUSTICUS.

"Woodm.. spare, oh! spare that tree."

It was with no small degree of pleasure, that I perused your several articles on the subject of trees, wherein you avowed yourself an earnest defender of the policy of giving our forest trees standing room. It is really a matter of regret that they are so ruthlessly swept away; it seems to be laid down as a system, in Canada, to cut down every tree standing on clear ground. So utterly opposed am I to this practice, that I confess a strong feeling of indignation stirs within me, when I see the axe laid at the root of a noble tree, the last survivor, it may be, on the farm, of the ancient forest, and know that it is so applied out of mere sordid love of gain, and for the paltry consideration of the fuel it will afford. The impolicy of such a procedure is very evident. The cattle themselves exhibit more taste and more sense in this respect than their masters, for they gladly seek the shelter from intense heat, which the rich foliage of the trees affords them. It is in the highest degree cruel to confine cattle in an enclosure where they are exposed to the fierce glare of our s..mmer's sun. But even putting out of sight that consideration, the want of shade in a pasture tells against the pocket of the farmer. The cattle are oppressed and enfeebled by the excessive heat, and they roam about from side to side of the field, seeking the partial shelter which the fences yield them. How different is the case in the adjoining field, where a chance tree or two has escaped the axe. There the cattle may be seen lying under the cool shade of the spreading branches, happily "chewing the cud of contentment," and preparing themselves for a vigorous attack upon the grass when the fresh breezes of evening shall have come.

I think I see a smile stealing over the face of the reader at this description, but this is no fancy sketch, and there is assuredly more truth than poetry in the assertion, that cows in a shady pasture will, during hot weather, give more milk than in an exposed one. But even were there not a pecuniary motive to induce the farmer to spare the trees, the desire of "the good man to be merciful to his beast" should alone be a sufficient reason for their preservation.

Again, in a few years, wood will become scarce, as it even already is in some parts of the country, and that, too, where there might have been abundance for many years to come, had not the slashing system been indiscriminately carried out. Such a practice reminds one of the fabled possessor of the goose that laid the golden eggs. The unhappy urchin, dissatisfied with moderate wealth obtained in the natural order of things, overcome by avarice, wished, the fable tells us, to become rich at once, and in order to do so, killed the source of opulence. So it has been and still is with the Canadian farmers; they have in the forest, which so closely covers the virgin soil, an inexhaustible mine of wealth, if "worked" with prudence. But the same over-anxiety to get rich, leads them to commit the same fatal mistake as the boy in the fable. The trees do not yield a direct return, so they are felled and made into firewood, or a more wholesale mode of destruction is adopted, and they are thrown into log-heaps and burnt, preparatory to being converted into pot or pearl ashes. Such a plan certainly yields those who adopt it ready money, and is thus of immediate service to the needy settler, who is in this way often enabled to pay for the lot on which he has seated himself, or "squatted," to use the term common in Western Canada. Though then it is excusable, and even necessary, for the poor man to cut down and convert the trees into ready money, the adoption of this practice will ultimately prove injurious even to him. How is it that farms which, for a few years after they were cleared, yielded abundant crops, have now become almost unproductive? Much of the secret, I am convinced, lies in the suicidal practice of converting all the trees into timber, fire-wood or pot-ash. It may appear anomalous, that ground which was thickly covered with immense trees, and possessed of sufficient strength to maintain them in vigorous growth and health, should yet, within a few years, lose "heart," and become either barren or produce weak and sickly crops. We can only account for it in the following way: When the soil was first stripped of trees, it had been enriched by the gradual decay of fallen trees, and the annual accumulation of leaves shed upon it at the approach of winter, during a long series of years. In consequence, the first crops were unusually abundant, owing to the strength and richness of the soil, caused as above stated, for it had always *received*

back from the trees *a natural manure*, equivalent to the amount of nourishment they abstracted from it. This statement will not appear overstrained, when we reflect that a large proportion of the sustenance of trees is derived from the air and moisture. In proof of this generally admitted truth, I may cite the cases of trees growing on walls or in clefts of rocks where there is little or no earth. As soon as the ground is cleared, the process of exhaustion commences. The land has fallen into the hands of a merciless task master, and it is forced to bear crops year after year, without intermission, 'till the unequal contest ends by its productive qualities running out. Such has been the case with a large portion of Eastern Canada, and such, it appears to me, is the cause. The objection will very probably at once prompt itself to the farmer—how can we clear the ground if we do not cut down the trees? Such, of course, is not the meaning I intend to convey in my remarks; what I contend for is this, to spare some of the trees, or if they must be all destroyed, to return them to the ground in the shape of ashes. If the farmer will remove them, he should regard their produce as a debt borrowed from the soil, the interest on which he is under obligations annually to repay in the shape of manure. In new clearings, when the farmer can afford it, it would be good policy to spread all the ashes on the ground instead of selling them. The exertion of self-denial in this respect, and the foregoing of the present advantage, would be amply rewarded by increased production, and the keeping of the soil in good heart; on old farms the deficiency of vegetative power, which had been first temporarily withdrawn from the earth by the trees, and then altogether abstracted from it by their removal, must be made up by the liberal use of manures, and probably, in view of the circumstances, lime, marl, and the chemical manures, will be thought better than stable manure. The farmer will never be far wrong in taking a leaf out of nature's book, and he should never forget that the ground in an uncultivated state is *annually* enriched by *natural manure*. Between the vegetable world and the earth, the wisdom of the deity has established a grand system of compensation, whereby, at the approach of winter, the ground is strewed with a thick layer of vegetable matter, the decomposition of which, and the long rest afforded by winter, have the effect of supplying the drain made on the soil by the plants during the previous summer, and recruiting its exhausted strength. When man in his self-sufficiency, and clothed, as he fancies, in "a little brief authority" over the land which he calls *his own*, exacts too much from it, and infringes nature's law—what wonder is it that punishment for the offence recoils upon him by the ground becoming barren and unfruitful? The annual growth of vegetation withdraws from the earth a certain amount of matter, and it is reasonable to conclude that if, by the intervention of man, the natural order of things is interrupted, and a constant withdrawal of the productive property takes place without any compensation being made for the obstruction, the capability of sustaining vegetable life in healthy and vigorous action, must be greatly impaired, if not altogether destroyed. Where the great benefits derivable from Agricultural chemistry are very obvious, as in the case of an exhausted soil, the chemist is by examination at once able to decide what ingredient, necessary to healthy vegetation, is deficient, and what manure is best suited to obviate the evil.

As my communication is extending beyond a reasonable length, I must bring it to a conclusion for the present, but as the subject is anything but exhausted, and I have digressed from the original purpose of my remarks, which I intended confining to adducing arguments in favour of sparing our forest trees, I will resume the consideration of the matter in a future communication. In the meantime, I enclose some beautiful lines on trees, under the supposition that they may not be deemed inappropriate to the pages of the Agricultural Journal. They are the composition of a lady, who suffers under one of the greatest privations to which the human race is subject—that of loss of sight.—*(See page 256.)*

Montreal, July, 1848.

WHITE GLOBE AND RED NORFOLK TURNIPS may be sown any time between the first and middle of July in drills, 28 inches drill from drill; being a very large growing turnip, if permitted too much room, it gets stringy, spongy, and hollow in the heart, and become comparatively useless. Experience proves that by thinning them out to 10 inches, plant from plant, this will be prevented, and that they become hard, solid, and succulent, and a profitable crop, but they should be consumed by the middle or latter end of January.

MR. BASTON'S SYSTEM OF AGRICULTURAL TRAINING.

(FROM THE HEREFORD TIMES.)

The elevation of the condition of the labouring class is precisely one of those things which may be greatly advanced by individual exertion. We need hardly say that it is for the advantage of the agriculturist that his labourers should be intelligent; yet it is quite certain that those laborers are less intelligent than any other section of the working classes, except the lowest in the towns. In very many cases the former have the charge of costly machinery, constructed upon scientific principles, and in the main only to be *profitably* worked by intelligent workmen; in all cases they have to pursue the great art of agriculture, which depends, not less than any other, upon the knowledge of correct principles; and in each instance the loss from unskilful labour falls upon the farmer himself. Since education, to deserve the name at all, must include moral and religious training, and since the result of that training in the majority of cases is to make men honest, industrious and upright, it is for the interest of a man whose property is necessarily exposed to depredation, and whose work must be done faithfully if he is to gain a profit, to see that his laborers have such an education. The system of parochial schools, though very useful so far as it goes, neither makes the youth generally intelligent, nor even prepares him in any sense for the labours by which he is to live.

Our friend, Mr. Batson, of Kynaston Court in this county, which is free from those defects, while it possesses all the advantages which have hitherto been deemed incompatible with general education. Allusions were made to the subject at the last meeting of the Herefordshire Agricultural Society, by no less an authority than Mr. Mechi, who expressed his warm approval of Mr. Batson's plan, and his conviction that it would continue to succeed. Deeming that very much good would ensue if the example were to be generally followed by agriculturists, we have obtained from Mr. Batson the following description of his system, which will be read, we doubt not, with great interest:—

DEAR SIR,—Agreeably with my promise, I forward you some account of the system I have adopted with the boys on my farm—a system which, I have much pleasure in saying, has realized my most sanguine hopes.

It is now nearly three years since I first formed a gang of boys, taking them merely as daily laborers, and paying them at the rate of 3s. per week in winter, and 4s. per week in summer; but finding that I could have no certainty of their attendance, and that there was considerable difficulty in adopting a regular system of discipline, owing to the want of education and *bad management at home*, I made the necessary accommodation for the reception of twenty boys on my premises, about fifteen months since, and took them under my own care entirely for a term of four years—boarding, clothing and educating them in lieu of their daily pay for labour on the farm—their ages averaging between nine and fourteen years.

The system I adopted was this:—Each boy to be provided with two suits of clothes—one for working in and the other for better use—with, also, a complete stock of linen, shoes &c.; and at the end of four years I sent them back with a like equipment.

The working hours are from six to six in summer, and during the winter they work while it is light.

The meal times are at 9 o'clock, when they have an hour for breakfast; at one o'clock, an hour for dinner; and at six o'clock, when they also have an hour for supper; and the evenings are spent in education until nine o'clock, when prayers are read, and they retire to rest.

The food consists of bread and milk, or bread and broth, for breakfast; bread, meat, and vegetables, for dinner; and bread and cheese for supper; with the addition of coffee and pudding on Sundays. According to the rule universally observed on my farm, *no beer or cider is allowed, excepting during the hay and corn harvests.* The labour consists of the general farm work; but I may more particularly observe the planting or dibbling of wheat, and other corn or root crops, and the hand-hoeing of corn, turnips, &c. The evening education is that of reading and writing, arithmetic, &c., and such religious and other instruction as time and opportunity will admit; in which, as well as their daily labour, they are superintended by a young man for the purpose, who was four years at the Woburn National School, and six years at the Duke of Bedford's farm, where he also worked in a gang; to which I may add, that I make it my duty to attend personally each evening to assist.

The enclosed calculations will show the cost of clothes per year and per week, and the cost of food per week, attendance, &c.:—

CALCULATION OF CLOTHES, MAKING, AND ATTENDANCE: TWENTY BOYS FOR ONE YEAR.

	£	s.	d.
34½ yards of moleskin, at 1s. 2½d. per yard,.....	2	1	8¼
44½ yards cordwroy, at 11d. per yard....	2	0	4½
3 yards of canvas, at 7d. per yard.....	0	1	9
3 gross of buttons, at 1s. 6d. per gross...	0	4	6
1½ lbs. of thread, at 2s. 10d. per lb.....	0	4	3
160 yards of calico, at 3d per yard.....	2	0	0
3½ dozen pairs of stockings, at 9s. per dozen.....	1	10	0
Shoes and mending, per contract.....	10	0	0
Making 20 suits, 50 days, at 2s. 6d. per day.....	6	5	0
Mending, say 25 days, at 2s. 6d. per day,	3	2	6
20 pairs of braces, at 6d.; 20 handkerchiefs, at 6d.....	1	0	0

78lbs. of soap, at 5d per lb.....	1	12	6
20 caps, at 2s.; 20 ditto, at 1s.....	3	0	0
20 smock frocks, at 4s. 6d. per frock.....	4	10	0
Attendance.....	25	0	0
	£62	12	6¾

Being £3 2s. 7½d. per boy, per year; or 1s. 2½d. per week. This calculation does not include the person who works with the boys.

TWENTY BOYS' KEEP PER WEEK,

taken at average market prices, as per amount consumed.

	£	s.	d
3 bushels of wheat flour, at 7s. 6d. per bushel.....	1	2	6
9¾lbs of cheese, at 5d. per lb.....	0	3	11½
1½lbs. of treacle, at 4d. per lb.....	0	0	6
3½lbs. of dripping, at 6d. per lb.....	0	1	9
35lbs. of fresh and salt meat, at 6d. per lb.....	0	17	6
1½ bush. of potatoes, at 6s. per bush.....	0	9	0
3 oz. of coffee, at 2s. per lb.....	0	0	4½
	£2	15	7

Or, 2s. 9¼d. per week, per boy.

Each boy's keep per week....	2s.	9¼d.
Each boy's clothes per ditto...	1s.	2½d.

Total expense for each boy per week. 3s. 11¾d.

In planting corn there is a considerable saving of seed (which will of course vary according to the idea of the farmer, as to quantity required); the seed is *all in the ground*, and at the required distances apart to admit of hoeing and weeding, and thus it requires less harrowing to cover the seed. The hoeing is as perfect as it well can be done by hand, and all the surface is moved—a system which is seldom carried out when it is hoed by the piece. In the turnip hoeing the plants are at regular distances, and all the surface is moved, so that no weeds escape. I may mention that the judges of Swede crops for the Herefordshire Agricultural Society, the season before last, mentioned the cultivation of my Swede crop as *the most perfect they had ever seen;* and I believe that in a field of 40 acres a man might have crossed it in six places, and not found six double plants. Of incidental work I need say little more than to remark that, in weeding, collecting couch, collecting turnips and potatoes, making hay, turning barley and other crops at harvest, picking stones from the land, &c., &c., the boys are peculiary adapted, as these operations do not require strength, but care, and from their size the boys get *so much closer to their work.*

But these are few of the great advantages to be derived. Whilst my boys are learning to be good and skilful labourers, and to get their living, they are rescued from what are too frequently dens of immorality and vice, and are learning their duty towards their God, and their duty towards their neighbour. They are learning habits of cleanliness, and a systematic mode of living, and may be, I trust, the commencement of a better race of men.

You may ask is this system appreciated by the labouring class? I should should say, most decidedly, it is.

I believe, in three months after I had filled up my number, *I had refused as many as sixty applicants* (some from a distance), and one poor woman walked 24 miles to get her boy placed with me, but my number was already made up.

