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AGRICULTURE.

WHAT IT IS IN THE PROVINCE OF QUEBEC; HOW TO IMPROVE IT. (1)

Agriculture is the most useful, the most moral, the most noble of employments, as it regards individuals; so, as regards nations, it is the only solid base of general prosperity.

A well thought out system of agriculture demands, not only great bodily exertion, but also great mental study.

That this art is of divine institution; that it was the intention of the Creator that man should find his chief employment in its exercise; is clearly shown by the passage:

"He placed him in the garden of Eden, to dress it and to keep it." (Gen. 2) The cultivation of the earth was thus an express injunction from God himself; the condition on which man's happiness, his dignity, his very existence depended, before the Fall had rendered all labour painful and disagreeable.

In all ages, and amongst the most celebrated nations, Agriculture has been considered the first and the most honoured of all the arts. Thus, in ancient history, the Chaldeans, the Egyptians, the Romans, as well as the Jews, were eminently agricultural peoples; and, from the beginning of the Christian era up to our own times, the most powerful, the most prosperous nations have derived their riches and their strength chiefly from this source.

That "Agriculture is the very foundation of human life and the nurse of the human species" is a maxim that has never been contravened. If, then, Man is only truly great and noble in proportion to the benefits he confers upon his race, what occupation is more noble and more useful than that of the Husbandman.

The magistracy, the liberal professions, trade, the mechanical arts are of the greatest use to us. Since the Fall, in proportion to the increase of population, the increase of power, courage, wisdom and of knowledge to direct, defend and control society, has been necessary. More energy has been requisite to extract from the bosom of the earth, and from the depths of the waters, their riches, and to utilize and spread abroad those blessings without limit which the Creator has placed at the service of mankind. But what does all this avail without the life of the body? How elevated an art, then, must that be which alone can supply those fruits, those products which, pleasing our appetites and rejoicing our hearts, establish and strengthen the life of Man.

The cultivation of the land must, necessarily tend to raise the mind of the cultivator to a higher moral tone. Throughout his varied toil he feels his immediate dependence on God. Man becomes the docile instrument of the Creator in the continuation of his Creation. The Farmer stirs the earth; he

(1) Prize Essay, by Ed. A. Barnard, Director of Agriculture for the Province of Quebec. Translated from the French by Arthur R. Jenner Fust, Esq., M. A.

waters it with his sweat; he entrusts the seed to its bosom, and then, his part of the work is over; the rest he leaves to God; from whose tender care come the heat, the refreshing dew, the necessary rain and the vivifying light of the marvellous eye of the Great Creator—the wonder-working Sun itself. It is God alone who gives the increase; here ten fold, there fifty fold, there a hundred fold.

All the more manly virtues—sobriety, economy, activity, perseverance, foresight, are the property of the true cultivator. And so, we find amongst the agricultural population, generally speaking, a riper judgment, a purer life, a firmer religious faith and a healthier progeny, than amongst the inhabitants of our towns.

What says Columella on this subject? "A country life is the neighbour, if not the actual parent of wisdom." The wise Cato affirms that: "It is amongst the farming class that the best citizens, the best soldiers are born." Cicero, again, declares that: "Luxury has its origin in cities. Luxury produces cupidity; cupidity, in its turn, shamelessness; and thence spring all those crimes which cannot derive their origin from the sober and laborious habits of a country life. The lessons taught by agriculture are economy, industry and justice. The love of one's country, source of so many virtues, exists in the highest degree amongst the agriculturists who bring up their families on their patrimonial estates. It is there that the bravest of our soldiers are born."

It is indeed a flattering testimony that these Pagan writers bear to agriculture! What then should be the honours paid by Christian peoples to a profession so noble and so useful? Does not the Farmer feel that he, more directly than another, is placed under the very eye of God? Can he ever forget to notice the beneficent action of the Almighty in the result of his different labours? Who feels so acutely as the Husbandman the daily necessity of prayer, that the rain, the heat, the fine weather necessary to the seasonable ripening of his crops may be granted to him? Is there any one who can enjoy, more than he, the beauties of nature? And can he, to whom so much is granted, refrain from offering, from the depths of a grateful heart, the thanks due to his adorable benefactor. Thus, this occupation offers purer pleasures, a more virtuous youth, a better spent life, a happier and more tranquil old age, than any other with which we are acquainted.

We have by no means exaggerated the happiness, the good fortune which fall to the lot of the agricultural population. And yet, what do we see every day? We see educated men who are contemners of agriculture; we see children of Farmers, on whom the only influence of instruction seems to be to make them despise the occupation of their forefathers; we see, lastly, a crowd of persons, more or less distinguished, who can see nothing in the rough, though honourable, labours of the fields, but a debasing employment, unworthy of an enlightened mind; the labour of a slave. Do we not often see Farmers of comfortable means, whose chief ambition, for their

Sons, is to squeeze them into a, so called, liberal profession; do we not equally see Wives of Farmers, who think they are working for the good of their Daughters, in seeking for them a future unconnected with agriculture?

Have such parents, whether they are influenced by weakness, or by want of thought, reflected on what they are doing? Have they considered that, in sending their children to the towns, they are over peopling the professions and the trades, which are already sufficiently encumbered; that they are exposing these young persons to a kind of life, almost always precarious, frequently wearisome, and, not uncommonly, ending most disastrously? They have left the rank of life into which they were born, and, in spite of the more or less complete education which they have received, they will too often be tempted to shorten, so to speak, their wretched existence, and to seek consolation for their sad disappointments, by giving themselves up to the seductions of vice, and the attractions of dissipation.

Might not these young people, thus made miserable for life, have been capable of discharging, from their very entrance into active life, the duties, if not of the landed proprietor, at least those of the Tenant-farmer, of the Steward, of the vigorous and hopeful Colonist, in short of the useful citizen, who renders services of the most necessary kind to all his fellow countrymen. The girls who leave their country homes in search of a more attractive and convenient abode, are they more fortunate in their families, are their children better brought up, more docile, more useful to society, and, in their turn, more generally happy?

I seize this opportunity to submit to my readers some reflections which have often occupied my attention during the constant and varied labours of a Farmer, and I wish to call their attention to our position as Agriculturists. I would appeal to all men of sense and of feeling who love our dear country; that country which contains the fertile and unequalled valley of the St Lawrence, that glorious Province of Quebec, whose riches are still hardly begun to be explored. More especially do I address myself to the intelligent men who inhabit the country, to those numerous youths who are in search of a profitable and an useful career. I demand that they shall all honour agriculture, as it deserves to be honoured, and that they shall not close their eyes to its nobleness and its eminent usefulness. Our Statesmen, and all those charged with the duty of watching over the common weal, will, after due consideration, find that, in this subject, the most important question of political economy, as regards our country, is contained. I say it, with regret, but with profound conviction; this question of our agricultural progress has, since the termination of those arduous struggles for the maintenance of our nationality, been, almost entirely, overlooked. Thank God! we are to-day the sole masters of our own destiny. Should we not be highly blamable were we to neglect any longer that art which has always been, since the establishment of the country, and which still is, the principal source of prosperity and happiness. I will say more: Agriculture will be, in the future, the greatest safeguard of our nationality, after that chief of all safeguards, Religion. Let me appeal then to all, but principally to the clergy and to the managers of all houses of education in the province. Let the first homage of all be paid to agriculture; let no opportunity be lost of showing the high nobility of this art, the only art taught to man by the most High himself. Let all, by word, or by example, extol the dignity, the utility of manual labour, of that enjoyment given to our first parents as their principal occupation in the Garden of Eden. Yes, men may talk, but to him who is gifted with good sense, to the man of reflection, manual labour has

always been an immense satisfaction. He who is accustomed to the work of the counting-house, the professional man, the man of letters, whose forces are sapped by the advances of age, for want of the exercise given by manual labour, may not appreciate this truth, but, let them once test it, and they will soon find, joined to repose of mind and tranquillity of soul, a vigour and robustness of health, the most inestimable gift of the great God to his earthly servants.

Is it not most desirable that the principle of social economy which I have just mentioned, the improvement of agriculture, should incite the surplus of our population towards the colonisation of our immense forests, those sources whence should flow incalculable riches, riches which, without doubt, will bring peace and plenty to thousands of families, to-day, alas, without resources?

Let the State protect Agriculture, let our Legislators, and our public men who are more directly charged with this duty, encourage, as they ought, farmers to study and observe the laws of good farming, then, this country, already recognised as one of the most peaceful and happy countries in the world, will become, what it ought to be, one of the most productive.

Canada, I repeat it, compared with other lands in our age, is prosperous, peaceful and happy. To what do we owe this happiness, this prosperity, in the midst of our numerous vicissitudes, if not, in great part at least, to agriculture? Would the French-Canadian nationality have been in existence to-day, had not the Catholic and French population of the country, surrounded, as it was a century ago, by those numerous armies of the enemies of our faith and of our nationality, remained, after the conquest, concealed, as it were, by the shadow, and under the protection of the Belfry of our country parish churches.

And, in the future as in the past, our only hope for safety, as a people, does it not lie in the ownership of the soil, in the colonisation and clearing of our forests, in the development of our riches and of our population by fostering the regular and intelligent improvement of our agriculture?