There is another great advantage I must not omit to mention, that in keeping these boys *I am consuming my own manufactures* (wheat, pigs, sheep, &c.), by which means I have the bran back on the farm; I have the butcher's profit of pigs and sheep; I get the manure (night soil) on the land, and *I keep my capital in my own country* (my farm) *instead of sending it abroad, (i. e.,* the labour market). I believe I have given you every particular requisite, and I think the calculation near. The only items I have omitted are milk (skimmed), which would otherwise go to the pigs; and garden stuff, which they have when in abundance. The calculation is from Sunday morning till Saturday night, and the boys have lived in the usual manner. The expense may vary, but I believe this is about the average. I have said nothing of the accommodation and expense of fiitting up, but it is not great. There are also books, &c, which are those generally used by the national schools, published by the Society for the diffusion of Christian Knowledge; in these a sovereign will go a long way. This and the interest of capital invested in furniture, &c., when divided amongst 20 boys, amounts to very little per week; perhaps in all 2s. per day.

Before milk is put into bottles for keeping, it should be evaporated in a water or vapor bath, and the scum which forms upon the top carefully removed; half an hour before evaporation is completed, there should be mixed with every pint of the reduced milk, the yolk of an egg well beaten. After being thoroughly cooled the milk must be but into bottles, corked tightly, to undergo the secon scalding. Milk preserved in this way has been found at the end of two years to be unchanged, and to afford butter and butter-milk the same as if new. It is not however pretended, that it preserves all the qualities of new milk; it almost always has a peculiar odor and taste, but such as it is, it forms an agreeable and a valuable article for sea stores for long voyages.

Cream evaporated one fifth part and put into bottles after having had the skin coagulated upon the surface removed from it, and then subjected to a second scalding for an hour, has not been sensibly altered at the end of two years.

The juice of six pounds of early and very ripe cherries put into a sauce-pan, with three pounds of powdered sugar, is set over a fire and made to boil for half an hour; the sauce-pan is then removed from the fire, and a pound of ripe raspberries is thrown into the liquor and pressed down

with a skimmer; to the whole is added six pints of brandy flavored with some aromatic, such as cloves, cinnamon, vanilla, &c. This preparation is preserved in close jars set in the sun.

As soon as the large cherries are ripe, the preparation of brandy, mentioned in the last paragraph, is to be strained and then put into glass jars filled with the fruit to be preserved; these jars are placed on windows exposed to the sun, till the fruit becomes penetrated by the liquor.

Plums are prepared in a somewhat different manner. For preserving, take the finest green gages, prick them, and put them into a sauce-pan with cold water; set the sauce-pan on the fire, and as fast as the plums rise, remove them with a skimmer, and throw them into cold water; dissolve two pounds of sugar in two pounds of hot water, and when the syrup is cold, throw the plums into it, and allow them to remain in it at a gentle heat for some time; when the fruit is penetrated by the sugar, remove it, evaporate the sirup, put the fruit again into it, and treat it as before; after which, remove it again, and evaporate the syrup till it becomes tenacious, then return the plums to it for the last time. When the whole is cold, put it into bottles with a quantity of brandy equal to that of the plums and sirup. The unbroken plums alone must be put up in this way.

The description of this process is a sufficient guide for those, who wish to preserve other fruits in the same way.

When syrups are used instead of sugar, a greater quantity of brandy than that mentioned is necessary to preserve the fruits unchanged.

Alcohol dissolves and retains the aroma of plants; it is only necessary to make an infusion of the plant or flower in alcohol, and afterwards to pass the liquor through a filter.—*Chaptal's Chymistry.*

Of Milk and its Products.—There is no product of a farm which contributes more towards the prosperity of the establishment than milk; not only does it form in itself one of the most important articles of food for the family, but the sale of a portion of it, either in its natural state, or made into butter or cheese, furnishes a daily income, from which nearly all the internal wants of a household may be supplied: I therefore think it will not be departing from my subject to devote one chapter in this work to an object of so much importance. Milk appears to me one of the least animalized portions of the animal kingdom. The various kinds of food taken by animals affording milk, give to it various degrees of richness and different tastes; the milk of a cow which is fed upon the leaves and stalks of maize, or upon the refuse of beets, is very sweet, and that of a cow nourished with cabbages has not so sweet a taste, and exhales a disagreeable odor; the milk of cows which browse damp meadows is watery and insipid: from these facts we may establish as a principle, that the quality of milk may be so varied by the choice of food, as to adapt it to the wants of the individual to be nourished by it, whether he be a healthy man or an invalid.

The numerous experiments that have been made by Messrs. Deyeux and Parmentier to ascertain the effect of food upon the milk of a cow, furnish the following results:

1st. That it is improper to change suddenly the kind of food, as it for a time diminishes the quantity of milk, even though the food be more succulent and of a better kind.

2nd. That all plants do not give to milk their characteristic qualities, and that there are some that do not exercise any particular action upon either of the constituent principles of milk.—*Ib.*

The New White Paint, of which a temporary mystery was lately made, and the basis of which we anticipated to be either antimony or bismuth (the latter a metal proposed by Regnault to be classed with antimony itself), formed the subject of a paper read by Mr. Forrest, the discoverer, at the Liverpool Polytechnic Society, on Monday, last week; when he announced his intention to make a present of it to the public; intimating, at the same time, that it consisted of white oxide of antimony (argentine flowers, as it used to be called by the old chemists), and that it had many advantages as an excellent body paint, superior to white lead and much cheaper, inasmuch as antimony might be obtained in abundance for about £12 a ton, while lead costs £24 10s. He also pointed out its greater permanency of colour, and its capability of being spread over a much larger surface than an equal weight of white lead. Indeed, it is not only lighter, but may be made more subtle; and it was its superiority in these and other respects that led us to regard it as a likely substitute for lead. It is rather singular, too, that the old chemists called antimony their lead; maintaining that, in some of its properties, it bore a near affinity to lead.—*Builder.*

Imports and Exports.—An account was yesterday printed (obtained by Mr. Wyld), in a parliamentary paper, of the official and declared value of the imports and exports of the United Kingdom for 41 years, ending with the year 1846. The imports calculated on the official rates of valuation were in the last six years (1841 to 1846. inclusive) as follows:—£64,444,268, £65,253,286, £70,214,912, £75,449.374, £85,281,958, and in 1846, £75,953,804. The total exports in the same period were—£116,902,887, £113,841,802, £131,832, 947, £145,956,654, £150,877,902, and in 1846 £148, 584,607. The declared value of the produce and manufacture of the United Kingdom exported in the six years, was—1841, £41,-634,623; 1842, £47,381,023; 1843, £52,279,769; 1844, £58,584,292; 1843, £60,111,082; and in 1846, £57,785,876.

FESCUE GRASS.

The grass that we place next in general value to the "ray-grass" is the meadow. The name "fescue" comes from *feta*, from *feo*, (Lat.,) from —— (Gr.) produco, meaning the young shoot or production of anything; "Fotuque" (French) a straw or stalk, a fescue or wild oat. The English Flora enumerates fourteen species of "fescue;" other botanists mention many more, some of which have the panicle pointed to one side; in the others, the panicle is equally spreading. The generic character of festuca:—Calyx two-valved, unequal, keeled, pointed, concave, upright, containing a spikelet, of many flowers more or less awned, alternate and two-ranked; corolla, two valves—lower one largest, like the calyx pointed and awned—inner one narrower, two-ribbed, cloven at the summit; filaments capillary, shorter than the corolla; anthers oblong, pendulous, notched at each end; germen turbinate; styles short, reflex; stigmas feathery; pericardium none; seed single, slender, oblong, very sharp at the ends, and grooved longitudinally, loose, and enveloped by the unchanged corolla; root annual or perennial; stems erect, spreading, leafy, knotty; leaves generally narrow, rigid, glaucous, or greyish green; flowers panicled, often purplish, nearly or quite erect.

Essential generic character:—Calyx two-valved acute, very unequal, many-flowered; spikelet cylindrical, two-ranked, roundish, with acuminglumes; corolla pointed at the summit, keeled, concave; inner valve flat or ribbed; flowers dispersed.

The "festuca" is nearly allied to the "bromus" and to the "poas." The terminal awn of the "festuca" is mostly constant, and the fine pubescence on the edge of the inner valve of the coralla is taken as a distinction from the strong bristly fringe of the "bromus." In "festuca" the awn is an extension of the valve narrowed gradually into a point; in "bromus" it is inserted in the keel and middle rib, as in the "avena." The "poas" are constantly awnless; and though the awn in "festuca" is not so constant as to be always depended on, the habits, size, and proportion of the different plants are sufficient to mark the character where the more minute parts are indistinct.

Of the "festucas," four plants claim the notice of the farmer—the meadow fescue, the darnel-like fescue, the hard fescue, and the sheep's fescue; which will be separately treated in our order of general utility.

The "meadow fescue" is one of the most valuable grasses that is known, not in consequence of any single very preeminent quality, but for the very best reason of preference—that of general value. It is found in the richest pastures, and on lands of mostly all qualities, but preferring those of a soft and damp nature.

Specific character:—Panicle-upright, branched, spreading, directed to one side, oblique; spikelets without awns, linear, compressed; florets numerous, oblong, obscurely ribbed; leaves, flat; nectary four-cleft; root fibrous. The plant is strictly and persistently perennial, very hardy, and grows readily on most soils; it yields much foliage and very sweet, on almost all descriptions of land, and never becomes tufted like many other grasses; it ripens an abundance of seed, sound and healthy, and easily gathered. Thus, it possesses the valuable qualities of yielding an abundance of seed, growing readily on most soils, from the burning sands and gravels to the marshes and irrigated lands; it yields a sweet and an abundant herbage, much relished by cattle, and is equally valuable for hay, or alternate pastures, or for permanent meadows. For the latter purposes it is indispensable, and for hay of one year we have no plant so suitable to accompany ray-grass, as it attains a size and a produce the first year that is so necessary, along with quick growth, for a purpose of short duration.

The produce of this grass on an acre at the time of flowering has been stated at 13,612 lbs.; when the seed is ripe, at 19,057 lbs; he nutritive matter of the latter being only one-fourth of the former. In point of nutritive matter in the crops of the season, and without the lattermath of the "fescue," as it is rather late in flowering, it is superior to the foxtail as 11 to 9, and inferior to "cocksfoot" as 2 to 1. But the lattermath of the "fescue" must be reckoned, which will approach it nearer to the cocksfoot, and raise it more above the foxtail; 1920 grains of the leaves of "fescue" gave 96 grains of nutritive matter; and 100 grains of nutritive matter gave 59 of mucilage or starch, 20 of saccharine matter or sugar, and 21 of extractive or saline matter. It flowers about the middle of June, the usual time of cutting grass crops for hay, and ripens the seed about the end of July; it is not a very early grass, but for general purposes it admits no superior, the ray-grass excepted, which it exceeds in quantity of foliage. The strong growth sometimes shows a coarseness of stems and panicle which dose not accompany the compact inflorescence of the "ray-grass."

The superior merit of the "ray-grass" and the "fescue" for alternate husbandry consists in the plants sending up an abundance of stems of a moderate height, and of a medium degree of coarseness. If the culms were fewer in number the quality would be deteriorated. The growth of the two plants is very ready on most soils, and the seed produced is ample, sound, and easily gathered. For permanent meadow, the use is also indispensable, as the ready growth furnishes a supply of herbage till the later growing plants come forward. In alternation, not less than 6 lbs. of "fescue" should be sown on an acre, and 2 lbs. for permanent purposes.

AGRICULTURE AS A SCIENCE.

AND INCREASING THE FERTILITY OF THE SOIL.

In whatever manner we may picture to ourselves the first practice of agriculture, when the human race was still in its infancy, I think that it is pretty generally allowed that agriculture originated in a desire, on the part of man, to have those plants which experience had taught him were useful to him, collected in his own immediate neighbourhood, instead of being obliged to gather them from a distance.

"It was a natural consequence of this desire that man should attempt to remove from their original site, and plant in his own vicinity those plants, the usefulness of which had attracted his attention, and excited his desire of possessing. And it is, moreover, probable that such attempts were not always successful; nay it is certain that many of them must, at first, have miscarried, and that more were taught gradually and by experience, which plants will bear transplanting and which will not. Thus the term cultivated plants became established and defined; in its more extended sense, this term means such plants as, from their usefulness to mankind, have become the subjects of care and labour to insure their growth, and which may be transferred from one locality to another, without their complete development being prevented. Man could not, however, fail to observe very soon that the artificial cultivation of plants causes them to undergo considerable alterations in their nature and qualities; that the whole aspect of the cultivated plants differs from that of the wild plants; and that simultaneously with a change in the aspect, an alteration also ensues in those properties which render them useful, so that in one plant they increase, while in another they decrease by cultivation. It was, therefore, natural that the causes for these changes should be sought for, and that cultivation should be confined to those plants the usefulness of which is augmented by their being cultivated."

Of course man arrived at this knowledge by experience, and learned what plants admitted of cultivation, and, therefore, which to prefer for this purpose. The term cultivated plant, then in its more restricted sense, is applied only to the latter kind of plants.

Cultivation has a constant tendency to oppose the peculiar development of plants ordained by nature, since it constantly endeavours to maintain their artificial or abnormal state.

For the purposes of cultivation, then, a knowledge of the constituents of the soil generally on the one hand, and of the especial constituents indispensable to the various kinds of cultivated plants on the other hand, are the necessary preliminary acquisitions to enable us to lay a rational foundation for agricultnre as a science. It is, therefore, very easy to explain why it is only of late years, that agriculture has been raised to the rank of a science, since chemistry itself, which must necessarily precede it, has but very recently become a science. It was only after the various substances surrounding plants—atmospheric air, water, and soil—had been chemically investigated, and after the material wants of vegetables had been ascertained by careful and minute examinations, that the construction of an agricultural science could be reasonably thought of; all attempts at such an attainment, previous to the aid of a true chemistry, necessarily miscarried.

It may be asked how could it happen that agriculture could be practised for thousands of years, and successfully too, without a scientific basis; or if an opinion has been formed that it may become a science without the aid of chemistry, I would answer and refute such objections by remarking, that agriculture is *an art* as well as *a science*, and that the most skilful practice of an art, even from the earliest age to the present time, by no means implies that it must have a scientific basis.

Innumerable experiments have been made, and from an accumulation of experience, rules have been formed which it was necessary to follow, in order to practice the art of agriculture successfuly: these rules have been brought under certain more general points of view; and in such principles and laws we trace the first attempts to establish a science of agriculture. But the many errors derived from false experience, and the fallacious inferences drawn even from correct observations, have always made the theory thus constructed disagree with, and even contradictory to the practice of the art; so that neither has the theory been confirmed by the practice nor has the practical art derived any real advantage from the theory. No better proof can be needed than this, that until very recently no real science of agriculture has existed.

But it is now universally felt that the time has at length arrived when the mere empirical practice of the art of agriculture is no longer sufficient. Agriculture, as an art, has probably reached its highest limits; the ingenuity of man has been exercised to the utmost in the mechanical labours of the soil, and in the treatment of cultivated plants; and it is altogether hopeless to expect any further improvements or inventions calculated to accomplish any great benefits in that direction. Nothing, in fact, remains to be done in this way. All the efforts, indeed, made at present to improve the practice of agriculture are directed, consciously or unconsciously, to the establishment of a science; and this can be accomplished only by a comprehensive study of the natural sciences, and especially of chemistry.

The cultivators of the soil discovered the advantages of fallow, of the rotation of crops, and the necessity of manuring in an empirical way, that is by experience. But, notwithstanding these points have been known for thousands of years, yet the agriculturist, up to the present moment, is obliged to act just the same as was done at the

beginning, in spite of the existence of many universal defects in practice. People either have not dared to abandon the old methods, yet they have not been able to improve them, or their attempts to introduce improvements, being only based upon empirical experience, have failed, and the sacrifice of time, labour and capital, have caused all deviations from the old beaten paths of practice to be looked upon with distrust. Agriculturists have come to regard it as a matter of course—as an established rule—that a farm, conducted upon theoretical principles, will yield less produce than it would in the hands of a purely practical farmer.

In short, defects in practice are obvious enough upon many points; and yet theory has hitherto offered no assistance, because it has not been based upon correct principles. The art of agriculture invented fallow, the rotation of crops, and manuring; but a true agricultural science can alone bring them to perfection.

This science may be subjected to two tests as to its truth or fallacy. First, it must not contradict well-established experience; and secondly, where practically applied, it must yield more favorable results than mere empiricism.

It is pretty generally known that the chief part of the mass of ordinary soil contributes nothing towards the nutrition of plants, and that the necessity of the soil to cultivated plants consists of the mechanical support it affords them, and in its constituting a medium for transmitting the salts and the water essential to their growth and development. Plants take a large portion of salts from the soil for their assimilation; consequently if these salts are not replaced, the land becomes unfit for their full development, and the produce of the crop is much deterioated. Three ways are open to the farmer to restore to the land its former nutritive powers.—1st. *By the operation of a summer fallow.*—2nd. *By the application of Manures.*—3rd. *By the land being left a certain time under pasture.*

By summer fallowing, a writer on agriculture observes,—"The desire for, and the necessity of rest, which nature has implanted in all animals when exhausted by long continued labour, has, no doubt, contributed much to the adoption of the practice of allowing the land to lie fallow. And although the parallel thus drawn between the functions of animal life and inorganic matter is neither correct nor logical, yet it has operated to establish the theory of fallow."

The earth cannot sleep, nor are we warranted to assume that it could be agreeable or beneficial to it to be spared for a time the infliction of the plough; but the soil in most cases has the property of altering its state of aggregation, when left without ploughing, and of accumulating a large amount of the salts indispensable to the growth of plants, if left for a time without cultivation.

Summer fallows, as they are often made, are little better than half a fallow. The land should be continually stirred—not a weed allowed to grow, for if weeds are allowed to occupy the land, a crop of some description of cultivated plant might as well be grown.

We will next examine how the soil accumulates the salts requisite to cultivated plants during summer fallow. A soil may contain all the salts* necessary for the assimilation of plants, but being in a state of combination insoluble in water and inert. Many of these compounds are salts of silicic acid, and are designated "silicates," and these silicates are decomposed by the action of the carbonic acid of the atmosphere. Carbonic acid possesses an exceedingly powerful tendency to combine chemically with those bases which, in their free and uncombined state, are soluble in water, and when dissolved, manifest that peculiar taste denominated alkaline. By this change the silicic acid is liberated, and may be dissolved in water the moment it is liberated; and the bases, as potash, lime, and soda, having combined with the carbonic acid, become carbonates, which are also highly soluble. It is thus shewn that a continual decomposition is going on; and if the minerals still present in the soil become decomposed so rapidly that the formation of alkaline salts and soluble silica keeps pace with the withdrawal of these substances in the crops, such a soil will always remain fertile. But this occurs very rarely, and scarcely ever in Europe. The continued stirring of the soil does not produce that benefit to the plants in a mechanical way that many persons suppose; it is from the greater surface that is exposed to the atmosphere which causes disintegration to take place more rapidly, consequently, the rougher the surface can be left, the quicker the operation.

Some there are that will state that there is no occasion to have summer fallow at all; others will as stoutly maintain the reverse. It is not my intention to defend the one or the other, as circumstances and situations must decide; however, I may mention that, if many farmers would give their land a summer fallow round, they would be great gainers by it, as they would then get their land thoroughly clean, which they are not likely to do by the hurried manner in which much land is prepared for the fallow crop.

2nd. *By the application of manures.* Continual harvests have, in the course of time, placed the soil in that state of exhaustion that neither summer fallow nor rotation of crops can restore it to that state of fertility requisite for the full development of cultivated plants, without manure; consequently, we must restore these constituents by that means. Plants take from the soil only inorganic matter, which we can restore

* Salts. The term salts is not limited to bodies possessing a saline taste. A great number of salts, including all those which are soluble in water, have not a saline taste. It is a term used for a combination of an acid and a base.

to the soil in two ways; first, by burning the plants and using the ashes, and, secondly, in collecting the dispersed substances made by the use of plants, and restore them to the soil.

The first method cannot answer, as it would never do to cultivate plants for the purpose of consuming them by fire for manure; but because we expect to derive advantages from them, such as the nutrition of man and animals, and their employment in the arts; consequently, we are restricted to the second method, which is more circuitous.

It must be borne in mind that no plants can be employed with advantage as manure as long as they can be used for other purposes. We will briefly examine the various transformations they pass through during their use, in order to lose none of their inorganic constituents. Many plants are used for the nutrition of animals, which are finally consumed by man; others which are not fit for this purpose are used to litter animals, and for other economical purposes.

Start not at the assertion, but plants and animals, so far as their truly *organic elements* are concerned, are the *offspring of the air;* they are but condensed or consolidated air.

It is in the vegetable kingdom, therefore, that the great elaboratory of organic life is found; it is there that both vegetable and animal substances are compounded, and they are all alike formed at the cost of the atmosphere.

From vegetables these substances pass ready formed into the bodies of herbivorous animals, which destroy one portion of them, and store up another in their tissues.

From herbivorous animals they pass ready formed into the bodies of carnivorous animals, which destroy or lay them up according to their wants.

Finally, during the life of these animals, or after their death, the organic substances in question return to the atmosphere from whence they originally came in proportion as they are destroyed.

Thus is the mysterious circle of organic life upon the surface of the globe completed and maintained. The air contains or engenders the oxidised substances required; carbonic acid, water, nitric acid, and ammonia. Vegetables, true reducing apparatus, seize upon the radicals of these, carbon, hydrogen, azote, and ammonium, and with them they fashion all the varieties of organic or organisable matters which they supply to animals. Animals, again, true apparatus of combustion, reproduce from them carbonic acid, water, oxide of ammonium, and azotic or nitric acid, which return to the air to reproduce the same phenomena to the end of time. And if to this picture, already so striking by its simplicity and grandeur, we add the indubitable part performed by the solar light, which is alone possessed of power to bring into play this immense, this unparalleled apparatus, constituted by the vegetable kingdom, in which the oxidised products of the atmosphere are subjected to reduction, the picture is complete.

Thus we see that it is impossible to apply inorganic matter, let it be in whatever shape it may, wrong. It matters not whether it be the decayed straw of wheat alone, or the straw used as litter which has absorbed the fœces of animals, or the bodies of animals themselves—from the tiny sprat to the gigantic whale careering through the ocean, or the patient sheep and noble horse. The whole of their bodies are valuable for manure, bones, skin, flesh, and blood, when in a state of decomposition.

If the farmer will think for himself, he will always find that science will assist him; for although practical experience possesses unquestionable value, it is like a vessel to which, in the form of science, the compass is wanting: it is a treasure which cannot be inherited. Science enables us to bequeath this treasure to our children, and it enables our children to increase the store. Science teaches us to recognise the food of plants, and the source from which it is derived. This knowledge alone makes us true masters of the soil, and lords of our capital.

3rd. *By the land being left a certain time under pasture.* It is well known that if land is properly laid down in grass, and well stocked with sheep, that it acquires a considerable portion of the fertility which it has lost by constant cropping. Much also depends on the kind of stock employed to eat the grass. Stock which has come to maturity is the best; milk cows and young growing stock the worst; the latter from not having the whole of their frame fully developed, require a large portion of salts for the formation of bone and muscle, and milk cows for the formation of milk; consequently, having assimilated so much for themselves, less is passed off in urine and dung.

If any person has the curiosity to examine an old grass pasture that has never received any manure, except left by stock, they will find two or three inches of the surface free from stones, the soil being of a rich soapy consistency; the whole of this soil is formed from the decayed roots and leaves of the grass, and the dung of the stock employed; so that a supply of manure for the following crops have been gradually accumulating during the time it has been pasture.

No general rule can be laid down as the period in which the soil will be able to regain its former fertility; this depends principally on the number and quality of the stock.

In some counties, the slovenly and injurious practice exists of taking two, three, or four corn crops in succession, and then laying it down in grass to rest.

This is now confined principally to the south-eastern counties. The manner in which land is often laid down appears to be left in a great measure to chance, as the soil is often in a very foul

state, and the seeds sown are not those best adapted to the soil, but such as the farmer fancies are the best. By this system the grasses indigenous to the soil soon become master, and long before the land is broken up for the next crop, the principal part of the grasses sown have disappeared, and nothing but a bed of weeds left.

Again, the whole of the produce of grass must be consumed on the land—none carried off for the purpose of soiling or for hay. The pastures should be well stocked, and as few seed stalks allowed to rise as possible.

In some instances the subsoil is considerably richer in salts (that percolate rapidly) than the surface. When this is the case a crop of buckwheat is very useful: it being a deep-rooted plant, brings many of the salts again to the surface, which is contained in the stem and leaves. This crop should be ploughed in when in flower, which is found a good preparation for wheat.

After all, the soil, as Mr. Milburn observes, "is never so utterly impoverished by cropping as not to be still capable of producing something." The productive faculty composes what may be termed its natural fecundity, which, although existing in various proportions according to its original fertility, yet when capable of producing five bushels of rye per acre, besides the seed may be supposed equal to 40 degrees; its full value has been estimated at 100. Now, from various experiments which have been made on a large scale, it is supposed that the application of about eight tons per acre of well fermented farm yard manure, of average quality, are equal in its effects to 50 degrees of nutritive matter, and that a bare summer fallow, not only by the influence of its working on the land, but also by producing the decomposition of the weeds which it destroys, is equivalent to 10 degrees, thus bringing the soil round to its former state, and rendering it again fit for the production of further crops.—*Thomas Keir Short, Martin Hall, Notts.*

STEAMING FOOD FOR PIGS.

In Wade's British History it is stated, that a gentleman in Norfolk put six pigs, of nearly equal weight, on the same food and litter for seven weeks. Three of the lot were kept as clean as possible with a curry-comb and brush, and were found to consume, in seven weeks, fewer peas by five bushels than the other three, yet they weighed more, when killed, by two stone and four pounds on the average—a strong argument in favor of keeping pigs personally clean.

From Mr. Boswell's experiments, we learn that during an equal space of time, the increase in the live weight of five pigs, fed on steam-boiled food, was 4 cwt. 2 qrs. 7 lbs., at an expense of £6 19s. 4d., while the increase in the live weight of five pigs, fed on raw food, was only 2 cwt. 2 qrs. 29 lbs., at an expense of £5 1s. 6d., a result highly favourable to the practice of feeding swine on steamed food.—*Farmers' Friend.*

CULTIVATION OF THE PLUM.

The cultivation of the plum is very simple, and perhaps not grown so extensively as it deserves.

The varieties are numerous, but the following are most worthy of the notice of the farmer, and succeed as standards:—

DESSERT PLUMS.

1. Green gage; well known.
2. Violet native; a French variety, and good fruit.
3. Imperitrice; a purple plum, good for drying, keeps well.
4. Coe's golden drop; a large yellow; keeps well, one of the best plums grown.

BAKING AND PRESERVING PLUMS.

5. Red Orleans: great bearer.
6. Magnum bonum; large plum, wanting in flavour.
7. Winesour; the best for preserving; delights in a calcareous soil.
8. Damson; excellent for preserving.
9. Bullace; white and black, good for cheese.

ESTIMATION OF SORTS.

The green gage is generally ranked the most delicious of plums, but many prefer the golden drop, to which, when grown to perfection, we give the preference. For a small garden, No. 1, 4, 5, 8, will be found the most profitable.

The winesour is extensively cultivated in the neighbourhood of Sherboorn in Yorkshire, where it first originated; at the same time it does not grow wild in abundance as stated by Loudon. Perhaps the price of no fruit fluctuates in the market more than the winsesour; in cold wet seasons the price varies from 20s. to 25s. per peck, whereas in favorable seasons they may often be obtained at from 2s. to 5s. per peck. The assertion is wrong that this tree will not flourish in any hot calcareous soil: it is true it prefers the latter, but the writer of this article has grown it successfully for many years on a light sand. When plums are planted in an orchard, half standards will be found the best, planted 30 feet distant each way: little or no pruning is required, except removing cross branches and keeping the tree open.

We do not believe that any fruit deserves a wall better than Coe's golden drop plum: an east or west wall is the best, and we have seen fine crops of fruit obtained on a north wall, as far north as Doncaster.

The trees should be trained on the fan principle, and kept moderately shortly pruned. As the fruit hangs after many of the others are gathered, the trees should be protected with gauze or thin netting. In the end of September or beginning of October the fruit should be carefully gathered with the stalk attached, if the object be to keep the fruit some time. Suspend each plum separately with thread tied to the stalk, and hang them in a cool dry room: look over the fruit

daily, and remove all that show the slightest symptoms of decay. By following this method we have frequently had plums on the table on the 21st of January: they will become slightly shrivelled, but retain all the flavour as when fresh gathered, providing it has been done before the occurrence of frost.