Were we to forget this duty, were we to neglect agriculture any longer, must we not expect to see in a very short time the recommencement of that terrible scourge, the expatriation of our fellow countrymen? We all know but too well how this scourge of emigration has in a few years swallowed up a notable proportion of the population of our older parishes; how it devastated lately our newest and most prosperous colonies to feed the requirements of the vast manufactories of our southern neighbours. Have we not seen, and seen with grief, in more than one district, Farmers, the owners of the soil, abandon, with their families, the home of their Fathers, where their ancestors had lived in comfort, to wander, as exiles, into a strange country, in hopes of amassing a few pieces of gold more rapidly, perhaps, than was possible in their native village? Too often, to satisfy the ever increasing demands of the luxury in which their families have desired to live, have they yielded to the attraction of higher wages and shorter hours of labour, without considering that the labour was the labour of a slave, and more, of a slave exiled from his country.

I trust I may be forgiven these remarks. They belong, naturally to the subject, and they seem to me to be quite suitable to the peculiar situation of our Province. Besides, they are in themselves an eulogy of agriculture, since to it belongs, most assuredly, our national happiness in the past, and our salvation, as a country, in the future. Yes, we must not disguise it, after God, it is to agriculture that French Canada owes that it is, what it is; it is in this art that its strength and its defence against future dangers reside. What greater praise, then, can be given to this divine art, with what more brilliant and more glorious coronal can a Canadian

patriot encircle the brow of this "Mother," as lovable as she is noble and useful, than by giving her, her true and well earned title "the nursery of the human race."

It is not the Canadians alone who are indebted to agriculture for the preservation of their power as a people. No one who studies history can fail to be struck by this fact; namely, the decline, and the almost entire disappearance of those numerous nations, which, in the zenith of their prosperity, have filled the world with the fame of their name, of their conquests and of their glory. All these nations, before they distinguished themselves as warriors, had become prosperous by the development of the art of cultivation. And what was the principal, if not the only rock on which they made shipwreck, one after the other, but the gradual abandonment and the subsequent ruin of their agriculture? A ruin too quickly consummated, and in most cases followed by an immoderate search after conquest, by robbery, by crime and all manner of forbidden enjoyments. What but this is the lesson we learn from the history of the Babylonians, of the Egyptians, of the Greeks and of the Romans? And the Hebrews, the favoured people, ruled over, in their happier days, by God himself, what were their epochs of grandeur and of happiness, but those in which, when obedient to the divine law they occupied themselves in the cultivation of the land? What were their seasons of misfortune and degradation, but those which followed their prosperity and pride, when the Hebrew granaries were full to overflowing, when the cellars would not hold the wine, when the nation was gorged with riches? It was at such seasons as these that, deaf to the voice of God and unwilling to work, the nation gave itself up to forbidden pleasures, and seeking wealth from unjust, tho' easy conquests, drew upon its guilty head the deserved chastisement of the divine wrath.

If we would know the source whence springs the strength of certain modern nations; how it happens that, in spite of the most disastrous troubles, more than one country has emerged from its trials more united and more vigorous than ever; we shall find the secret in the progress and the perfection of their agriculture.

How could France have ever escaped from the iron yoke of the stern German, had not the marvellous riches of her industrious husbandmen enabled her to pay the enormous ransom demanded—a ransom which the whole world deemed her incapable of discharging.

And the country of the industrious Flemings, that little plot of sand torn from the sea, how could it have preserved itself free from the spoliations of its greedy neighbours, were it not for the frugality, the activity and the intelligence of its agricultural population, at once the densest and the most laborious of Europe? England too, our new Mother-country, how could she, a small island covered in great part with mountains, heaths and sands, have drawn upon herself the praises of her Roman invaders, had she not already, even at that far removed time, distinguished herself by the, comparatively, advanced state of her agriculture.

Proud as these English are of their flag, on which the Sun never sets, they owe the retention of their numerous conquests, in all parts of the world, more to the arts of peace, than to the arts of war. Do they pay no homage to agriculture? Need I say that no where is that pursuit more highly honoured than in the British Isles? There, are grown the greatest average crops known in the whole world. It is to the English that are due those wonderful improvements in the races of the domestic animals, which have gained for their producers not only reputation, but prices well-nigh fabulous. Drainage, steam-cultivation, in fact, all the greatest inventions in the science of agriculture, have their origin in England;

and it is there, that the cultivation of the soil is held, and will, probably, always be held, in the highest and most reverential esteem.

If there is a gentleman in the world who attaches a high value to the rank he holds, and who never forgets the dignity of that rank, it is the English gentleman. To follow-trade, or commerce, would be alien to the ideas in which he is brought up. Few careers are open to him; arms, the priesthood, diplomacy, the bar and—agriculture! What a lesson should this be to those amongst us, too many are they, alas, who despise the gentle art, and blush for their origin, and for the occupation of their ancestors. Many, if not most, of the great noblemen of England, nay the very members of the Royal family themselves, give no small portion of their time, to the persevering study of this industry. The Queen, the Prince of Wales compete for prizes at the annual exhibitions, and do not disdain personally to inspect and direct the operations on their landed properties. It would be well to remark that, in England, the exhibitions of agricultural products, implements, &c., are held yearly in different districts, in order that the best practices of the most improving farmers may be carried into the various parts of the country.

And, lastly, whence arises the distinctive character of the Chinese, a people so ancient that its origin is lost in the darkness of ages gone by? Is it not from the wisdom of its laws, which, paying due homage to agriculture, have raised her to that position which she so justly merits; laws, which have enabled the soil to produce sufficient food for the wants of the population without exhausting its fertility, by obliging the cultivator to return to the earth, but, in another form, that which, in his harvests, he takes away from her.

Let us now, for a moment, glance at agriculture from that point of view which regards the intellectual attainments necessary to its development in perfection.

Agriculture demands, in addition to bodily labour and those qualities of the mind indispensable to the successful prosecution of all human occupation, it demands, I say, more than any other career, the union and support of the deepest learning with the most varied knowledge. I cannot better conclude this part of my essay, than by showing the truth of this assertion, and its interest in the present condition of our country.

In truth, the Cultivator who wishes to search to the bottom of the questions which belong to his art, and which influence directly its results, can never hope to arrive at his end however long his life may be, so vast and varied are they. *Mathematics* await him on the threshold—they are the introduction to his future studies. *Physics* explain to us, first *mechanics*, by which we learn to understand the use and construction of the different machines and tools employed on the farm in these modern days; then, come *pneumatics* which, treating of the air, and of the laws which govern its movements, explain to us the action of the Barometer, of the different pumps, the Syphon, the Windmill, Ventilation, &c.; *hydrostatics*, the law of fluids, which offer to Agriculture the aid of the Hydraulic Ram, of Water-powers and the Brahma press, besides showing the support necessary to sustain in their places the banks of our water courses; *electricity*, that astounding agent, which was formerly only known to husbandmen by its disastrous effects, but which scientific men now study with close attention in its connection with the growth of plants, with their decomposition, &c.; *magnetism*, that other power, nearly allied to *light*, *heat* and *electricity*, which has, for some time, been the foundation of a new and strange system of cultivation; *heat*, a force, that though imponderable, has a constant and marvellous effect, and which leads us into a labyrinth of studies connected with *steam* and

its powers, with the different sorts of fuel, the dew &c.; *light*, the active and indispensable principle in the growth and ripening of all kinds of crops. Chemistry, that science which presents itself to our view in a thousand different ways, in spite of its often causing its votaries to despair, by its apparent mutability, has made, incontestably, great progress in our age, and has rendered the the most valuable aid to agriculture. Owing to the discoveries made by this science, the whole system of cultivation seems doomed to undergo a change; it is from Chemistry that we learn the real value of those mineral manures which we extract from their repose in the rocks; manures of such surpassingly concentrated force, that they far excel in their effects the richest animal composts; it is from Chemistry that we learn how to decompose, or dissolve substances, so as, by transmutation, to form new combinations; it explains the effects of fertilisers, tells us what matters are wanting in the composition of our soils, teaches us how to supply the defect, and, finally, it defines, precisely, the nutritive worth of our agricultural products, and shows us how to convert them, most profitably, into *fat, muscle and bone*. A lengthy catalogue, indeed! We must, still, add *meteorology, geology, botany and zoology*. These are a few of the sciences which lay their offerings daily at the shrine of the Goddess Ceres.

The study of these sciences is eagerly pursued by the intelligent and educated sons of Farmers in every country where agriculture is held in honour.

In consequence of their efforts, the science of *mechanics* has produced those labour saving implements we see on every modern farm; *chemistry* has given reputation, honour and fortune to thousands, *zoology* and *anatomy* have aided in transforming the different races of cattle, to the undying glory of the Collings, the Bakewells, the Bates. See, how many careers of diverse kinds are connected with the cultivation of the soil, when it is fairly and sensibly carried out, and then say, if the future open to our children, if we direct them to an intelligent study of agricultural science in its fulness, be not filled with the most beneficent and hopeful prospects.

I intended to speak, in this essay, of those allied industries, which have changed the face of entire countries, which have caused the most ardent labour, the study of science in its deepest moods, and the most perfect form of agriculture to walk abreast, assuring, by this means, to individuals, as well as to the State, the most secure source of wealth, and the most enduring stock of prosperity. It may be said, with profound truth, that the sister sciences are the richest crown, the last perfection of agriculture.