The imperitrice may be treated in the same way, only they are less trouble, as they may be gradually dried on plates or dishes, turning them occasionally, and removing any that decay. They do not retain their flavour so well as the golden drop, but are still an acquisition to the dessert in the winter months.—*Thomas Keir Short.*

The theory of the rotation of crops is of great interest to agriculturists. "When cattle," says Davy, "are fed upon land not benefitted by their manure, the effect is always an exhaustion of the soil. This is particularly the case where carrying horses are kept, as they consume the pasture during the night and drop the greater part of the manure during their labour in the day time. The exportation of corn from a country, unless some article capable of becoming manure is introduced in compensation, must ultimately tend to extract the soil. Some of the spots, now desert sands, in Northern Africa and Asia Minor, were anciently fertile; Sicily was the granary of Italy, and the quantity of corn carried off from it by the Romans is, probably, a chief cause of its present sterility. The late George Sinclair took a similar view of the cause of the exhaustion of soils. "If," he says, "a plant impoverishes a soil in proportion to the weight of vegetable matter it produces on a green space of ground, the following will be the order in which the undermentioned plants exhaust the ground, being the proportion they bear to each other with respect to weight of produce:—

Mangel Wurzel	25
Cabbages	25
White Turnips	16
Potatoes	15
Khol rabi	14
Bulb-stalked Cabbage	14
Swedish Turnips	13
Carrots	11

But when we take the weight of nutritive matter, which a plant affords, from a given space of ground, the results are very different, and will be found to agree with the daily experience in the garden and in the farm. The following figures represent the proportion in which they stand to each other with respect to the nutritive matter per acre, and in exhausting the land:—

Potatoes	63
Cabbages	42
Mangel Wurzel	28
Carrots	24
Kohl-rabi	17
Swedish Turnip,	16
Common Turnip	14

Change of crops also prevents very materially the increase of predatory grubs and insects, which also more or less prey upon the farmer's crops. The parent of the wire-worm, for instance, which is the larva of a small beetle, the *elater segstis*, may be seen in the summer months depositing its eggs on lays or meadows abounding with the cereal grasses; for instinct teaches it to place its eggs where the young wire-worm will meet with its natural food, which are the cereal grasses. Change of crop, therefore, not only checks the deposit of the eggs, but by removing the natural food of the young vermin, it materially prevents increase, or even their continuance, which otherwise, as is the case, for instance, with the wire-worm, might for four or five years be a pest to the soil.

Threshing Wheat, by the flail, is much practised by farmers who supply the London market with straw. The price for threshing and dressing reaped wheat is from 2s. 6d. to 3s. the quarter of 8 bushels. Should the wheat yield well a man will thresh out a quarter in a day. With the common hand-dressing machine, 15 quarters or 120 bushels may be twice winnowed and put into sacks by two men in a day.

Threshing Barley.—A much larger proportion of barley is threshed by hand than of wheat, for it is often done as cheap by hand as it is by our present system of hiring machines. Allowing one of those to thresh 20 quarters (160 bushels) of barley in a day of 10 hours, the following will be a rough calculation of the cost:—

	s.	d.
Hire of machine	12	6
Board of man	1	0
Six horses	15	0
Six men at 20d	10	0
Four boys at 8d	2	8
Dressing 20 quarters at 2d	3	4
Total	44	0

The average expense of threshing 20 quarters of barley of the same description by the flail, and dressing the same, is 40s., or 4s. cheaper than the machine, which will nevertheless have the advantage of despatch. The rate per quarter for threshing and dressing varies from 1s. 6d. to 2s. the quarter. I have known two men to thresh and dress, on an average, 15 quarters a week, at 20d. the quarter—they earned 25s. weekly. When barley is harvested in large barns, 2d. or 3d. a quarter is given extra for that laid in the middlestead or threshing-floor. Oats are threshed from 1s. to 1s. 4d. a quarter; beans and peas from 1s. to 1s. 6d. The quantity threshed varies from 1½ to 2 quarters per day. Thatching stacks, 1d. per square yard. Common Suffolk draining, 30 inches deep, 4s. to 4s. 6d. a score rods or perches; tile-draining, 4 feet deep, 6d. to 8d. a rod. Blacksmith's bill, for pair of horses, £3; saddler's bill, for pair of horses, £1 per annum. Potatoes are dug and pitted in the field for 20s. to 24s. per acre.—*Farmers' Friend.*

CULTURE OF THE DAHLIA FOR EXHIBITION.

"I beg to offer the following directions as the result of considerable experience, attended with uniform success. The ground which I occupy is loam and old vegetable garden mould. The finest flowers are produced with less labour and attention, on the latter, to which, of course I give the preference; and I would recommend persons selecting a new piece of ground, or beginning to cultivate the Dahlia, to choose a moist, light soil, in a convenient situation for giving them plenty of water, as rapid growth causes them to produce flowers with perfect centres; and those flowers that generally come thin after the first bloom, should have an open situation and heavy soil, in order to produce slow growth. Marquis of Aylesbury, Hudson's Princess Royal, and such like flowers, are fit for the former situation; and Lady St. Maur, Beauty of Sussex, Marchioness of Cornwallis, &c., are suitable for the latter.

"*A few remarks on Planting.*—The ground having been well thrown up in ridges during winter, about the first week in May, having a quantity of rotten manure and soil well decomposed together (but where it is convenient, I prefer night soil, which I find to produce the finest flowers), I mark the distance from plant to plant (six feet each way), dig the soil out one spade deep and three feet wide, and then fill the space with the prepared compost. The proper time to commence planting is about the middle of May. Select those plants that are short, stout, and fast swelling; avoid those that have stood too long in the pots and have become hard in the leg. I prefer plants about six to eight inches in height, as they make shoots near the ground. I first place my stakes where I intend to plant, then set the Dahlias, and secure them with strong bars, sufficiently loose to allow the stem to swell. As soon as they produce the side branches, I secure them with small sticks. I must strongly impress on those who wish to obtain fine flowers, the importance of tying the branches out, *not up* in a bunch, like a wheat sheaf, which is too often the case; as it is essential that the sun and air should circulate freely through the plants, as well as round them. I procure four side branches on each plant, if possible, then place four stakes, the distance varying according to the growth of the plant, some eighteen inches to two feet, and thin all superfluous shoots away as the plants progress. It is also injudicious to subject each variety to the same amount of thinning; for by such treatment, as much injury will be done to some kinds as good to others. Those that are generally too large and coarse, must be spared, when such varieties as require size only, should be thinned considerably. Those who have grown the Dahlia for exhibition will be fully alive to the importance of keeping down insects, more particularly the common enemy, the earwig. Many plans are adopted for this purpose, the most common, and perhaps most effectual, being to place bean stalks about the plants, and to put upon the stakes which support the plants, small pots, half filled with dry moss, to which they retire. The most active vigilance is necessary, as they fly from plant to plant; but commence early to examine the plants, and keep them down as much as possible. The surface of the ground should frequently be moved; it will require to be forked up between the plants about five or six weeks after they have been set. Cleanliness should be observed in every department, and at every stage of their growth, or success will be anything but certain. From constant watering, the soil near the plants will become baked and hard; it will, therefore, be best to mulch them with partly decomposed manure. This should be done immediately after the ground has been forked over, as it will keep the roots nearest the surface moist. Use soft water, if possible. When the plants are become large, it will be necessary to give them considerable quantities at a time, instead of frequent waterings; but this will depend upon the state of the weather and the soil.

"Selecting blooms for exhibition often puzzles the most experienced growers. The dark selfs being so much more numerous and superior in shape to the light flowers, in selecting twenty-four; one or two points often have to be sacrificed, either shape or contrast in colour. I recommend that as much diversity of colour as possible should be introduced, with due regard to shape and perfect centres. Much can be done by arrangement, yet we often see stands contain a whole row of flowers of great similarity. At all times place deep circular flowers at the four corners, and select quality before size. Discard all confused centres. Never unnecessarily handle the blooms; it should be remembered that all this pains-taking has been to produce them in the highest state of perfection, to be looked at only; the dead

appearance caused by handling can never be removed.

"*Fancy Dahlias* are becoming very popular, and deservedly so. The impression that these party-coloured flowers could never be produced of good shape, is fast wearing away; every succeeding season has tended to remove the prejudice, and some of the flowers in the accompanying list of fancy Dahlias would grace a stand of ordinary varieties. I should recommend the same treatment for these as the others, and in a few years they will, no doubt, be as extensively cultivated, being more showy in the borders, and with improved shape, will be more attractive in the stands.

"The varieties in the following list will be found worthy of cultivation, and very ornamental to the flower garden:—

Ascanio (Salter).—Purple and white, pretty.
Alexander (Schultz). Gold, edged with scarlet.
Bijou de Closhault.—Dark rose and white.
Bouquet de Breuil.—Scarlet and white, fine shape.
Captivation (Salter).—Nankeen, tipped with white, large and fine.
Coquette (Schmidt).—Carmine and white, pretty.
Delicata (Girling).—White, edged with rose.
Erzherzog Stephan (Deegen).—White and purple.
Eugene Sue.—Violet, purple and white.
Hermina (Makring).—Scarlet and white, fine shape and very strong.
Judy (Girling).—Purple, tipped with white.
Ludwig Pensel (Deegen).—Blood-red, tipped with white.
Ludwig Marquard (Sieckman).—Crimson and white.
Madam Walner (Girling).—Dark marone, tipped with white.
Miss Watson (Girling).—Rose lilac, tipped with white, good.
Maria Louisa.—Marone and white.
Nihil (Bailey).—Scarlet and white, large and showy.
Preussens Kokarde (Deegen).—White edged with black.
Prima Donna (Sparry).—Crimson and white, fine shape.
Quinola (Poulet).—Dark crimson tipped with white.
Rosea alba (Girling).—Rose and white, very distinct.
Ville de Beaume (Poulet).—Scarlet and white, fine show flower."

AFFECTIONS IN ANIMALS.—A correspondent who communicates his name (E. Evans) as a voucher of his veracity, has sent us the two following anecdotes. That which relates to the dog is only a repetition of similar phenomena that have occurred within our own knowledge in the animal world; but the feline adventure is one which we do not recollect at this moment to have heard paralleled. Our informant states that a gentleman residing in Norfolk has a favorite pointer, which he one day observed stealing away from the house with a loaf of bread in his mouth. On following, and making enquiry after him, the animal was found in the stable sitting up in a begging attitude, soliciting a pony, with whom he was on habits of intimacy, constantly lying in the same stall, to take and eat it. Like Tommy in Sandford and Merton, he seems to have forgotten that the bread he so generously proffered was stolen property. On further inquiry the gentleman was informed that his dog was constantly in the practice of purloining food in the same manner and carrying it to this favourite pony. On one occasion the animal was observed to express great annoyance, and to whine excessively, because, forsooth, the pony would not eat a bone which he had brought him to pick. Our informant justly observe that instances of such strong affection between animals of a different race rarely occur. The same correspondent states that at the house from which he dates his letter, there resides a cat which has just had a litter of kittens, and, strange to tell, in addition to her own proper family, she is actually rearing, with the greatest possible tenderness, a brood of young chickens—the hen mother having died before they were able to feed themselves. "Cat, kittens, and chickens," says our correspondent, concluding with something like a rhetorical chuckle, "all lie in the same nest, the chickens nestling upon her back." In such facts as these we take great interest, and shall be happy at any time to give publicity to similar curious and entertaining anecdotes of the animal world. The occasional aberrations of instinct are quite as remarkable as the certainty and constancy of its operation in general.—*Cambridge Advertiser.*

POISONOUS PORK.—A captain of a vessel, from Constantinople to Wexford, and several of his crew, died from eating pork preserved in a leaden cistern.

Agricultural Journal

AND

TRANSACTIONS

OF THE

LOWER CANADA AGRICULTURAL SOCIETY.

MONTREAL, AUGUST, 1848.

In our last we stated that a good crop in Canada this year would go far to improve the circumstances of the country, and we rejoice to say, that from present appearances, there is every reasonable hope that we shall realize an ample crop, with the blessing of favorable harvest weather to save and secure it. We have done all in our power to bring prominently before the public the great importance of Agriculture, and if we have failed to convince our readers of this unquestionable fact, we regret it. The most satisfactory proof we can have of the success of our endeavours will be the active co-operation and support of the public, in promoting the improvement and securing the prosperous condition of Agriculture. It would be inconsistent of any man who entertained the opinion that Agriculture was all-important to this country to withhold any support, it was in his power to give, to promote its prosperous condition; and we cannot hide from ourselves, that so long as a general interest is not manifested to do all that is possible to instruct and encourage the improvement of husbandry, Agriculture, and all we can say in its favour, has very little value in the estimation of our readers or the public. The Lower Canada Agricultural Society have been organized more than a year, but to enable them to accomplish the objects for which the association was formed, requires active support. We have constantly, and from all quarters, heard their objects approved and commended, but certainly the support necessary for their accomplishment has not been afforded. The circumstances of the country, at present, have been the main cause of this, we believe, but when matters are at the worst, is the time for exertion to improve them; and we again repeat, that it is from a prosperous state of Agriculture the improvement of the circumstances of the country must come, and that it is impossible for it to come from any other source. This proposition we advance without any apprehension that it can be disproved satisfactorily. The present inactivity in our trade, we should have no cause to regret, if it has the effect of inducing us to understand our true position, and apply the only remedy in our power, namely—the augmentation of our own productions in quantity and value. This would give us *real* relief that we cannot hope to obtain from any other source. These are not less certain facts, however little attention they obtain from the community. There is not much encouragement to bring them so often before the public, except the examples we have of the ultimate success of perseverance in a good cause, and that what is true must overcome error, and prevail at last over apathy, and against all opposition. The grand and principal object of the Society was to establish Model Farms, and a system of instruction which should secure for farmers' sons, and others desirous of becoming farmers, a practical education adapted to their intended profession, embracing the science applicable to it, and thus giving them the same chance of success that young men have who enter other professions. There cannot exist a doubt, that while such establishments, so essential to the prosperity of Agriculture, are not provided for, it will be sufficient evidence that the true interests of Agriculture do not obtain much consideration. These matters have been long enough left to farmers without their effecting what is necessary, and we need not be surprised that it should be so. The farmers live apart, and do not meet very frequently for the purpose of taking into consideration their common interests, and, when they do happen to meet, they do not remain together a sufficient time to originate or perfect any great measure for

general improvement, nor have they generally the means to enable them, *unaided*, to establish either Model Farms or Agricultural Schools. If, therefore, it would conduce to general prosperity to establish Model Farms and Schools, they will, in the commencement, have to be provided for from public funds, or by persons of sufficient capital, but after some time, we have no doubt, these establishments would pay for themselves. In such matters of general interest and necessity, pounds, shillings and pence should not be the great consideration, where public money has been expended so liberally heretofore, usefully, we admit, but certainly not more for the general good than the establishment of Model Farms and Agricultural Schools, conducted under a judicious system of instruction and management. We shall now leave the matter to the consideration of those who are sufficiently interested for Agriculture, to take time to read this article, or look over the contents of this Journal when they receive it. We would still hope that, by bringing the subject constantly before those who will read our articles, we may be able to persuade them to take a lively interest in the cause we advocate, and if they should not approve of the suggestions we submit, they will propose those that would be better calculated to forward the improvement of Agriculture and the general prosperity of the country. The Society have no other object in view, and they will rejoice at its accomplishment, by whatever means, and by whomsoever proposed.

Book-farming, as it is termed, is ridiculed most unjustly by ignorance and prejudice, as if a good system of farming could be made a bad one, because it was published in print. If we object to perfect systems of Agriculture, because they appear in print, we may as well object to any other information or instruction we see in printed books or newspapers, and indeed we may object to education altogether. What is the use of education unless to be instructed by what has been written and published for us? Every farmer does not become an author or publisher on Agricultural subjects, but those who do so, confer a great benefit on agriculturists, although the latter have not generally the generosity to acknowledge the obligation. A farmer may cultivate extremely well in every way, and be a most successful farmer; but this is all for himself and his own advantage, and he does not make known his good system of Agriculture for the instruction, encouragement or benefit of others. What objection can be made that this good and perfect system of Agriculture should be published and made known to others? Is the system made a bad one because it is printed and published? We admit that if any publication will recommend a faulty system of husbandry, or one that would be injurious for farmers to adopt, that every well disposed and honest man should denounce the imposition, and endeavour to give correct information to the farmers; but to be opposed to good information and instruction, because it appears in print, is unquestionable evidence of gross ignorance and determined prejudice. Has it not been universally admitted that the art of printing has conferred incalculable advantages upon the human race? And if we are to reject all agricultural instruction or information that comes before us, because it is printed, certainly the art of printing cannot be any great advantage to Agricultural improvement. Every farmer will read with impartiality what may be in his power to read, and he can judge whether it would be proper to adopt any suggestions proposed to him. If he finds what is published is only the system adopted by himself, he should have no objection that it should be made known to other farmers. If there is any defective or improper information or instruction proposed for the farmer's adoption, as a patriot, he should expose the defects, and point out where the publication is in error. There is no just grounds for objection to book-farming, as it is termed, provided the information and instruction offered is consistent with good farming, and we never car

believe that such an objection can proceed from anything but ignorance and prejudice, or a selfish desire that there should be no other good farmers but those who make such objections to the instruction of others.

The Lower Canada Agricultural Society have lately received from England several new Agricultural works for their library, and books have been promised by friends and members that will very soon make a useful collection. It is not the great number of the books that constitute a useful library, but the character of the works that are collected. It is much better to have few books, well selected for an Agricultural Library, than to buy them by the square foot to fill up a certain space of shelves. All the books they possess at present contain interesting information and instruction on Agricultural subjects. It is to be regretted that they are nearly all in the English language, as it is very difficult to procure, here, any published in French. We hope that members and friends who may have Agricultural works in that language will help to furnish the library. We have translations of excellent French works, but cannot procure copies in the original language in which they were published. The Society may have translations made from their English books.

AGRICULTURAL REPORT FOR JULY.

The month of July was as favourable for vegetation as could possibly be desired up to the 21st. There was sufficient rain and sunshine to produce rapid vegetation, and we have never seen cultivated crops in Canada have a more promising appearance, where any justice has been done to them. There may, perhaps, be one drawback, that young wheat sown on rich soils has, in many places, been lodged, and may not again attain an erect posture. If this should be the case, it will prevent the grain from filling in perfection. It is one of the unavoidable consequences of late sowing that a rapid and luxuriant growth makes the straw or stem of crops soft and weak, and very liable to be beaten down and lodged by heavy rain. Another cause that occasions the straw of our crops to be weak is, that we do not apply lime or salt, either of which substances has the effect of giving strength and firmness to the straw, as well as weight to the grain. To insure good crops in ordinary seasons, we must cultivate for them, and apply to the soil the ingredients required to perfect a crop in straw and grain. The discoveries, from experiments made in other countries, should be very advantageous to us, if we put in practice what has proved to be beneficial. We have no doubt that the application of salt and lime to our lands here, particularly for wheat, would produce a most beneficial effect upon the crops. Peas, beans and oats are very luxuriant this year, and should the harvest be dry, there will be a most abundant crop of them. This, in a great measure, is owing to early sowing, that has been long recommended. Barley also has a much better appearance this year than last, and although thin in some fields, will, we believe, prove a full average crop—some has already been cut down. There are some grains defective in the ear of barley, injured apparently by the wheat fly. We have seen this insect this year, but not in such numbers as heretofore. It may be in consequence that scarcely any wheat was in ear in the neighbourhood of Montreal at the usual period of its appearance. We know, however, that some wheat has been sown early this year, and we would earnestly solicit a report from those who have sown early, to what extent, or if any damage has been done to the crop by the fly. We would very much rejoice if this great plague to the Canadian farmers was at an end, and that we could sow our wheat, as formerly, the moment the snow disappeared in spring. Indian corn and potatoes never looked better. The latter crop has no symptoms of the fatal disease that has damaged the crops of this useful root the last few years. The time has not yet come,

crop. We may hope the best, and that the however, that determines the fate of the potatoe precautions of farmers as regards the preparation of the soil, application of manure, and careful selection of seed, will have some effect in checking the disease. The season is very favorable for all other root crops, with the exception that turnips have suffered very much by the fly, but they may yet prove a good crop, as we know some farmers have repeatedly sown fresh seed, and this might have been done throughout the month of July, on rich, well prepared soil, or where ashes could be applied. We have grown a middling crop of turnips, sown as late as the first week of August, but it would only be, when the season was favorable, to near the end of November. The hay crop has much improved since our last report, but is still a deficient crop generally. When the beginning of June is very dry, hay is seldom a heavy crop, however favorable the latter part of the month may be, and up to the time of mowing. Showers of rain may have a most beneficial influence on cultivated crops that would have very little effect upon the land under grass. The moist weather we have had since the 20th of June has gradually improved the meadows, and prevented them drying up, as was certain to be the case had the latter part of June been as dry as the commencement of that month. If the hay we have is all well got in, it will greatly augment its value. One load of good well cured hay is worth more than a load and a half, or two loads, of ill cured hay.

The foregoing part of our Report was written previous to the 21st July, but on the evening of that day, and the following day, we had thunder storms and a great fall of rain, as heavy as we have seen for many years for the time it continued, which must have materially injured hay in process of curing, and also the growing crops in many places. We have not ascertained how far this heavy rain extended. At this period of the season, and this year in particular, when the crops generally are so very luxuriant, heavy falls of rain cannot fail to produce extensive injury to them, by beating them down, causing mildew, and damaging hay and barley now being cut. The safety of the wheat-crop will mainly depend upon its being a variety that will resist mildew and rust. If it should be rusted at this stage of its growth, it will be of little value; but we hope that black-sea-wheat will resist the rust as it did for the years past. Barley is so far advanced towards maturity that there is not much danger from rust; but peas and oats may both be injured by this disease. Beans have a most luxuriant growth, and the late rains will increase this luxuriance. We would therefore recommend that the extreme tops should be cut off with a scythe. This can readily be done by a careful person passing along the furrows. It prevents the constant blossoming, which is the greatest drawback to bean cultivation, and assists in maturing the crop and preparing it for the stack or the barn. The hay crop will, we fear, be greatly deteriorated in value by the rains in the latter end of July. The injury done to hay, in the process of curing, by heavy rains, never can be remedied. Grain crops, when cut down, may not suffer much damage by rain if not sprouted; they may be dried and saved without much loss. On the contrary, if hay once loses colour, which it very soon will by rain, it loses one-half or more of its value, compared with well saved hay. We do not make these statements as complaints of the weather or against the order of Providence; we only state matters as they are, and make a true report of the state of the crops. If the weather is now favorable for harvesting, we may yet realize a good produce, but all will depend upon this. Farmers are often unjustly accused of complaining, because they cannot save hay of a wet day, or have good crops, when the whole work of a year may be destroyed in one day without the power of remedy. There is a vast difference between the casualties they are subject to and those who have all their goods safely stored under cover. July 28th, 1848.

We have seen it recommended for foul soils to apply a few bushels of common salt per acre, and that it materially accelerates the destruction of weeds and their seeds; from 15 to 20 bushels per acre is the ordinary proportion. To most insects—grubs, slugs, worms, &c.—salt is very destructive: lime, to a considerable degree, produces the same result, but it must be applied in a much larger proportion than salt. Salt and lime not only help to kill the weeds and vermin in fallow land, but it converts them into decomposed matter, which serves as the food of the future crop, and this is considered a very great advantage which attends the application of salt and lime, or either, as manure for land. Indeed, at any time that a farmer can procure salt conveniently it may be directly applied to arable land, while cultivating for crops, or mixed in the manure or compost heap. Lime may also be applied in the same way, but not mixed with farm-yard manure. A great defect in Canadian agriculture is, that neither lime nor salt is often employed as manure, or applied to the soil in any way.

We have given extracts from an excellent work lately published in England, entitled "The Farmers' Friend," on the subject of hoeing and harvesting crops, and the prices paid for these works in England. The works of the farm are well executed for these prices, and we regret to say that such works, particularly hoeing, cannot be done for anything near the same rates in Canada. We attribute this difference of cost to the inexperience of farm labourers in such works, and we shall always have the same cause of complaint so long as we do not adopt the system of apprenticeship of boys to regular agricultural training. The great expense of hoeing and weeding in Canada is a bar to improved husbandry that must be mended, or farmers will not sacrifice their money to hoe and weed crops that will cost nearly as much in some cases as the crop would be worth. Task work would be very desirable, provided it would be executed in a proper manner and according to contract, but we know it is very difficult to find people to do this, and it is often the cause of very unpleasant misunderstandings between the employer and employed. Farming, we may truly say, is very backward in this country compared with England, and these English rates of farm work, compared with that of Canada, prove it.

Rags are a powerful manure. We have seen a report of their being applied to mangel wurzel at the rate of 7 cwt. per acre, and the produce was 36 tons, which was 8 tons more than was produced by 26 loads of farm-yard dung, applied to the acre. Salt and lime are said to be actually necessary to be applied to soil for mangel wurzel, carrots and turnips: 3 cwt. of salt per acre would be the least that should be applied. Potash is another manure essential to these root crops, and when we have it in such abundance in this country, we might make use of it; salt and potash might be applied as top-dressing to the crop after the seed leaf appears, if not put in with the seed. Bones may be dissolved in the following manner, according to the report of Mr. Pusey, late President of the Royal English Agricultural Society, who states that he mixed one cart-load of crushed bones, having wetted them, with two cart-loads of sterile white sand, dug up from some depth, and quite unfit in itself to support vegetation—that in a few days the heap became so hot in the middle as not to be borne by the naked hand—that in a few days more the bones had disappeared, being reduced in general to a blue, mouldy substance, some corroded fragments only remaining in the centre and the outside to the depth of five or six inches unchanged, because the heat was insufficient. From five to eight bushels of crushed bones fermented and dissolved in sand in this way, Mr. Pusey states to be sufficient for the acre. In one experiment made by him, with common turnips, the following table shows the results:—

Description of Manure.	Quantity per acre.	Cost.			Produce.	
	Bushels.	£	s.	d.	tons.	cwt.
Bones	25½	3	10	0	14	2
Bones dissolved with sulphuric acid	7½	2	3	0	14	8
Heated bones and sand.	12¾	1	11	0	17	1

The bones when dissolved in the sand in this way, are mixed up with the sand and all applied as manure. This mode of applying bones might be practiced here for turnips, mangel wurzel, or carrots, and the proper quantity of salt might be mixed with this manure if not previously applied to the soil.

A friend has favoured us with the Liverpool Mail of the 5th February last, containing the report of a trial wherein Robert Neilson, Esq. was defendant, he having been prosecuted for having his manure heaps too near the road—the complaint was dismissed. We allude to this trial to make extracts from Mr. Neilson's speech, as they show how an improved system of farming would benefit this country—by causing the employment of a greater number of laborers—the circulation of more money, the greater trade of the towns and villages which would supply the wants of the increased population—the greater number of shipping required to convey our surplus produce, &c. &c. In one word an improved system of farming would make another country of Canada, and would certainly for years prevent the cry of "hard times" from being heard.

Mr. Neilson said:

I hold a farm under the Earl of Derby, of something less than 300 acres, and requiring, for the system of farming I have adopted, from 2,500 to 3,000 tons of manure annually, being a larger quantity than I can produce at home. I contracted, three years ago, for the refuse of St. John's Market, in Liverpool, of both vegetable and animal matter, the richness and consequent value of which is evidenced by the fragrance of which you have heard so much to day.

* * * * * I found my farm, seven years ago, almost entirely exhausted, in condition full of weeds and water, with the whole tithe amounting to only £9 16s., and the year's wages under £100. Being able to procure plenty of manure, I have drained the whole of it, levelled the crooked fences, filled the ditches and pits, reduced 83 fields into 10, and gained upwards of 25 acres for the application of the plough and profitable cultivation; and what is the result? My grain tithe alone, last year, if it had not been commuted, would have been £97 10s., and my weekly wages, exclusive of team's men and horse labour, amounted to £912 10s. 6d., and this is solely owing to the plentiful application of similar heaps of manure to those now sought to be indicted as a nuisance. By an extract from my farm journal I find that I have now carted on the land, ready for the approaching spring crops, 1162 tons of manure on a field of 27 statute acres, and 838 tons on a field of 16 statute acres, namely, 1990 tons on 43 statute acres, and I look to the second of these indicted heaps for supplying the remainder of my fallow crops, at the rate of 45 tons to the statute acre. The wages requisite for harvesting the expectant crops consequent on the application of this manure, exclusive of horse labour, will be upwards of £1000; providing for the employment of an average number of about thirty-five men, women, and children, young and old, varying in wages from four shillings to fifteen shillings per week throughout the year.

Mr. Neilson further added that, holding his land under a liberal landlord, and secured by a long lease, he grumbled not at the pressure of rates, which he endeavored to lighten by the employment of all the poor around him in the system of farming he pursued.

WIREWORM.—Mr. Dickinson, of Curzon-street, favoured the Council with the result of his endeavours to eradicate the wire-worm from his Italian Rye-grass, of which it had previously, on the small plot of ground, destroyed three crops. This result was attained by the application of volatile alkali as it exists in guano. This communication was received with the best thanks of the Council, and referred to the Journal Committee. Mr. Bennett believed that the wire-worm was fonder of the root of the Rye-grass than that of any other plant; and he had always understood that the great drawback in the cultivation of Rye-Grass was the harbouring it furnished to those infesting insects. He considered, therefore, that this would prove an important discovery of Mr. Dickinson, should the same result be uniformly obtained. Sir John Johnston thought it desirable to ascertain whether the remedy would be equally effective in other cases; for instance, in that of a Clover-lay turned up for wheat. Prof. Way had no doubt that the clover disease was the ravage of an insect. Mr. Lawes conceived that it was in all cases owing to the unhealthiness of a plant, and an excess of organic matter, that worms and insects infested different crops.

TURNIPS.