But, I must stop here. I think I have shown that agriculture is of divine origin, taught to man by the Creator himself at a time when man seemed fated to enjoy immortal happiness on this earth; that the labour which it demands is still a source of strength and enjoyment; that agriculture is the safeguard of the family, and of the State, alike, and that it offers a career, intellectual and scientific, noble and productive; a career, in fine worthy of pursuit by the most elevated, the most solid, the most thoughtful minds.

On Forage Crops. (1)

Nobody who has thought much upon the subject of farming in Canada can avoid seeing that the probable course of events demands an entire alteration in the system of cultivation on our older lands. I do not propose, in the present article, to speak of those pleasant spots, where, as in the bottom, or *interval* meadows, along the vagrant *Coaticook*, or the rocky-bedded *St. Francis*, the grass is rarely wanting, even in the

(1) By Arthur R. Jenner Gust.

driest times; but, as is well known to my readers, there are tracts of really valuable land, where, owing to the shallowness of the soil, or to the poorness of the preparation, the herbage, when once eaten bare, refuses to spring again, rain, it never so abundantly, until the season is so far spent that the produce of meat, butter and cheese is cut hopelessly short for that year. Of course, the management of the pastures still leaves much to be desired, but, I think, there are signs of improvement—the subdivision of the fields employed for grazing purposes is one of the chief points. In the great grass farms of Leicestershire & Northamptonshire, England, the opinion, well weighed, and backed by the experience of centuries, is, and I beg to call particular attention to the fact, that, 50 acres, in three enclosures, will fatten as many bullocks, as 60 acres in one piece! Rather an important affair where land is worth from £2 10 to £3, an acre per annum, to say nothing of tithes and taxes and rates which, probably, amount to another pound.

I have, in my mind's eye, as I write, a charming spot not far from Compton Centre, 100 acres of pasture. Into this, every year, in May, walk 20 young bullocks; out of this they never escape, until they are placed in the yards for the winter. Fancy a pleasant dinner of soup, fish, cutlets, pastry, vegetables, cheese and salad, all to be eaten off the same plate! Fancy this renewed, day after day, week after week, for five months, with the agreeable accompaniment of a dozen, or so, of friends poking their noses over our food, in their curiosity to see if any morsel more delicious than usual have escaped our attention! It would require Dean Swift himself to do full justice to the nastiness of the subsequent description, so I won't attempt it. Well, this is, exactly what these poor bullocks have to endure, in their way. I know, from personal observation during two summers, that at least one third of the pastures are utterly wasted, in this manner alone, through almost the whole of the richer parts of the Eastern Townships.

However, the improvement of pastures and of meadows is not my present business.

Forage crops, in this country, if cultivated systematically, give very little trouble and are immensely profitable.

They give very little trouble, because, when once sown, they take care of themselves, requiring no hoeing, and they are immensely profitable, because they supply the greatest void in our husbandry; green, moist and wholesome food in the driest time of the season.

Let us, first, see what the different sorts of forage crops are; and I think they may be divided into two classes, viz., those that are suited to the feeding of horned stock and horses; and those that are more peculiarly adapted to the wants of the sheep.

Again, of those crops which are beneficial to the cattle, some seem better qualified to produce, when given to cows, superior butter; others, are, on the contrary, more useful to the cheese factory; others, to the production of large quantities of milk, poor in quality, but, considered by the vendors, apparently, quite good enough for the consumption of the dwellers in our towns.

They are as follows:

Rye,	} for horses and cattle.
Lucerne,	
Tares, or vetches,	
Clover,	
Indian corn,	
Hungarian grass,	
Rape—for sheep	

There are, doubtless, many others worth a trial, but these I know, from personal experience, to be good, suited to our climate and to our soils, and, if sown at proper seasons, capable of filling up most, if not all of those terrible gaps which,

on the majority of farms, occur but too frequently in the course of three seasons out of four.

Rye — The rapidity with which this cereal runs its course, from germination to earing, limits its consumption to a very short time, it cannot be depended upon to last, in the juicy state more than ten days; it then becomes hard and stick like, and is refused by all decently well fed animals. The acreage sown must of course follow the requirements of the stock but should be, comparatively, small. The land should have been ploughed in the fall with a narrow furrow, well laid up at an angle of 45°; the seed, at least 3 bushels per acre, well covered by the harrows, or what is better, let in with the cultivator, and the land harrowed, until fine, afterwards. Those who are fortunate enough to possess a drill will of course work the land well before using that implement, so that one, or at most two strokes of the harrows will finish the work.

I am inclined to think that half a bushel of wheat added to the Rye, although the former is a much slower grower than the latter, would thicken the bottom and give a heavier swath towards the latter part of the season. One thing is certain, horses prefer green heat to Barley, Rye, or Oats. I need not say, I suppose, that the heavier the ground and the worse the tilth, the more seed must be sown; in fact, on some of our clays in the valley of the St. Lawrence, four bushels to the acre would not be too much. The poorest land will bear Rye, as every one knows.

It would be a good thing to sow a small piece of Rye in the autumn, say about the middle of September, for the sake of the horses. It would come in very early, and would, by judicious use, in the absence of carrots, cool the system of the animals after their long course of dry, hard food. The great London stables consume large quantities of this food in the Spring of every year, and, although the horses go back to their Hay, Beans and Oats after a fortnight or so, it is presumed the owners find their account in the practice.

In sowing Rye in the Autumn I have found the following plan a good one; having first ploughed the land, pass the cultivator across the ridges, and, if cloddy, harrow till fine; then sow the seed by hand, and plough it down with a furrow of 4 inches in depth, and as narrow as possible; this will put the roots pretty safe from the influence of the alternate frosts and thaws of the Spring. The grain will soon make its appearance between the furrows, the crests of which will protect the blade from the wind. Keep the stock off, it and roll the moment the dry weather comes in the Spring. After sowing in this fashion, the land should not be harrowed, as the rougher it lies all the Winter, the better.

Lucerne. — The Medicago of the Romans, is probably the oldest forage plant known to agriculture. The plentiful yield of this sound and healthy green crop, when it meets with suitable soil and treatment, should incite every farmer to give it a trial. When once established it is very forward, that is to say it will be fit to cut, in the average of years, at least ten days before the red clover. If any one should attempt to grow Lucerne in rows he would, probably, soon plough it up, as the land, treated in this fashion, can hardly be kept clean by any amount of hoeing. But there is a plan which does away with all manual labour during the growth of this crop, and I will try to describe it as plainly and lucidly as possible.

In the first place, Lucerne demands a dry subsoil. Sandy loams, black loams and clay loams, sand and gravels will all suit it; but on heavy, tenacious clays, with water lying on them in Spring and Autumn, it would be waste of time to sow it.

After having chosen a piece of well fallowed land, near the homestead, and having ploughed it deeply in the Autumn, apply a good dressing of manure in the early Spring turned

down by two ploughs following one another in the same furrow. There is no fear of going too deep, as the roots of this plant have been traced six feet below the surface. I may observe here that the proper time for deep ploughing is in the Autumn, and in preparation for a manured green crop, *never* for a straw crop; with this proviso borne in mind, ploughing cannot be too deep, as the wonders of spade culture on the barren sands and clays of the labourers' allotments in England clearly prove. Hops, on the soil of the "Upper Green Sand" at Farnham, Surrey, have been traced 24 feet deep in the shattered semi-rock; and it is easy to see that, in our burning climate, 12 inches of soil will retain moisture longer than 6 inches.

Twenty pounds of seed will be required per acre, sown broadcast, with the usual quantity of Barley, and harrowed in. After the young shoots appear, a good rolling completes the operation. When the grain crop is carried, a dressing of loose, light manure should be given to preserve the Lucerne from the frost. In the following Spring pass a set of *light* harrows over it, for the land will be all the better for a stirring, and it will destroy some few weeds that may be showing themselves. About the end of May, the first cutting will, in an average year, be ready for the scythe, but the crop *should* be in bloom before it is begun; still, if "green-meal" is very much wanted, it may be cut as soon as it will give a swath worth carrying home. This, as well as all other forage crops should lie for 3 or 4 hours after mowing, to wilt a little, lest the cattle suffer from "blowing," or "hoven."

At the end of the season, say in October, the land should be harrowed, with heavy harrows, several times. There is no fear of disturbing the roots, as by this time they will be down too deep to be pulled out. This will keep the land clean, if repeated each Spring and Autumn.

According to the treatment it receives, Lucerne will give three or four cuttings in the season. It is most useful for horses, and, when cut in bloom, they will require no oats, if they have plenty of it.

I presume the reason why more *Clover* is not sown is that, as generally made into hay, it is considered, and with some plausibility, to be of small value. But, as a forage crop, every body who has tried it must approve of it. The yield is great, and the quality rich. It will bear constant cutting, and, strange as it may seem, the greater the quantity carried off the land, the more is the soil enriched; and for this reason: the roots which constitute the manure of the succeeding crop of grain, grow in proportion to the growth of the stem and leaves. If the clover is kept cropped off short by sheep, horses &c., the roots will be short and scanty, but, if the stock are kept off, and the plant allowed to get well up after each cutting, the roots will be long, thick and abundant, and, when turned down in the Autumn, their decomposition will afford the most suitable food to the wheat or oats during the following season. I cannot agree with the idea derived, I believe, from the United States, that the second crop should be ploughed in. It seems to me that, in our climate, the practice is most wasteful. The horses will be only too glad of it, and if placed in a good yard, with a shed to run under, will do much better than in the pastures, besides saving their manure.

Clover is, in reality, an annual, but the usual system pursued in its cultivation has converted it into a biennial. According to Von Thaer, Clover never fails to show a good plant when sown with Buck-wheat. This might be worth a trial in this country. In England, many thousands of acres have become, what is technically called "clover-sick." There, the strict "four-course," or "Norfolk" rotation, in which clover is sown every fourth year, has been practised so long,

that the soil refuses to grow it, and, in consequence, the farmers have been compelled to substitute Alsike, Dutch, or Hop trefoils, so that, now, the true, or red clover is only sown once in 12 years, to the great detriment of the Wheat crop, which, almost invariably succeeds after clover. I incline to think that a few pounds of "Cocks foot" or "Orchard grass" (*Dactylis glomerata*) might be advantageously add in place of part of the 14 pounds of clover seed sown to the acre. Rye grass, which accompanies it in Scotland, and successfully, in some parts of the east of England has completely ruined the land. If tried here, great caution should be used. Rye grass is a true *cereal*, and, therefore, necessarily unfits the land for the production of grain. One of the finest farms in Cambridge-shire, with which I am well acquainted, fell off in yield at least 40 per cent, in the grain crop, after the introduction of rye grass amongst the clover. This farm (1000 acres) was on a chalk subsoil and averaged, formerly, 56 bushels of Barley, and 44 bushels of Wheat to the acre, so the lass to the proprietor, who farmed it himself, was something fearful.

Tares, or Vetches.—This is the next crop on our list, and well known to every farmer. It will grow well on all soils, but prefers a clay-loam. On sands, or gravels, it demands a fair dressing of manure, but on heavy land, in tolerable condition, it can do without. As Tares are inclined to fall down when they are at their best, it is customary to sow 2 or 3 pecks of Rye, or Oats, per acre with them, but as Rye soon becomes uncatable, and horses don't care much for green Oats, at present prices, half a bushel of Wheat would be worth trying.

The quantity of seed required is $2\frac{1}{2}$ bushels, when the land is in fair order, but 3 bushels would not be too much in rough ground. There are two sorts, the Winter and the Spring Tares; the seed of the former is small, that of the latter much larger, but the quality of the forage of the Winter Tares is so much superior to that of the Spring Tares that, in the East of England, they are sown invariably to the utter exclusion of the other sort. A couple of bushels of Plaster to the acre, on the young plant, will materially assist the yield. It is well to observe that nothing is gained by very luxuriant crops of Tares, as they always fall down and waste themselves, unless cut at the critical time of coming into bloom.

A very productive mixture for forage is; $1\frac{1}{2}$ bushels of Tares, $\frac{1}{2}$ bushel of Pease, $\frac{1}{2}$ bushel of Horse-beans and $\frac{1}{2}$ bushel of Wheat. Of course, the Roller must follow the Harrow at seed time, or else the unhappy man who mows the crop will lose his temper, and the Farmer's time, pretty frequently. Two sowings should be made, one 3 weeks after the other; the second will, probably, just fill up the interval between the first and second crops of Clover.

I do not think there is any necessity for saying much on the subject of Indian corn. It is, probably, the very feeblest food, in a green state, that can be found. The milk yielded by cows fed on it will need no water for the purpose of dilution; in fact, did I wish to supply a very good imitation of Ass's milk, I should feed a white-skinned cow with Green Indian corn and Brewers' grains; that milk would not disagree with the most delicate infant. Still it is a bulky crop, if sown thickly in rows 27 inches apart with a good allowance of manure; the quantity of seed per acre depends entirely upon the sort of corn, but 2 bushels, to $2\frac{1}{2}$ bushels should be enough. Individually, I should grudge the manure, as robbing the root crop, and if any of my readers have tried to harvest the corn for the Winter, in a dripping Autumn, I fancy they have not forgotten it.

We now come to the *Hungarian Grass*, (1) and a most useful grass it is; rapid in growth, wonderfully easy to sow, sure to take, if the land is decently prepared; greedily eaten by all sorts of stock, if cut whilst young; and the best butter

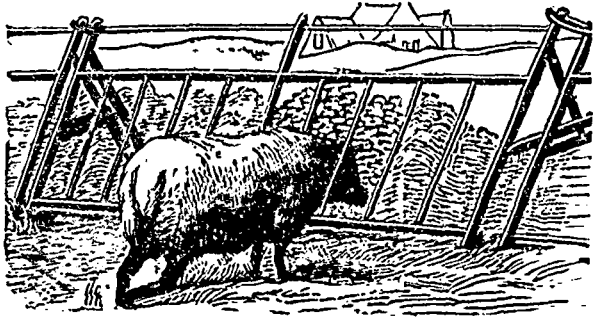
(1) See engraving, page 31.

producer of all the forage crops grown. Unfortunately, most people who have tried it will let it stand too long. It has only one defect, as far as I know; it won't bear frost; so that, by about the middle of October, it should be all consumed. The land, after the Autumn ploughing, should be re-ploughed in the Spring, harrowed till fine, and rolled after the seed is sown. It will take about 28 lbs. to the acre; with that quantity, hardly a weed can show its face. Two sowings should be made, at an interval of 3 weeks, to have it come in fresh and fresh.

I suppose the time will arrive, when we shall no longer see the sheep lying under the fences, and depositing their invaluable manure, to say nothing of the oily exudations from their fleecy coats, on the grassy borders of the arable lands out of the plough's reach. To the system of folding off green crops all the Summer, as well as all the Winter, the, formerly, poor lands of the East and South of England owe their present fertility. Here, the end of October must, as a general rule, see the flock in the yards, but it is my firm conviction that Canada never will produce the full amount of grain which it is capable of producing, until the sheep is made, what it is in England, the dung-carrier of the farm. On the sandy soils of Bedfordshire, as well as on the chalky clays of Kent, towards the beginning of July, the traveller sees, as he journeys along the roads, large fields of a rich, green plant, something like a tall cabbage stalk, with leaves growing all the way up it, and from 3 to $3\frac{1}{2}$ feet high. This is *Rape*, or Coleseed, the Colza of the French. The latter, distinguished from the former by the roughness of the leaves (*hispid*), is supposed to be, and, perhaps, is, the more fattening of the two; but they will both make sheep *ripe fat*, without any other food. Cows are fond of it, and it makes them give plenty of rich milk, but great care must be taken that it is not given to them with the dew on, or in rainy weather. Insects don't trouble it; as it is sown broadcast it requires no hoeing; and no weed can struggle against it. It is grateful for manure, but on good soils, of a moderately heavy quality, it can do without it. A few, say 10 bushels of bones, mixed with as many bushels of ashes, lixiviated if no others can be spared, will, on light soils, produce a crop so luxuriant in its lush abundance, that no one can fail to appreciate it. If it is desired that the Ewes should bring forth twin lambs in the Spring, a fortnight, or three weeks of feeding on Rape, before the Ram is put to them, will have the wished for effect. I remember, in 1853, my Ewes, 250 in number, lambed down 397 lambs. Of 15 that lambed one night, there were 29 lambs born! They were "Hampshire Downs," a breed not much given to twin, but they had lived upon Rape for 3 weeks in the previous September. The plant grows so high, and is so thick on the ground, that the sheep don't trample it down, as they do Clover; for which reason they may be allowed to feed on it at liberty; though of course, the more economical plan would be to divide a small piece off, every two days, or so. I submit a sketch of the newest kind of *Hurdle*; it is usually made of iron, but I have used some of wood, which answered perfectly. It will be easily seen that a boy can move them backwards, or forwards, without difficulty. If sheep are given to jumping, it would be a good plan to leave one of the upright bars of each hurdle 18 inches higher than in the sketch; if a wire is then run along the tops of the bars, loosely will do, the sheep may try to jump at first; but, after a few attempts, the shock they receive on falling back from their spring will so astonish their weak nerves, that they will become disinclined to further adventures. It is in this way alone, that the Welsh Mountain sheep, the wildest domestic animals in Creation, can be kept within bounds. The fresh piece should always be given in the afternoon, say about 2 o'clock, when the sheep will

have their bellies pretty full, and the evening dews have not begun to fall.

The land should be as carefully prepared for Rape as for Mangolds, or Swedes. A cross-ploughing, in the Spring, followed by the harrows, the roller and the cultivator, or grubber, if there is one handy, should leave the land in a fine tilth by the middle, or end of May. From 6 lbs. to 8 lbs. of seed per acre can be either harrowed in, with light harrows,



or with a bush; or, if the soil be a little cloddy, a roller may be used; but so early in the season I should prefer to leave a harrowed surface, to a rolled surface, as being less likely to suffer consolidation and, consequently, hardening on the top, from heavy rains followed by a hot Sun, unless, as in the case of Tares &c., where a scythe has to be subsequently used, and even then I should rather roll after the crop is up.

When the hurry of harvest is over, choose a piece of land, in good condition, either in stubble, or where the first crop of Tares has grown, and, having ploughed it, and made it decently fine, scatter over it 3 lbs. of Rapeseed and 10 lbs. of Hungarian grass seed to the acre, and harrow it in. It will be ready to feed by the beginning of October, and will be of the greatest possible use for the following purpose.