The want of success in growing this crop successfully has arisen very much fron the slovenly and careless manner in which the after-culture is performed, from not being properly thinned, hoed, and wed. When the plants have attained the second, or as it is termed, the rough leaf, and are from two to three inches high, the operation of hoeing ought to be commenced, by running a horse-hoe or drill-harrow between the drills, to keep down the weeds, and strip a small slice off each drill; for this purpose, there should be attached to the hoe or harrow two coulters, bent inwards at the lower extremity. The next process is thinning, which is generally performed by hand-hoeing, and should not be done in wet weather. When the plants are very luxuriant, and the hoers not very expert, it has been found advantageous to hand thin, leaving two or three plants together, the hoers following a few days after, to select the best plants to remain. If the thinning and hoeing can be performed at one time, it is the better and less expensive mode. As to the distance at which turnips ought to stand in the row, a great diversity of opinion prevails; our own experience has led us to adopt intervals of from 12 to 14 inches for Swedes, and 10 to 12 inches for the softer varieties, and these are now pretty generally the spaces agreed upon by most practical men; something, however, must depend upon the nature of the soil, and on the quantity and quality of manure applied to it; if it be of a rich fertile nature, and well manured, the plants may be left at greater distances than if it be an inferior soil, indifferently manured; the common error in this country is, to leave the plants too thick. The thinning being completed, the next thing that requires attention is the keeping down the weeds, and the thorough pulverization of the soil between the drills, so as to allow the tender fibres of the turnip to shoot forth in search of nourishment. In about ten days or a fortnight after the thining, say when the plants shall have reached the height of six or eight inches, the drill grubber or harrow,—the former is by much the better implement, as it stirs the soil to a greater depth,—should be passed between the drills; and, if necessary, the same operation again repeated, as this is the time to eradicate weeds. Should any rough weeds appear in the drills, they should be pulled by hand, carried off and put into the dung-heap. When the leaves have attained such a size as nearly to close the intervals between the drills, a plough, with the mould-board taken off, and a piece of sheet-iron put on to fill the space between the coulter and side-plate, so as to prevent the earth from falling over on the turnip leaves, should be passed along each side of the drill, or, as it is commonly termed, they should be lightly stripped, with a single horse; after this, pass the drill-harrow through them, and then make a slight rut with the double mould-board plough. The last operation has by some been objected to; but we consider it beneficial as it throws the manure, which has been scattered in other processes, back upon the turnip roots, and in heavy clay lands, not well drained, it carries off the superfluous water. The operations in the culture of this crop should not be performed when the weather is wet, especially in heavy soils; and great care should be taken not to injure the leaves. Turnips ought to be consumed by cattle on the farm, as it is thus they become a valuable crop, by the improved quality and greater quantity of manure which is produced.

B. J.

The Good Farmer is always fond of his land. He strives to obtain knowledge. He takes notice of the best plans of other farmers who live near to him. He goes often to see what plans distant farmers adopt. He rises early in the morning. He sets his men to work and also his teams in the cool of the morning. The good farmer is always trying to improve his land. He does not say "My land is so good, and its crops are so great, that they cannot be made better." He keeps his land free from weeds, and does not allow water to rest upon it, he drains it well. He keeps his sheep, his horses, cattle and cows, as clean and as warm as he can, for he well knows that none of them keep in such good health, or grow so fat, when they are cold and dirty, as when they are clean and warm. And above all, he does not forget his duty to his poor neighbours, or to God, by whose blessing alone his harvests can thrive.—*Rural Spelling Book.*

Good Air.—Fresh air is the best for man and beast. In a close room the air is soon spoiled by breath: to keep it good the bad air must be let out, that the good air may be let in. To do this in the best way, you must let the bad air out at the top of the window, or by an open place as high up in the room as you can; for in a room the bad hot air is at the top of the room, and is not so heavy as good fresh air

which, in a room, is always the best at the bottom near the floor. The best way to sweeten the air of a room is to open the window at the bottom and at the top; for by this plan the bad air goes out at the top, while the good air flows in at the bottom of the window.—*Ib.*

WEEDS.—Pull them out by the hand; hoe them out with great care when they are young, for if they grow old they run to seed, and hurt the land: besides, we know, if without weeds, the land would grow much better plants, sweet crops for man, or food for beasts. Rake off the weeds, but do not burn them—lay them by in a heap, mix them with lime or common salt: this kills the weeds and they decay in a short time, and so you make nice good mould to mend the soil: whilst he who burns his weeds gets only ashes, which are not of so much use to dress the land.—*Ib.*

GOOD WATER is known by being bright and clear, and without taste or swell. Bad water is the cause of many diseases; it should not be used for household purposes. The rain water is the best, and next to that the water of springs and that from wells. The water of a pond and of a ditch is not good for any man to drink. Ditch water very soon becomes quite thick, and then begins to give out bad swells, and little bubbles of very foul air, so that we know that such bad water in a ditch or pool, or in a pond, is a very bad thing to have near a house; and thus we may be quite sure that as to take away too much water from the land is the first care of the good farmer, so to remove far from the house all bad water should be the first care of those who wish to live in health.

It is well known that some waters are called "hard," and are unfitted for the purposes of washing or brewing. This is owing to such waters holding dissolved in them, either carbonate of lime or sulphate of lime, (chalk or gypsum) either of which by decomposition, prevents the use of soap, and retards the extraction of the saccharine matter from malt. Rain water from the total absnce of these two substances, is the best of all waters for washing and brewing, and if proper care is taken in its collection and storing in tanks, no family need be without an abundant supply of it; for it has been determined that sufficient rain falls upon every house in England for the use of its inhabitants. Although this varies in amount in different districts, yet the average annual depth which falls in Eng'and is about 24 inches, or more than 12 gallons upon every square foot of roof (a gallon contains 277,274 inches); so that supposing the roof to be 15 feet square only, more than 2800 gallons of water fall upon it in rain every year, which is nearly 8 gallons per day.—*Ib.*

[We know the usual annual quantity of rain that falls in Canada, and we may make our calculations by the above rule.—EDIT. A. J.]

MIGRATORY EELS.—The curious were startled the other day by seeing a whole shoal of eels wending their way up the Deveron to their summer retreats. The shoal was not less than 300 yards in length, was of considerable breadth and depth, and was steadily passing upwards at the rate of about a mile an hour. No obstacles seemed to retard its progress. The mill lead was traversed, and the waterfall ascended. This interesting phenomenon is witnessed every year about this period, and shoals of several miles in length are at times seen. It is thus explained:—At the beginning of winter the whole eel tribe descend from the upper part of rivers, where the cold is most severe, to the mouth of the stream, where amid the brackish water they enjoy a less diminished temperature, and deposit their spawn. From these spring the young fry, to whom the warm weather forms a signal to ascend the rivers, and in their upward progress they congregate in such shoals as that above mentioned.—*Banffshire Journal.*

SWEDISH TURNIPS should have been sown early this month, or latter end of last. They prove a much better keeping turnip by sowing early, with a moderate quantity of manure, than by sowing later, when they must get additional manure to force them on; they are a very slow-growing turnip, and if stunted, by want of a sufficient quantity of manure, or not being thinned in time, and to the necessary distance, they are not sufficiently fleshy or succulent, but become all rind and fibre, and comparatively worthless. They should be sown in drills twenty-eight inches asunder, and thinned out from twelve to fifteen inches, plant from plant; early thinning is absolutely necessary for the proper development of the turnip plant. Their becoming shanky or bottle-necked is chiefly attributable to want of thinning in time, for if they are drawn up by being too much crowded they assume this habit, which no after-management can rectify; 4 lbs. of seed is the quantity to sow an Irish acre.

PRACTICAL HINTS FOR AMATEURS AND SMALL GARDENERS.

STRAWBERRIES.—This is not the season for making plantations of this favourite fruit; and as directions given now may probably be forgotten at the time they are wanted, we shall reserve them for a more convenient period. We will presume that your beds have been properly made, and that now you have strong plants profusely covered with bloom; each plant maintaining a *noli me tangere* distance from its neighbour, and not practising that ridiculous and useless hug of fraternity so common among ill-regulated strawberries. Such a well-conducted bed is now a beautiful sight in itself, and associated with pleasant expectances. What had better be done with it, in order to secure a large amount of fruit, and keep the bed in good condition?

It is common to deluge strawberries with water, when a few days of drought occur, at the time they are in bloom, for the purpose, it it said, of setting the fruit. Now this dictum, like axiomatic statements in all professions, requires to be received with limitations and cautions, or its practice will do more harm than good. The question to be asked is, is the soil in so dry a state as to require water? for it need scarcely be said, that moisture is not wanted by the foliage or the bloom, but only by the root. Well-prepared beds will seldom require watering, and whether they do or not is discoverable by actual inspection. If the soil is moist a little beneath the surface and the plants look flourishing, water will do no good; but on the contrary it may prove injurious by striking off, instead of setting, the fruit. It is customary, in gardens where there is grass, to place the mowing on the soil of the strawberry beds, to preserve the fruit clean in heavy rains, which otherwise will often scatter it over with mould. Now, if this mulching system is begun early, it will check evaporation in hot weather, and render watering superfluous.

As soon as the fruit begins to set, runners are produced; and it is recommended to cut them off as they appear, for the purpose of getting finer fruit, and strengthening the parent plant. This practice has the approval of so many first rate horticulturists, that it must be safe to follow it ourselves, although it should be remembered, that other great names have questioned its utility, among others Mr. Knight, of Downton Castle. Amateurs having time to make observations should decide this doubt by actual experiment, and now is the time to commence operations. Take six plants in a row and carefully cut off all runners; let six more, as similar as possible, be left to nature. Then the state of the fruit and the plants will enable you to come to a decision for yourselves. I mention six plants for the sake of example merely, as it is evident the experiment will be more satisfactory, the greater the number of roots operated upon. Having thought much on the subject myself, I am inclined to doubt the benefit accruing from the excision of runners, for the following reason:—As soon as one crop is removed, another follows, and this continues through the whole period of growth. If the removal of a runner was a final process, and no successor was produced, then the bearing of the operation on the fruit and the plant would not be doubtful; as, when peaches are removed from a tree, no others being formed to supply their place, the juices which would have matured them go to those remaining.—But if a fresh peach were to take the place of the one plucked off, would any one practise the system of thinning? Here, again, direct experiment is wanted, and may be carried on in the following way:—Let the runners allowed to grow on one plant be weighed a month hence; and, in the mean time, let an account be kept of the weight of all those removed from another similar plant, during the same period. The balance struck between these two accounts will tell more truth than theory can do.

As a new bed of strawberries should be made every year, so that a fresh healthy stock may be always in possession, as many runners should be pegged down as you require; and, when rooted, the young plants must be removed to their final destination, or to a nursery bed, to be planted out in the Autumn. This is all we can advise respecting the strawberry, at the present time, unless we add a word of caution in reference to gathering the fruit. The amateur should either do this himself, or trust the task to an experienced person, if he wishes to have the full benefit of his labour. It is really atrocious to pluck away at a truss of fruit as eager visiters will sometimes do,—gaining one and often destroying a dozen unripe ones by the same ruthless attack. This may be of no importance in an old-fashioned garden, where strawberry beds have little attention; but when they are highly cultivated, it is vexatious to have a crop served as the corn is in a field, having a footpath through it.—*H. B., in The Gardeners' Chron.*

GYPSUM.—The fertilizing power of gypsum upon the artificial grasses, except in cases where the soil naturally contains a sufficient proportion of sulphate of lime, is well ascertained, and of great practical value. This is part cularly true, with respect to the usual rotational mixture of clover and ryegrass. "If the farmer finds," says Mr. Johnson, in his Prize Essay, "that his fields will only grow clover successfully once in 8 or 12 years, and that his neighbours tell him his land is 'tired' of clover or 'clover sick,'—If he notices that even the application of farm-yard compost hardly adds to the luxuriance of his grasses, he may then safely conclude, that his crops have gradually exhausted his land of sulphate of lime,—and he may, with every confidence of success, apply a dressing of gypsum, at the rate of 2 cwt. per acre, taking care to choose a wet morning for the application; this may be done at any season of the year, but it is best either in April, or the first days of May." He then declares that he can attest these facts from experience and observation; and narrates two remarkable verifications of them, in the case respectively of an old paddock, and of clover and sainfoin lands. The paddock was old, and had gradually become less productive; and, after being vainly plied with many kinds of mineral and compost manures, a portion of it suddenly became luxuriant, under a dose of 40 bushels per acre, of peat ashes, containing 12 per cent. of sulphate of lime, and otherwise consisting of sand, chalk, red oxide of iron, and a small quantity of common salt; and when suspicion arose that this revived portion owed its revival solely to the sulphate of lime, another portion was dosed with finely pulverised gypsum, at the rate of 2 cwt. per acre, and experienced fully as great a revival, not only sending up its former grasses with renovated vigour, but producing white clover and other grasses, whose seeds had long been sleeping in the soil. The soil of the paddock contained 6½ per cent. of organic and soluble matters, and 19 per cent. of carbonates of lime and magnesia, and was about 10 inches deep, and rested on a thin stratum of gravel, immediately incumbent on chalk. The experimenter, in the case of the clover and sainfoin lands, Mr. Barnard, of Little Bordean, in Hampshire, says,—"I have sown gypsum 6 or 7 years, and never on clover or sainfoin without satisfactory proofs of its efficacy, having usually grown half a ton or more of hay per acre by its use;" and he adds, that, on the 1st of May, 1838, he gypsed a piece of a field of two-year-old sainfoin, at the rate of 2¼ cwt per acre,—that, at harvest time, he reaped from it a produce of hay quite one ton per acre extra,—that in October, he reaped from the gypsed portion another produce of 1¼ ton per acre, while there was scarcely any on the ungypsed portion,—and that, in the following year, without making any new application of gypsum, he got two mowings from the gypsed portion, and could find nothing to cut on the ungypsed portion. An incidental verification of the fertilizing power of gypsum upon the artificial herbage-plants, similar to that afforded by the instance of the peat-ashes, occurs in the common and successful use of coal-ashes as a top-dressing for clover, lucern, and sainfoin. Such coal-ashes as are found, on analysis, to contain a considerable proportion, say about one-tenth of their whole weigh, of sulphate of lime, are generally found by farmers to be the most efficacious top-dressing for these plants to which they can apply it; and as they otherwise comprise but a very small proportion of fertilizing substances, they may be inferred to owe all or very nearly all their efficacy to their gypsum. A fact of considerable interest, in reference to gypsed grass-lands, too, is, that horses and cattle always prefer the grass of gypsed portions of a field to that of an ungypsed portion. But let not any farmer be induced by these considerations to throw away money and labour in the gypsing of any ordinary natural pastures. "It is certain," says Boussingault, "that gypsum has no effect upon natural meadows. Positive experience has satisfied me of the absolute inutility of the substance here; so that, upon my natural meadowe at Bechelbronn, I now never employ a particle of it."—*Rural Clyclopedia.*

IMPORTANT TO LIVERY STABLE KEEPERS AND OTHERS.—In a cause tried on Friday, in the Court of Common Pleas, the Lord Chief Justice, in summing up, said,—"There were two very prevalent errors against which the public should be guarded. One was that a person had a lien on a horse for the payment of money due for its keep; the other that a party might sell property left with him, to pay the expenses incurred in keeping it. In neither of these cases did any such right exist, though, from the appearance of advertisements in the papers, stating that property would be sold to pay expenses, the public seemed to be of a contrary opinion."