I suppose every body knows that meadows in which Timothy grass grows should never be fed at all. Owing to its, so to speak, bulbous habit of growth, the roots are easily extracted, and the injury done can never be repaired: consequently, towards the Autumn, the Cattle, being restricted to the pastures, which by that time are, except in very wet seasons, pretty bare, retire into winter quarters in by no means a proper condition to bear the, necessarily, hard fare they may expect there. The steers and heifers lose flesh, the cows fall off in their milk just when butter sells, in our Towns, at a good price, and the poor animals never, during the whole season, recover from the check, but go out to grass the following Spring with the double duty of repairing the waste of flesh and fat, and of yielding milk at the same time, imposed upon them.

Now this slight trouble of sowing a mixture of Rape and Hungarian grass over two, or more acres, according to the size of the farm, would remedy this misfortune. The grass may be touched by the frost, but the cows will eat it and the Rape together, and the dryness of the one will modify the moistness of the other; tho' there is no danger to be feared if the animals have a little straw to eat before they are turned out after milking. I can answer for it, that the flavour and colour of the butter will be all that can be desired, in fact, no one could tell any difference between it and grass-fed butter. Pray dont fancy, my reader, that the cows will scour. Rape is a very much sounder food than Turnip tops, and never produces diarrhoea.

Should you wish to grow your own Rapeseed, a hundred or two of the roots might be stowed away in the cellar, or root house, and planted out in the Spring—it yields largely, but,

unfortunately, birds are very fond of it, which militates against its ripening. The price is very low, about 12 cents a pound, so its hardly worth the trouble of growing. The refuse of the seed, after the Oil-crushers have done with it, is used for fattening, and for manure, under the name of Rape-cake. When best Linseed cake is worth £10.10 a Ton (in England) Rape-cake sells for £6.5 to £6.10. It is rather bitter, and the animals will never eat much of it, 3 lbs. to 4 lbs. a day, at most; whereas they will devour 9 lbs. or 10 lbs. of Linseed cake, and make no fuss about it. As manure, Rape-cake used to be employed largely, in the East of England, for Wheat. Highly nitrogenous, it was the best substitute for dung before Guano was imported.

Having now, cursorily, gone over the list of forage crops which I mentioned at the beginning of this paper, I think it would be as well to speak, shortly, of the manures best suited to the different plants I have been describing. And, not to plunge too deeply into botanical distinctions, they may be divided into two classes, the grasses, and the pod-bearing plants. Of the former we have talked of Rye and Hungarian grass; of the latter we have mentioned Lucerne, Clover, Tares and Rape. Now it is pretty safe to aver that the specific manurial substance for the former is Nitrogen, and, for the latter, Sulphuric acid. Of course Potash is of benefit to both classes, but there really are so many ways in which any amount of ashes might be collected on the great majority of our farms, at a very small cost of labour, that it is hardly worth mentioning. Moreover wherever a fair amount of stock is kept, the quantity of Potash in the manure made is very large, still, if one could find, here in Canada, a deposit of Kainit, or mineral potash, it would be very serviceable.

As to Sulphuric Acid, it is cheap enough, and plentiful enough, in fact it is constantly used all over the country under the form of "Plaster," which is, simply, a combination of Sulphuric Acid and Lime.

Nitrogenous manures are quite another thing. It, nitrogen, is the grand desideratum, to the farmer, of the present day. It is very scarce, and, consequently, very dear. Guano is too high priced to be used with profit, so is Nitrate of Soda. The refuse skins, ears &c. of the Tanneries contain a considerable proportion of Nitrate of Lime when rotted, but the quantity to be had is very small. We, on our farms, waste it every day, by neglecting to preserve the urine of our animals. Can't we be persuaded that it is, really and practically, the most powerful manure to be found? Put a drop of Spirits of Hartshorn into a table spoonful of water and give it to any small flower in a pot, see, after a few doses, how the whole look of the plant is changed! It is only Nitrogen, after all, that has done it, Spirits of Hartshorn being dilute Ammonia which, in its turn is composed of Nitrogen and Hydrogen. As for the mineral Superphosphate *alone*, it is, except for Swedes, Turnips &c., perfectly useless. combined with Ammonia, however, it forms a most valuable manure, as Messrs. Lawes and Gilbert have proved, in their report to the Royal Agricultural Society of England of their painstaking experiments at Rothampstead, about which I hope to have something to say in an early number of this Journal.

There is plenty of saw dust to be had near most farms, and no better absorbent can be found for the urine. Of course, liquid manure tanks are out of the question, but nine tenths of the urine might be saved by such a material as I have just mentioned being used. Labour is low now; England is anxious for all the supplies of meat, cheese and butter we can send her, and this is the time to make preparations for a more extended trade in those articles. But, to succeed, there must be active exertion, perhaps, truth to tell, even our Eastern Townships people are accustomed to take things a little coolly; the world is rushing on at a terrible pace, and, if

we don't take care, we shall be left behind. A shade more anxiety to take advantage of the fine weather in Spring might not be unbecoming. There is not, believe me, "plenty of time."

HEREFORDS.

In this number we present engravings of a Hereford Bull and Cow, a breed which, as will be seen from the following remarks, possesses many qualities which recommend it to our Canadian farmers.

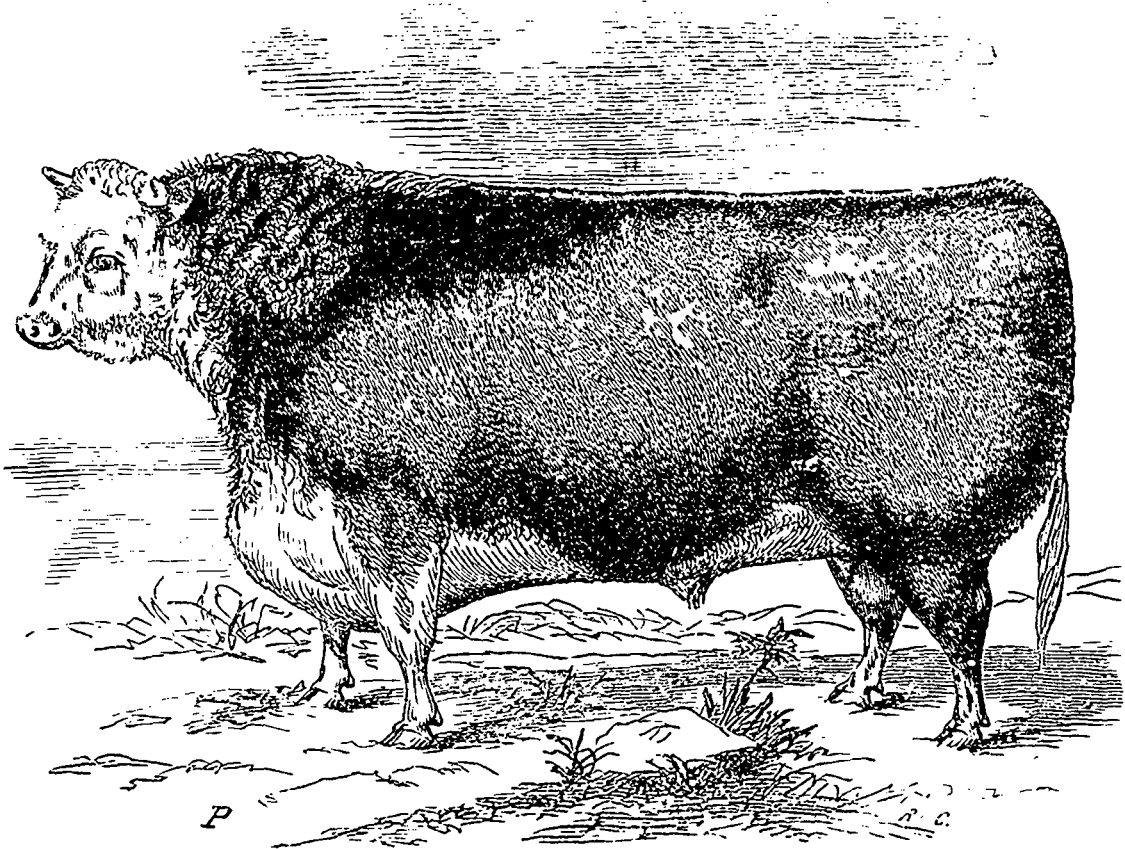
They take their name from the county of Hereford in England, which, for many centuries, has been celebrated for its excellent breed of cattle.