TASK WORK,

TO WHICH LAND OR SQUARE MEASURE IS APPLIED.

Table of Land Measure:

9 Square feet.....1 Square yard.
30¼ Square yards.....1 Square rod.
40 Rods.....1 Rood.
4 Roods or 10 square chains.....1 Acre.

In using land measure as a means of calculating the earnings of labourers by the piece, it is usual to let or put out the job at a certain rate, per acre, for such work as mowing, reaping and hoeing, in which a large quantity of land is gone over; but for trenching and digging, in small quantities, the square rod is most convenient.

Mowing permanent meadow-grass for hay is the first operation that will come under our notice; it is one of those operations of husbandry which require to be executed with despatch, as, by being quickly performed, the hay harvest is shorter, and every advantage may be taken to secure the produce in fine weather. This is of great importance in the hay country around London, where in the season of hay making, mowers are in great request, and command high wages. In Suffolk the rate for mowing varies, with the bulk of the crop, from 2s. to 2s. 6d. per acre: beer is frequently allowed in part payment for mowing; the work is then done at 2s., and half a gallon of beer for each acre. The hours of labour in mowing grass are from five in the morning to seven in the evening, stopping two hours in the meantime; they thus labour twelve hours in a day, during which an expert mower will cut 1½ acres; the generality of men will earn in money about 3s. a day; the cost of cutting low meadow-grass is rather more than of cutting upland. Mowing clover and rye-grass is generally more quickly performed, and consequently the rate per acre is lower; I find the average price, per acre, is 2s. or 20d. and half a gallon of beer; the quantity mown in a day nearly 1½ acres; the earnings of a man will thus vary from 2s. 6d. to 3s. The cutting such crops of clover and rye-grass does not greatly differ from the mowing for making into hay. Men engaged to mow grass by the day, have 2s and an allowance of beer; but they cannot, of course, be fairly expected to work so hard if paid in this manner; the making grass into hay is occasionally put out by the job at the rate of 4s. an acre for mowing and making; this gives ample employment to the wives and children of the mowers. But the farmer must not be guided in his opinion of the right time of carting by his men, for if he is, he will in all probability have it carted before it is in a fit state for stacking.

Mowing Wheat—Is a practice coming into use in preference to reaping; the rate paid, per acre, depends, of course, upon the bulk of the crop, and on the abundance of labourers during the harvest: for a light crop 6s., and for a heavy one 8s. are paid per acre; this includes mowing, tying, shocking, and raking; the mowing constitutes barely half the labour, though the making and binding the sheaves may be done by boys: a strong lad will make and bind sheaves as fast as one man mows. A man in a day of ten hours will mow upwards of an acre, and with the assistance of another man or of two boys, he will be able to complete the other operations required in cutting an acre of an average crop of wheat.

Reaping—Is also generally done by the acre, and in seasons when the crop is heavy or lodged by rain, it becomes a tedious labour; the price, per acre, for a medium crop of wheat that stands upright is 8s, but if the wheat is lodged from 10s to 12s. A good reaper will sometimes cut more than half an acre in a day, but the generality do not cut more than one-third. Reaping beans costs about 6s. an acre. Strangers are frequently employed to mow or reap wheat. I consider it a good plan to supply them with beer at the rate of a gallon for each acre; this will greatly influence the workmen, as they then will have no occasion to go to the beer shops for drink sold at a high price. The cost to the farmer will be but little, as he can brew beer for the purpose at about 6d. a gallon.

Mowing Barley or Oats—Is usually included in the contract for harvest, of which I am about to give a description. A man will cut upwards of two acres of barley in a day; of oats he will not be able to get over quite so much.

Harvest Work—Is generally put out by task. some farmers give a certain price per man to a company, who agree in return to do all the harvest work, in cutting, carrying and stacking the corn, to which an acre or two of turnip hoeing for each man is sometimes added. Others hire a sufficient number of men, for four or five weeks, at a certain sum for that time; this method is mostly practised by small farmers, who work with the men and keep them from loitering, for otherwise there would not be much inducement for the labourers to hurry. On the larger farms, two distinct modes of hiring are sometimes adopted: the men are divided into two companies—one called the crop-men, who engage to cut a certain number of acres of wheat, all the barley, oats, peas, beans, or any other crop that may be grown on the farm, to pitch and load all the corn, and to turn a portion of it when required; to this is added a certain quantity of turnip-hoeing, about one or two acres for each man. The yard-men, as the others are called, are hired by the month or five weeks; their labour is of various kinds, though principally confined to cutting wheat, unloading and stacking corn, and any other labour that requires to be done. An able bodied man is usually paid £4 10s., and three bushels of malt, for five weeks, certain employment; while crop-men, who work by the job, have from £4 10s. to £5, and three bushels of malt, whether their harvest is of long or short duration. On a farm of 240 acres of arable land, cultivated on the

Norfolk rotation, six crop-men are sufficient. The following is a rough calculation of the work performed by each man, and the cost per acre :—

Cutting (mowing) 8 acres of wheat at 7s...	£2	16	0
Mowing 10 acres of barley at 2s.....	1	0	0
Pitching and loading 10 acres of wheat at 1s	0	10	0
do. do. 10 acres of barley at 1s 6d	0	15	0
Turning barley.....	0	3	0
Twice hoeing 1 acre of turnips at 6s.....	0	6	0
	£5	10	0

Where beans are grown, the cost of cutting and tying is about 6s.; the cost of making peas is from 4s. to 5s. an acre.

Hoeing.—The many crops that are benefitted by the free use of the hoe, offer frequent opportunity for the employment of the labourer by measure work. Turnip-hoeing will first come under our notice; the average price we pay for the first hoeing, or singling out drilled turnips, is 3s. per acre; that of the second hoeing, 2s. 6d.; but when the seed is broad cast, or the distance from drill to drill but small, the cost of singling out will be more. Though turnips planted on the ridge system are at a greater distance than those drilled on the flat, yet we find, from the necessity there is of pulling the ridges down with the hoe, that the cost is quite as much. In hoeing between the drills of turnips, when the land is soft, the Dutch or thrust hoe may be used at a cost of about 1s. 6d. per acre, where the distance between the drills is 18 inches. Turnip-hoeing is best done by men accustomed to the work, with whom a bargain is made, for the completion of the work, in a proper manner; the first and second, (and third if wanted,) may be done on our land by the same party, at a cost of from 5s. to 6s. an acre. But hoeing is paid at about the same rate as sowing turnips, viz.: from 5s. to 6s: an acre, for twice going over; a third hoeing is often required at a cost of 2s. an acre. More than half an acre of the first hoeing or singling of turnips and beet is generally performed by a man in a day of ten hours and a half; though as the labour is not very severe, women and men unable to do hard work are frequently employed. The turnip hoer may derive much assistance from his children, by having a small boy or girl to follow him and single the plants which have been left double by the hoe.

Hoeing Carrots.—Carrots are extensively grown in the sandy soil of Norfolk and Suffolk, and, no doubt, would be grown much more if it were not for the enormous expense in the labour of hoeing and weeding; this might in some degree be lessened, if the drill system of growing carrots were adopted in preference to sowing the seed broad cast. The cultivation of carrots generally gives employment to the undertaker and his gang, who engages to do the whole work, and is usually paid for his services by half the crop. In fact he does everything with the exception of tillage and carting. The number of bushels is ascertained by the number of cart-loads carted away. However, when carrots are drilled the cost of hoeing will be considerably less; I have known the price for twice hoeing (which includes singling out) drilled carrots at 10 inches, to be no more than 10s. an acre.

Hoeing Wheat and Beans.—From 2s. to 3s. per acre are here paid for hoeing between the drills of wheat. A man accustomed to hoeing will get over three quarters of an acre in a day; and as an instance of this, it took two men exactly four days each to hoe six acres on a gravelly soil, the drills being seven inches apart: they were paid 2s. 6d. per acre. A bargain is sometimes made for having the wheat crop clean up to a specific time, usually to the end of June; in that case, the wheat receives as many hoeings as it may require, at an average charge of 6s. an acre.

Hoeing beans is done for about 2s. 6d. per acre; a certain difference in the rate of payment is occasioned by the width between the drills; when this is narrow the work goes off proportionately slower. Barley, same price.

Harvesting Root-crops.—The laborer, in doing this kind of work, may be paid by the acre, or, when the crop is carried off the land, by the number of cart-loads; the former method is to be preferred, as it affords a mode of measurement less liable to dispute. Men with large families are the best to engage in the making up and storing away roots, as their wives and children will be able to do a good portion of the labour. Harvesting roots is performed in various ways. Pulling, cutting off the tops, and filling turnips into carts, will cost about 8s. per acre; but this must depend upon the size of the roots, where the bulk of the crop is the same.

Harvesting Beets.—The pulling and laying the roots in heaps ready to be carted away, the leaves being twisted off by the hand at the time of pulling (which is done by men, and is rather severe labour) is paid for at an average price of 5s. an acre for a fair crop; at this rate a man will earn 2s. a day, for it will take about 2½ days to pull an acre. As the task-men pull the roots, they are filled by the boys, and carried to the places they are stored for the winter. With us the filling into carts is done by day-work, at a cost of about 2s. per acre—four boys, at 1s. per day, filling 190 loads (30 bushels each) off 7 acres of land in three days. The beet was pulled in the same time by six men, at the rate of 6s. per acre.

Taking up and Storing Carrots.—When carrots are sown broadcast, and the plants left thick, the cost of taking up and cutting off the tops is sometimes as high as 18s to 20s. the acre for a fair crop; but when drilled, the cost for taking up is much reduced; this is caused by the carrots being handier to fork up when in rows, besides which they are generally singled out at greater intervals, and are consequently fewer in number than those broadcast. We shall find that if the work is done by day labourers, it will take six

men to fork up an acre of drilled carrots, and will take six boys or girls to cut the tops off as the carrots are taken up by the men. In this way it will take from 12s. to 13s. per acre; if the carrots are a thin plant, the price will be proportionately lower, and if a very thick one, it may be 2s. or 3s. above this sum. It must be borne in mind that this only includes taking up and topping.

Ploughing—Ordinary land is generally done by jobbing-farmers at from 7s. to 8s. the acre, when the work can be done with a pair of horses. The man who takes the work finding the man, plough and horses.

Drill-workers—Are men who gain a living by letting out drills to the farmers at a certain price per acre, or by the day's work; the charge for a corn-drill, with a man to follow is from 12d. to 15d. per acre; for a corn-drill, or seed and manure-drill, 18d. an acre is the usual charge.

Digging and Trenching.—Digging one spit deep, from 9 to 12 inches, usually costs from 2d. to 2½d. the square rod; the quantity dug will vary, with the nature of the soil, from 8 to 12 rods in a day. At day wages four men took eight days to dig, in a workmanlike manner, two acres of a clayey loam, each man averaged 10 rods a day, and were paid 2d. per rod. Trenching two spits or 18 inches deep, and loosening the bottom of the trench, costs about 6d. the rod; a man will, on an average, trench 4 rods in a day.—*Farmer's Friend.*

Glass Milk Pans are coming more and more into use in Europe. Their advantage on the score of cleanliness must be obvious. It were to be wished that societies or institutes would appoint a standing committee, and put aside a small portion of their ample funds for the instant importation of sample articles invented abroad, connected with agricultural and rural economy. True it is, that in general, this may be left to the vigilance and rivalry of tradesman and manafacturers; but many years elapse before we get the benefit of many things which might at once be profitably introduced. The same reason and policy that prompt the offer of premiums for useful things of home invention, would warrant the introduction of things which have been recently invented and patronized by agricultural societies abroad. Satisfied that glass milk pans (on which the manafacturer should indicate the capacity of the vessel) would be a valuable acquisition to our dairy women, we respectfully suggest the importation of a dozen, and the offer of a premium to the glass manafacturer who shall first produce them in this country at a cost that will justify their being brought into general use. It has been seen in an interesting and valuable "Essay on the management of Holstein Dairies," published in the Farmers' Library, that there the dairy women are allowed one dollar a year for "pan money," and charged for all their breaks; yet they always "made by the operation." Let us all have glass milk-pans.—*Farmer's Library.*

How to Dry a Cow.—"A subscriber" asks—"How may I run a heifer dry that calved last month, as I propose putting her on grass on the 12th of May, for fattening? Also, would you recommend bleeding bullocks that have been stall-fed all winter prior to their being put on grass?"—We recommend bleeding the bullocks previous to putting them out. Various recipes have been given to dry a cow which had recently calved, and various modes adopted, according to the will and caprice of the individual, but we have found the following recipe answer well:—Let the animal be milked dry, and about two, or if in good condition, three or four quarts of blood extracted; then procure a fresh rennet bag; pour on it two quarts of rain or river water; boil them down to one quart, and strain. When sufficiently cool, give it as a drench to the cow, and she will be dry in forty-eight hours. She should, of course, be kept on sheaf oats, or chopped straw and oats, with hay, or other dry food, for two or three days previous and subsequently. Another plan is, to milk and bleed her as before, and then give the following:—Roche alum, in powder, 4 oz.; common alum, in powder, 4 oz.; dragon's blood, in powder, half an ounce; Tumeric, in powder, 1 oz., to be given in a quart of cold skimmed milk, as a drench to each cow, allowing a period of at least two hours to elapse before turning her to feed. It is essential not to allow her to be milked or interfered with afterwards.—*Irish Far. Gaz.*

For Cow-pock in Cows.—Wash and foment, then rub with an ointment composed of one ounce of bees-wax, mixed with three ounces of lard, and when cool mix one-fourth ounce sugar of lead made fine, and about as much finely-powdered alum as will lie on a sixpence; a dose of physic will allay the fever, or wash with a solution of chloride of lime, after the fomentation; this will prevent the disease being communicated.—*Farmer's Gazette.*

Raising Double Stocked Gilly-flowers.—Double flowers being a sport of nature are sometimes called monsters, but if they are, they are very beautiful ones. There is no method by which we can grow them with certainty, but much may be done to assist nature in her freaks and pranks. Double flowers proceed from over luxuriance in plants in a state of cultivation, for it is rare to find nature sporting in this way in uncultivated plants. The plan, therefore, adopted by the most successful florists is to plant the single or some semi-double stocks in rich soil, so as to encourage a luxuriant habit; before blooming trim off all the tide shoots, leaving but the leaded, and when you have four or five pods formed, pinch off the flowered stem, flowers and all, so as to throw the whole growth and vigour of the plant into the few seed pods you have preserved. After the seeds are properly ripened, sow them in a light rich bed well drained, and we will be much disappointed if you have not from one-half to three-fourths of double flowering plants.—*Ib.*

DEEP CULTIVATION.