There were no Herd-books, either public or private, prior to 1846; during which year Mr. Eyton, of Eyton Hall, Salop, made the first attempt at compiling a Herd-book for breeders. He was succeeded by Mr. W. S. Powell of Hereford, at whose death it was taken up by Mr. T. Duckham, of

Baysham Court, Ross, to whom we are indebted for the historical part of this paper. Mr. Duckham thus describes the breed as we now meet with it. (1)

"The characteristics of the Red-with-white-face race are as follows:—The face, throat, chest, lower part of the body and legs, together with the crest, or mane, and the tip of the tail, a beautifully clear white: a small red spot on the eye, and a round, red spot in the middle of the white on the throat, are distinctive marks which have many admirers. The horns are of a yellow, or white, waxy appearance, frequently darker at the ends; those of the bull should spring at straight from a broad, flat forehead; whilst those of the cow usually have a wave, and a slight upward tendency. The countenance is at once pleasant, cheerful and open, presenting a placid appearance, denoting good temper, and the quietude of disposition which is so essential to the successful grazing of all

(1) Pamphlet on the Rise and Progress of the Hereford breed of cattle, by Thos Duckham.



ruminating animals: yet the eye is full and lively: the head small, in comparison to the substance of the body, the muzzle white and moderately fine, the cheek thin: the chest, deep and full, the bosom, sufficiently prominent, the shoulder blades thin, flat and sloping towards the chine, and well covered, on the outside, with mellow flesh; kernel, full from the shoulder-point to the throat, and so beautifully do the blades blend into the body, that it is difficult to tell, in a well fed animal, where they are set on: the chine and loin broad, the hips long and moderately broad, legs straight and small, the rump forming a straight line with the back, and at a right angles with the thighs, which should be full of flesh down to the hocks, without exuberance; twist good, well filled up with

flesh, even with the thigh; the ribs should spring well, and be deep on a level with the shoulder point; the flank full, and the whole carcass well and evenly covered with a rich mellow flesh, distinguishable by its yielding, with a pleasing elasticity, to the touch; the hide thick, yet mellow, well covered with soft glossy hair, having a tendency to curl."

Such, he says, are the points of a first class Hereford. "The breeders of Herefords have for ages past made the breeding of steers and oxen their study. Duncomb wrote: "The rearing of oxen for the purposes of agriculture prevails universally; nearly half the plowing is performed by them, and they take, too, an equal share in the labours of the harvest." From their great aptitude to fatten, and the fine quality of the

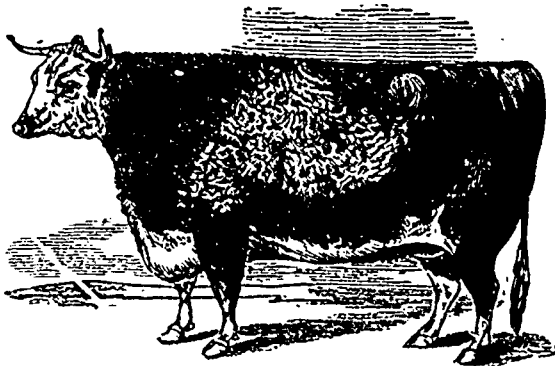
meat, which, by the intermixture of fat and lean, presents that marbled appearance so much prized by the epicure, and therefore commands a top price in the market, they have long been eagerly sought after by graziers."

From the above remarks it will be seen, that this excellent breed of cattle is admirably suited to many of our lower Canadian farms.

For working cattle, Hereford oxen are unsurpassed; they attain a large size, are very powerful, and combine good feeding qualities with endurance and docility of temper.

As dairy stock they claim no place, though, occasionally, a good milkor may be found among them. On this point Mr. Stone informs us that tho' they do not give a large quantity of milk, it is rich in cream and cheese. Having been bred, in the first place, for working oxen, and latterly for beef, no effort has been made to ensure milking qualities in them.

They fatten readily on any moderately good soil, on soils in fact, on which their rivals the short-horns would not thrive, and they sometimes attain to very heavy weights. They are healthy and robust in constitution, and are reliable breeders.



They are eagerly bought by English butchers, on account of the prime quality of the beef, which is better mixed than that of any of the other breeds. Owing to their round shape, there are more prime cuts than in any other beef. In all parts of the world we find that the Herefords are gaining in favour; herds of them are to be found in Scotland, Ireland, Australia, the West Indies, the United States and in Canada. Mr. Duckham, in the pamphlet above referred to, says, "Mr. Stone, of Morton Lodge, Guelph, Canada West, who has been long an extensive and successful breeder of short horns, was induced to try a few Herefords upon a portion of his possessions, from the fact that, those he was in the habit of seeing exhibited in that part of the world were so unlike the Herefords he was in the habit of seeing in his youth in England, and so strikingly contrasted with what he saw at the Canterbury Royal Meeting, that he became a purchaser of several animals at Lord Bateman's sale. So pleased was he with their doing, that he sent commissions to the sales of Lord Berwick, and of Mr. Williams of Kingsland; subsequently he attended the Guernaffael sale, and further added to his celebrated herd, which now numbers some fifty head. His judicious selections, and subsequent judgement in breeding, have given him a well merited reputation with breeders, not only in Canada, but over a large extent of the United States."

The growing favour in which these fine animals are held in Canada and the United States is evidenced by the fact that, by two steamers which arrived from Liverpool at the port of Quebec, on the 1st of May, Mr. Simon Beattie imported a number of very choice specimens of this breed which he intends to offer for sale at Toronto, and Mr. Stone had eighteen

selected animals, all pure bred Herefords, eleven of them being well forward in calf. He also imported fourteen more by the steamer "Texas", which raises his herd of Herefords to about a hundred head.

We recently visited Mr. Hickson's farm, Côte St. Paul, and were shown three beautiful young Hereford cows, and a fine imported bull bought from Mr. Stone. On a recent professional visit to Stanstead, we were pleased to see some excellent specimens of the breed; the Hon. Mr. Tyrill having some which he was feeding for the English market. There is a small herd at the Agricultural College at Guelph, Ontario, and at other places.

It will thus be seen that, those wishing to start a herd can do so without the risk and expense of importation; and we hope to see these hardy, easily fed, and consequently profitable, cattle introduced, by our Lower Canadian farmers, on those farms, many of which we have in the Townships, which are not rich enough to feed the improved Short-horn, and which, from situation, or other circumstances, cannot be profitably worked as dairy farms. On these farms the Herefords would thrive admirably.

OUR CATTLE TRADE.

It may be interesting to our readers to know what is being done in connection with this important subject.

We regret to say that, owing to the continued existence of Pleuro-pneumonia to a large extent in the United States, that country (not only the infested States, but the whole country) remains on the scheduled list, and all cattle, coming from any part of that country, must conform to the provisions of the "Contagious Diseases (Animals) act 1878": viz., be slaughtered within ten days after their arrival at the port of entry.

When we consider the vast extent of territory which is entirely free from disease, compared with the narrow limits of the few Atlantic States in which it exists; it, at first sight, seems absurd to schedule the whole country, on the grounds of danger from infection; yet, the law distinctly states, that any country in which contagious disease exists shall be scheduled; not any part of a country; consequently no provision is made in the law, as it now is, for so vast a territory as that of the United States, extending, as it does, from ocean to ocean.

Independently of this legal difficulty, we have the fact that the enormous growth of cattle importation into England has very seriously crippled the farmers, reduced the rents, and thus reduced the incomes of the landed proprietors, who are consequently opposed to the importation of American beef. On the other hand, owing to the St. Lawrence being the best and most favourite route for Western shipments, the closure of our ports against Western cattle turns the tide of export into American channels; and thus, while the stock raiser must accept a very serious reduction in price, the shipping and transport companies reap a rich harvest, having all the stock to carry.

That the present arrangement is highly injurious to Canadian carrying interests is but too true, in fact, to some of the Companies, it is simply ruinous. It is a well known fact that a large number of steamers had been chartered for the special purpose of cattle carrying, and it is apparent that this large increase in our tonnage would react favourably for our merchants, especially the produce importers, in offering greater competition, and consequently, reduced rates.

The question is frequently asked: "What has the government done to get the embargo removed?" We are aware that everything has been done which could be done. The minister of Agriculture has had frequent correspondence on the subject. Sir John Rose has repeatedly urged the advisa-

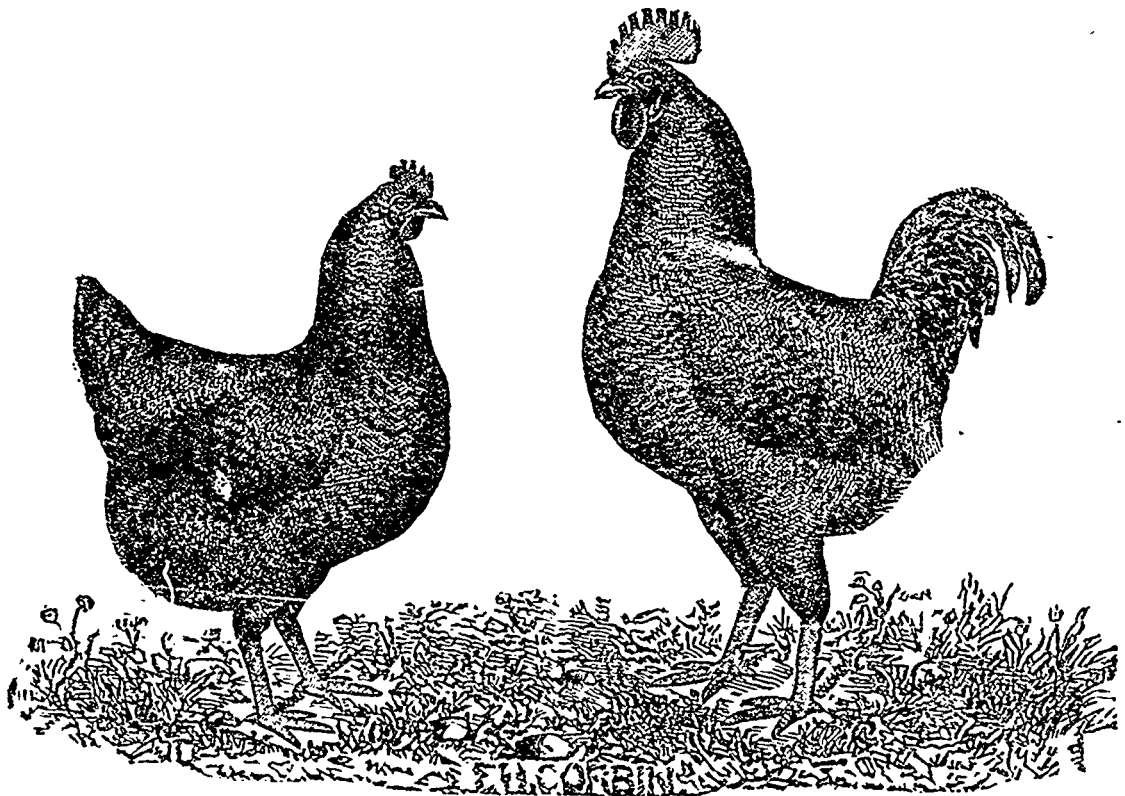
bility of allowing healthy Western cattle to come into this country for export to Great Britain. More recently the Hon. J. O. C. Abbott and the Hon. Mr. Langevin, have been in communication with the Imperial authorities on the subject. The result is not yet known. In the mean time navigation has opened, and the shipment of our Canadian cattle goes on briskly; for the week ending the 9th of May, the shipments have been over a thousand head. During this second week a still larger number are being shipped.

So far, we cannot compliment either the railway or steamboat authorities on the facilities they afford for carrying on the trade. We have seen hundreds of cattle yarded in very mud puddles for hours without water. We have seen, five hundred animals stand in crowded cars on the hot wharf, from early morning till late at night without a drop of water or a morsel of food, and then hurriedly driven on board close, ill-ventilated steamers.

It is eminently the duty of the owners, and particularly of the Insurance Companies, to insist that the carrying Companies provide better facilities. We have not the slightest doubt that the government will lend them all the assistance in its power, and will, by order in council, empower their Inspectors to interfere, on behalf of those interested, to prevent loss of life and cruelty to the animals.

Since the above has been in type, we have received an order in council, regulating these matters, which will be found at page 31.

We are sure the agricultural communities will appreciate the great interest manifested by the Minister of Agriculture in promoting their prosperity by thus fostering one of their most important sources of revenue; a trade which must continue to increase. We hope that the hands of the inspectors will be strengthened by the cooperation of all interested in the trade.



Improved Plymouth Rock.

There has probably never been a breed of fowls that has given rise to more discussion, and that, too, in regard to the minutest details, than the Plymouth Rock; a cut of which we give to our readers, photographed from birds, bred and raised by Mr. F. U. Corbin of Newington, Conn. U. S.

The honor of originating the breed has been warmly contested in the Poultry Journals of the United States, and the controversy had hardly subsided, when the question, "What the Plymouth Rock really is?" began to be agitated. The question now was, not, "What is the cross?" but, "What is the breed?" These two questions, being similar to each other, are frequently confounded.

In the interest of our readers we quote from Mr. Corbin's book.

He says "They" (i. e. the questions) "are, however, entirely distinct, the first viz: "What was the cross?" dealing with the elements procuring a certain result; and the

second, viz. "What is the breed?" dealing with the result already produced.

Writers of greater or less note, some of national reputation, took up this latter question; a portion of whom, by substituting cause for effect, endeavored to prove that it was only a modified form of some other breed, forgetting, in their haste, that, however much it might resemble others in certain points or peculiarities, still, it was a distinct breed, with a form, shape, comb, color and marking peculiar to itself, and recognized as such by the Standard: and that the only way to change or modify any of its peculiarities was, by improvement, to which all breeds are susceptible."

Considerable dissatisfaction having been expressed in regard to the shape, Mr. Corbin was induced to try to modify it. After repeated failures, he succeeded in impressing permanently on his own strain, what he considers the true Plymouth Rock shape, or rather, one peculiar to itself.

This partakes much more of the Dorking than of the Cochin, being deeper and longer than the latter. An examination of the fowls themselves shows at once their manifest superiority.

The American Agriculturist of Dec. 1877, says: "First among the good qualities of a fowl is size. This the Plymouth Rocks have in an unusual degree.

There are many excellent breeds of Poultry which are all that can be desired, except as to size, and the lack of this is fatal to their popularity; for, after all, profit is the chief object with most people in choosing a kind of fowl to keep. Hardiness of constitution, vigor, pleasing form and prolific production of eggs are all very desirable qualities in fowls, and these all belong to this breed."

We can vouch for the fact that this is a peculiarity which belongs in an especial degree to this strain, as we have bred from them for the last three years. That they are the best fowl for the farmer, is not saying too much in their favor, standing the cold of our climate better, maturing earlier, and producing more flesh in less time than any other fowl now bred for market and table purposes.

POULTRY AND BIRDS

BY J. J. MECHI.

It appears to me that I must say a word on behalf of farmer's wives who have to keep poultry as a source of profit, and who sometimes get considerably snubbed by their husbands, who grudge the destruction of a few rods of corn or clover, and who evidently don't reason on the matter, and do not or will not understand either the habits or the profits of poultry.

A farmer will readily turn a flock of sheep to trample on and drag down a fine field of clover or grass, but he would be much annoyed to see half an acre eaten by his poultry. He will give his pigs barley and beans by the sack, but objects to the poultry helping themselves to their kernels. By-and-by, I will tell him which pay best for their food, for I am sure he has never entered into the question. Let us now consider the habits of poultry. Take my own as an instance; for some three hundred of them have access to all my field (no fences to obstruct them) from early morning, to dewy eve.

As soon as the fowl house is opened they receive their morning meal of barley, they then betake themselves to the fields—for what? Observe them. That wonderful eye of theirs examines everywhere, and, quick as thought, they appropriate every fly, slug, worm, or insect on every blade of grass or clover. This is their occupation during the whole day, except when at rest or when grazing—for poultry graze equally as do sheep or cattle,—and it is essential that a piece of pasture should be near the fowl house, otherwise they will and must, appropriate your young cabbage, turnip, or mangold plants; they must also have free access to water.

What a mistake we make when we cage up poultry and deprive them of their natural food—green food and insects, with some grain. They are first-class judges of weather, they know by instinct (where does instinct end and reason begin?) when and where their food—insects, worms, etc., is to be most readily found, they watch for every load of green tares or green beans brought home to be passed through the chaff—outter, and they at once set to work upon the myriads of insects that infest almost every crop.

They are the most industrious and economical of creatures—their ready claw and keen eye are ever at work—not a seed of weeds or grass is wasted. In fact, fowls and birds are true farmer's friends, and the farmer can have no idea

how many enemies he has (invisible ones to him) in the shape of insects, until he devotes his attention to the operations of his poultry; although he can neither see his enemies nor know of their whereabouts, the fowls and birds at once detect them, as you may see by their eager darts and rapid movements, hither and thither.

Watch a company of ducks toddling along in regular line, for fair play, and they will show you slugs and insects where you never suspected them. In fact, within a week of leaving the shell the juveniles are on the alert for their natural food, the insect tribe.

I could write a small volume on the value of birds, for it is only by watching their habits and good work that the farmer can realize how many enemies he has, and how many friends there are ready to seek for and destroy these enemies.

It is a well admitted fact by all my laborers that my best and thickest crops are in immediate proximity to the fowl-house, commencing at only ten yards distance. Yes, but see how they are scratching up the seed corn, and what a mess they make! Well, I have seen them at work between the rows of young wheat (and I only put in a bushel per acre at nine inches apart), and I find, in nine cases out of ten, that they are in search of insects, and that they do find them.

Gardeners who are sensitively particular about the appearance of their gardens, and hate fowls, see, however, what takes place. An intelligent chemist took to a garden where insects had long and undisturbed sway, and devoured every thing; he was fond of poultry, and understood their habits, therefore he gave them free access to his garden; they cleared off the enemy, and he had plenty of everything. No doubt but there are times when you should protect your fruit, or your shallow sown seeds; in my case I sometimes employ a boy for a fortnight, immediately after drilling, close to the poultry house, but even when I have not done so, I have scarcely been inconvenienced if the grain was properly deposited by the drill. The hencoops and broods of chickens are always placed on a patch of grass edging the wheat or barley fields: and if, when the crops are ripe, they help themselves to a few ears, I know they are good customers, for they must be fed like sheep, or pigs, or cattle; and they always sell for double the price per pound, although they cost less to produce.

Partridges are great friends to farmers although they don't always believe it. There is no surer sign of imperfect tillage than when you hear of birds and game getting out the seed. What I call imperfect tillage is plowing the land and then merely scratching the surface with light wooden harrows, so that the seeds are close to the surface, and under them are unbroken furrow-slices, long, hard lumps of undivided and unbroken earth; in the case of strong soils almost as tough and impenetrable as weather-boarding. In my case I always use heavy iron harrows and deep-stepped teeth that cut the furrow slices into mould; or sometimes cultivate with the cultivator harrow before drilling, and generally the surface has been well scarified before plowing, so that the seed is not only properly deposited, but where it grows the young fibres find mould below to work in.