Gentlemen,—the question of deep cultivation is so important that I must not leave it. I know that the majority of agriculturists considers that subsoiling is not a profitable thing. Now that is one of the greatest mistakes that was ever made in agriculture. If you find a farmer ploughing his ground 5 inches or 6 inches, you will find him digging his garden 13 inches or 20 inches depth. If you ask him why? he says: "I can grow better crops in my garden by deep cultivation." How inconsistent then? If the one operation be right, the other is wrong. Besides, if increased depth of cultivation be injurious, you must carry out the principle and say that 2 inches are better than 3 inches, and that 1 inch is better than 2 inches, and thus you must go backward, and in course of time there would be no cultivation at all. I say, you must carry out the principle of deep cultivation. What is there magical in the favorite depth of 6 inches, except in the power of a pair of horses to draw the plough and do an acre a day? Will any man say, if his horses could take 18 inches with a pair he would not do it? I have proof on my farm at present which will astound you as shewing the effects of deep cultivation, and it may assist you in coming to a proper conclusion on the subject. I ploughed one part of a field of mustard, with Smith's sub-soil plough, 13 inches below the other which went 9, that is 24 inches deep altogether. The other part of the field was ploughed in the usual way. Both were done on the same day, and both were treated in the same way as to manure. My bailiff prognosticated that I had ruined one side of the field, and that we should grow nothing—that was the part of the field subsoiled—my man remarking, that "diving down into that nasty subsoil would be the ruin of the crop." Now I had occasion to go into Suffolk; on my return I asked my bailiff, "Well, how goes on the mustard?" He said, "Oh! I am done now!" "Done now!" said I; "what is the matter—does subsoiling answer?" "Oh! said he, "I am wholly done!" I said, "I am glad of it, and hope that many farmers who come to see the crop will be 'done' too, and alter their minds." Many farmers have seen the result with their own eyes. In one case the crop was four feet in height and as thick as it could be; in the other case the height the crop attained was but 18 inches. The secretary of the Debenham Farmer's Club, Mr. Greer, has seen the crop, and he, therefore, is a witness to the difference. Whether I shall see the same difference in the wheat crop to follow, I don't know. I have subsoiled in other cases, and I have uniformly found it answered the desired purpose of increasing the crops. But, gentlemen, woe betide the unfortunate wight who does this without drainage; he will make his land like the bottom of a pond, and ruin his crop. That is a distinction that should be particularly attended to, because many farmers have condemned subsoiling when they ought to have condemned themselves, for not having previously drained the land.—*Farmer's Friend.*

REARING OF CATTLE.

What has been said regarding the food given to the cow will be more or less effective in promoting the growth of the young animal fed solely on milk; when richer in curd it promotes more muscle; when richer in phosphates, more bone, and in butter, more fat. Milk is a perfect food for a growing animal—nothing is wanted in it; the mother selects all the ingredients of this perfect food from the substances which are mingled in her stomach from the food she eates; she changes them chemically in such a degree as to present them to the young animal in a state in which it can most easily, and with least labour, employ them for sustaining its body, and all this at a given appointed moment of time. In due time, the young animal begins to feed for itself, and then the mother improves in condition. Warmth, exercise, and good food are all that is then required, always bearing in mind that, as nature prepares the food for young animals in a state in which they can most easily digest it, so we should prepare by boiling or steaming all dry food and roots for the same purpose. In the growing animal the food has a double function to perform: it sustains and it must increase the body; hence, whatever tends to decrease the sustaining quantity, (and cold, exercise and uneasiness do so,) will tend in an equal degree to lessen the value of a given weight of food in adding to the weight of the animal's body; to the pregnant and to the milking cow the same remarks apply. The custom of allowing young cattle to remain, during the whole winter, in straw-yards, exposed to all the variations of the weather, cannot be too loudly condemned. Oil-cake, it is true, which is sometimes given in large quantities, may make some small amends, by the supply of carbon to the system, but if a warm, dry and clean shed was substituted, with turnips instead of cake, the condition and quality of the animal would be very much improved, and a considerable saving of expense be effected—to say nothing of the improvement of manure.

All vegetables contain ready formed, (which they extract from the food on which they live,) the substances of which the parts of animals are composed. The animal consequently draws ready formed the materials of its own body from the vegetable food it eats. The starch, sugar and gum in vegetables are to supply carbon for respiration. Carnivorous animals obtain it from the fat of the food; young animals which live upon milk, by the milk-sugar it contains. In the young animal we find an excess of life—it has to increase as well as sustain itself. In the full grown animal we find the daily waste of substance which is carried out of the belly by the excretions

made by the gluten, phosphates, and the saline substances in its food, and a balance kept up between the powers of life and the bodily structure, it simply has to sustain itself. In the old animal, when life is diminished, we observe a proportionate decrease of bodily substance.

It is interesting and wonderful, when we thus trace the existence of the bodily structure of all animals ready formed in the vegetable—which property in vegetables is formed during their growth, is derived from sources purely gaseous and inorganic, by chemical, mechanical and physical operations. It is the duty of the practical farmer to adopt these methods for improving the soil, but forms no part of my subject.—*Ib.*

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1. Newly broken up land, though it be not manured with lime, contains sufficient store of nutriment for some years' crops.

2. It is better for newly broken up land to remain unlimed for two or three years, except under special circumstances; for it is already sufficiently fertile, and the expense for some years is unnecessary, and the application would probably cause an excessive fertility, if one may use that expression, such as would injure grain crops by an excessive growth of straw. Now the special circumstances to which we allude occur in cases (1) where light land or ferruginous subsoil has remained long under stagnant water; the soil is then found to contain compounds of iron injurious to vegetation, which are decomposed by an application of caustic, lime, and the elements of which, under the influence of that application, are induced to re-arrange themselves in forms no longer injurious. And (2) in cases where, as an effect of stagnant water, peat has been formed, which, when drained, leaves a soil destitute of mineral elements necessary to fertility—lime and clay are then necessary applications.

The farmer, independently of all theory on this subject, will be perfectly safe in remembering that where lime has not hitherto been applied, and where the land contains an excess of vegetable matter, or has long been injured by stagnant water, or is destitute naturally of calcareous matter, lime, whatever the mode in which it acts, is sure to have a fertilizing influence. Apply lime, therefore, a year or two after breaking up your grass lands and then maintain the fertility thus produced, by growing each year, on half the land, crops for consumption on the land, by selling only grain and butcher-meat off your farm, and by bringing on to it oil-cake and other food for cattle, sheep and pigs; you will thusenrich your manure and increase its quantity.—*Ib.*

Nutritive Properties of Carrots and Parsnips.—The red carrots are said to be the most nutritive sort; the produce is much less per acre than the other sorts; but we do not know that the exact ratio has ever been ascertained. In the Channel Islands, the parsnip is considered superior to the carrot in nutritive properties. As both crops are superior in nutritive value to the swedes, they are proportionally more exhaustive. This most excellent root will fatten oxen or pigs (or poultry, if boiled) in an extraordinary manner, and is certainly one of the best preparatory crops for wheat. In 1834, 2½ drills of the Altringham or cattle carrot produced 261 lbs., and an equal portion of land in parsnips afforded 840 lbs. There were many autumnal weeds among the carrots, and none in the parsnips, though treated alike. Sir Humphrey Davy states that 1,000 parts of carrots furnished 95 parts of sugar 3 parts of mucilage, and ½ part of extract: 1,000 parts of parsnips afforded 90 parts of mucilage. Hence may not the excess of mucilage in the parsnip be one cause of its superior fattening, or butyraceous quality.

It has been said that a crop of clover, tares, potatoes, cabbage, or turnips, will furnish, at least, three times as much food for cattle, as an equal breadth of pasture grass of medium quality. The following table of the nutritive quality of various sorts of food now in common use has been selected from various tables now published. In the root crops—first, carrots; second, mangel wurzel, third, swedes; fourth, potatoes; fifth, cabbage; sixth, common turnips.

In the green crops—first, rye; second, clover; third, grass.

In the corn crops—first, beans; second, peas; third, lintels; fourth, wheat; fifth, barley and Indian-corn; sixth, oats; seventh, rye; eighth, buckwheat.

In the straw crops—first, pea-straw, which is nearly equal to hay; second, oats and barley straw; fourth, wheat straw; fifth, rye-straw; and sixth, bean straw.

Three pounds of oil-cake are equal to about ten pounds of good hay.—*British Farmer's Magazine.*

Recipe for Destroying Caterpillars on Currant Bushes.—Pour over your gooseberry and currant bushes, from a water-pot, with a hose or pipe, lime-water, or a weak solution of salt and water, so as to wet the leaves (if any) and fruit well. Immediately after, and while still wet, shake some fine road dust or dry ashes over the bushes, which will banish the caterpillars. The dust will be well washed off before the fruit is ripe. We have, with good effect, put a layer of sea-weed under gooseberry bushes when attacked with caterpillars, the gases escaping from which have destroyed them, and we have heard of a little guano being used for the same purpose; we cannot, however, recommend it on our own experience, but as it deserves trial we mention it. —*Farmers' Gazette.*

PLOUGHING IN THE ISLAND OF JERSEY.—The great plough was drawn by eight horses, preceded by a small plough with two horses. The small plough cut off a slice from the surface, of about ten inches broad and four deep, which fell into the bottom of the furrow which had been previously made; the large plough then came up, taking with it the same breadth of furrow, but going down to a further depth of ten inches, which slice was laid over upon the top of the last or surface slice; thus completely burying it, and altogether ploughing to a depth of fourteen inches. The eight horses were yoked two and two, and appeared to be working up to their full strength when making the furrow.—The plough was very clumsy, and not very well harnessed, so that much force was unnecessarily wasted in the operation. It is evident, if the whole horses were somewhat distressed in making the furrow in the centre of the field, that, when they came to the turn, the whole stress falling upon the horses next the plough, they would be unequal to the task. Such was the case; and, in order to remedy the defect, at the end of the furrow was a spadesman, who made a ditch or trench of several yards long in the same line, so that the plough had then no soil to turn over, and the last horses had only to carry the plough round. The top of the opposite furrow was prepared in a similar manner, by which means the full stress was not put upon the plough till the whole eight horses were in line, and able thus to exert themselves in company. Notwithstanding all this, the horses seemed to struggle very much, both in taking the turn and in again commencing the opposite furrow. They were otherwise well trained to the work, and took the turns at the word of the driver. The land is ploughed in breaks or patches.—The horses always going round from one side of the break, whatever may be its breadth, to the other, so that there are no ridges visible; and, when they are finished, it resembles one of our well-drained fields, which are ploughed without ridges, by means of the shifting mould-board plough. On this occasion, there were ten horses, eight men, one boy, and two women employed; and the farmer informed me, that they could do nearly two Statute acres a-day. The ploughmen give themselves very little trouble as to making a straight furrow; providing the land is all stirred and deepened, they care for nothing more. There are spadesmen constantly employed smoothing and straightening the surface after the plough; indeed, the last-made furrow exhibits a line very graceful from its curves, reaching, at some parts, its proper extremity, and at others a yard within it. The spadesmen remedy this defect, and dig up the parts that have escaped the plough; and, after the whole has been smoothed and straightened, it makes altogether a very tolerable-looking job.—*Burns' Murdoch's Notes.*

THE QUEEN-BEE AT HOME.—The community of bees is an example of a pure monarchy, unrestrained by any checks on power, yet never deviating into despotism on the one hand, or anarchy on the other. Some years ago, while our gracious queen was making a royal progress through her northern dominions, we witnessed a no less interesting sight of the progress of a queen-bee, in the glass-hive of an ingenious friend, and lover of nature, at his country retreat. The hive was of that construction which opened from behind, and showed the whole economy within. In a few minutes the queen made her appearance from the lower part of the hive. Her elongated body and tapering abdomen at once distinguished her. She moved along slowly, now and then pausing to deposit an egg in one of the empty combs; and it was most interesting to perceive how she was constantly accompanied by nearly a dozen of bees that formed a circle around her, with their heads invariably turned towards her. This guard was relieved at frequent intervals, so that as she walked forward, a new group immediately took the place of the old, and these having returned again, resumed the labours in which they had been previously engaged. Her appearance always seemed to give pleasure, which was indicated by a quivering movement of the wings. The labourers, in whatever way occupied, immediately forsook their work, and came to pay homage to their queen, by forming a guard around her person. Every other part of the hive, meanwhile, presented a busy scene. Many bees were seen moving their bodies with a tremulous motion, by which thin and minute films of wax were shaken from their scaly sides. Others were ready to take up this wax and knead it into matter proper for constructing cells. Frequent arrivals of bees from the field brought pollen on their thighs for the young grubs, and honey, which they deposited in the cells. All was activity, order, and peaceful industry. None were idle but the drones, who seemed to stroll about like gentlemen.—*British Quarterly Review.*

TREES.

BY MISS FRANCES BROWN.

Like the latest left of the battle-spears,
In their ancient strength they stand ;
And they tell us still of the sylvan years
When the forest filled the land ;
Ere ever a hunter tracked the wood,
Or mariner ploughed the seas—
But the isles were green in the solitude
Of their old primeval trees.

They have survived the Druid's faith,
And the Roman Eagle's fall,
And the thrilling blast of the bugle's breath,
From the Norman's knightly hall ;
But the sun shines bright, and the showers descend,
And the wild bird's home is made
Where the ancient giants still extend,
The green of their summer shade.

We have seen our early winters hang,
Their pearls on each leafless bough ;
And greeted the buds of the waking spring,
With joy we know not now ;
For life hath its winters cold and hoar—
But their frosts can form no gem ;
And the spring may breathe on our hearts no more,
But it still returns to them.

They are waving o'er our hamlet roofs,
They are bending o'er our dead—
And the odours breathed from his native groves,
On the exile's heart they shed ;
Like him who gazed on his country's palm,
By the palace-circled Seine,
Till the Pagod arose in the wanderer's dream ,
And the Ganges rolled again.

How sweet in our childhood's ear they spoke—
For we knew their voices well,
When far in our western hills, they woke,
Of the coming spring to tell ;
But now they send us a sadder sound,
On the winds of autumn eves—
For it murmurs of wisdom more profound—
But it tells of withered leaves.

Oh! such were the Dryad tones that rose,
In the Grecian woods of old—
And the voice from the Indian wilderness.
That the Conqueror's fate foretold ;
For many a minstrel's dream had birth
In the sounds of leaf and breeze ;
And the early oracles of earth
Were the old complaining trees.

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