For want of this proper tillage I have seen great losses; the fine fibres cannot work into the great lumps of plow slices which, in stiff clays are nearly as hard and as whole as weather board. I do not believe that one farmer in ten can tell me what price per pound, live weight, he gets for his poultry, and for his beef and mutton, but I will tell him: 5 s., per stone of 8 lbs, is 4½ d. per pound live weight for beef, and nearly about the same for mutton. Now, as good poultry always sell for at least 9d. per lb. live weight (I mean wholesale) and as they cost no more per pound to produce than beef or mutton, it follows that we gain one hundred per cent, by

poultry, as compared with meat. I have tested this carefully. In fact I know that the difference is greater than this, because I have frequently sold poultry at 14d. and 16d. per lb. live weight, or more than three times the price of meat. When we sell a chicken, the purchaser pays for the head, skin, feet, entrails and all but feathers (which sell for more than the carcass per pound), but, when they buy meat, the feet, skin, blood, entrails, etc., are all removed, and called offal; consequently, it needs no conjurer to convince heads of families that poultry is dearer food, by one hundred per cent. than meat.

But should poultry be so dear? I answer decidedly not, if we, as farmers, did our duty to ourselves, our land and our country.

The demand is evidently in excess of the supply for both poultry and eggs, for we import immense quantities, and, in addition, 500,000,000 eggs annually. Of course your poultry breeder must understand the business, as must the breeder of other farm creatures. The edge of the fields is the proper place for juveniles, and not cooped up in yards and sheds. Mine are not fancy poultry. I breed from pure stock on each side; say Game, Cochinchina and Brahma, all running and mixing together. I like Dorkings, but they will not thrive on our stiff clays. Every two or three years I change the male birds, paying 21 s. each for young, well bred ones. We send them to the wholesale salesmen in London, ready plucked. The hen-houses should have asphalted floors, be kept clean, well ventilated, and occasionally lime washed; the slated roof lime-washed in hot weather. A farmer never grudges barley by the load for his pigs, and cake and corn for his other stock: why should he regret feeding his poultry? We should consider that poultry manure the land the same as any farm animal. It is well known that many a farmer's wife clothes herself, and her numerous family, by the proceeds of her poultry. In some cases that I know of, one of the farm hands receives a pint of beer, when the governor is at market, to carry in a sack of barley, on the sly, for the use of the poultry, so as not to shock the farmer's excessive and unreasonable prejudice about the unprofitableness of poultry. The hen-house floors being asphalted and swept daily, and, having no open farm-yard knee deep in straw, we know nothing about fleas.

ESSEX GAZETTE.

In Breeding.

We give an article on in and in breeding from an old breeder which may prove interesting to our readers. He says: "I have been endeavoring to make some advances in this very important subject for the last few years with varied success.

My specialty and favorites being the whitefaced Black Spanish, which I have kept for the last fifteen years, and still feel disposed to hold on to my old friends, notwithstanding they have been cast aside by so many for new aspirants to favor with the poultry breeding fraternity.

In the first few years of my experience, I adopted the universally accepted theory of crossing the flock, by the introduction of a male bird from some noted breeder, only to find I had made a mistake, my birds turning out inferior to the previous year's breeding—with white tipped primaries, red feathers on the back, loss of velvety white in the face &c., although none of these blemishes appeared in the parents, evidently showing that, in bringing the two strains of blood together, a very radical change had been made, but made the wrong way. Now all this is very annoying and vexatious when, after a certain amount of expense and a great deal of labor, you looked for improvement and found deterioration, and had to begin again, to endeavor to regain the ground you had lost.

Thus, my faith in the theory of out-crossing was greatly shaken, as far as my own experience took me, so I thought I would try in-breeding, as my attention had been drawn to an article in an English publication, giving the name of a party who had bred the Malay fowl for thirty years without a single introduction of new blood, and was the acknowledged champion of that variety.

He evidently believed in in-breeding, or, in other words, keeping pure blood when he had it. I must confess, that I am beginning to lean that way and if I succeed for the four years to come, as I have in the four years that are past, I shall tumble over altogether. Four years ago, I procured a Black Spanish cock from England and bred him and his sons alternately with my flock since; and I have to-day as fine a lot as I ever possessed. I intend to continue this course as long as I produce first class specimens.

Of course, the selection must be wise and judicious, and a good deal of judgment must be exercised in the matter.

There is a growing conviction in my mind that the thing can be done to a much greater extent than it is.

It would necessitate the forming of three pens at least and breeding alternately from each pen. This method is only open to those who have plenty of room, or keep but few varieties. I should be glad to see this subject ventilated, by those who may have had some experience in it, for the benefit of those interested.

PURE BLOOD.

Montreal, May 5, 1879.

Large egg trade.

To give some idea of the business done by egg dealers in the United States, we quote from the Scientific American.

The egg trade in this country is estimated by competent authorities to equal \$80,000,000 a year. The barreled eggs received yearly at New York reach over 500,000 barrels, valued at \$9,000,000, and this is but one branch of the trade. It is said that Philadelphia consumes 80,000 doz. eggs a day. The receipts in Boston for the year 1878 were over 6,500,000 dozen. Between 5,000,000 and 6,000,000 dozen are annually exported from the country. The millions of dozens consumed throughout the country without passing into dealers hands, it is impossible to estimate.

GOLDEN RULES FOR FRUIT GROWING.

Fruit growing has become one of the great interests of the Country. In spite of the great activity of Pomologists, Nurserymen, Provincial and County Fairs, and Planters themselves, the demand seems to increase in a far greater ratio than the supply.

It is true that apples have partially failed some seasons, but, in seasons of full fruitage, they pay for transportation for hundreds of miles, and give good profits to growers. The demand is for fine fruit, and there is no probability that the market will be overstocked for generations to come. The consumption of fruit is increasing in a far greater ratio than the population, and the recent method of canning has immensely increased the demand for summer fruits, as well as the public demand for large supplies. This is a change most favorable to the health of our people, and no one need have any fears that fruit-growing will, in his day, or in that of his children, fail to return large profits.

We say to every one who owns a patch of ground, or a farm, if you have a corner in which a tree can stand, or a spot, however small, in which fruit can grow—lose no time in turning it to account. We say to the larger land owner, who has not all kinds of fruit growing: lose no time in sup-

plying your family with this greatest, as well as most healthful, of luxuries. If you would plant largely and have tons of this Divine blessing for market, fear not that your labor will not return to you in abundance of money. Seek the best of all kinds, and three or four of the best varieties of apples, pears and grapes, are enough—better than to occupy ground with that which is inferior. Plant thoroughly, give good culture, and smile in high satisfaction when you see the trees and vines growing luxuriantly. Get apples, cherries, pears, grapes, and all your fruit plants in the Fall, and bury them as described below so as to have them ready to plant in early spring. Grapes, in cold climates, if procured in the Fall, should be carefully protected, and planted in the Spring, and for one or two winters should be carefully laid down, and covered with hemlock boughs, or coarse straw.

HINTS ON TRANSPLANTING.

In all but severe climates such as the Province of Quebec there is a difference of opinion as to Autumn or Spring, as the most favorable time for setting trees. We remark to those designing to set out orchards; if you are prepared to do so in the Fall, do not defer till Spring to prepare the holes, secure your plants &c., and if ready in the Spring, do not put it off till Fall, as both the Fall and the Spring season are suitable for such preparation, and we think trees will flourish equally well, with proper care and attention.

The success of a planter of trees depends so much upon his management of them, after having received them from the Nurseryman, that we deem it necessary to call attention to a few important considerations:

FIRST.—A fertile, well drained soil.

SECOND.—Thorough cultivation.

In setting out trees, select a soil well drained, which can be plowed early, planted early, and worked soon after heavy rains.

Thorough cultivation consists in pulverizing the land, which will secure to the tree abundant nourishment, in the shape of moisture. This must be done while the trees are young, by annually plowing, and manuring when necessary, a succession of root crops, such as potatoes, beets and carrots.

Sowed crops are all injurious, because they extract moisture in droughts when the trees most need it. When necessary to plant trees in land sown with grain, if a large space around each tree is cleared, and the ground frequently stirred with a hoe, or mulched with fresh cut grass, or any kind of coarse litter, this objection will be void.

Young trees, when carefully transplanted, seldom die. If afterwards they receive proper attention, their growth is but slightly checked. After the land is plowed and re-plowed, dig holes from one to two feet wider than the roots of the tree spread out in their natural position, leaving a little mound in the centre of the hole, trim off the ends of the large roots smoothly, with a sharp knife, from the under side, shorten the top branches about one-half their original length, in order to restore the balance between the tops and the roots, which must suffer a little by removal.

Do not plant trees any deeper than when they stood in the nursery, except Dwarf Pear trees, which should be set so deep that the pear stock shall be three inches below the surface. The earth for filling in around the roots should be surface or top soil, without manure, and made fine; place the tree in the hole upon the little mound, and begin to sift in the fine mould, taking care to fill all the interstices, and using the fingers to spread out all the fibres, during the operation. The mellow earth should rise two or three inches above the surrounding surface, to allow for its subsequent settling. The next operation is mulching, which is the application around trees of straw, old hay, sea weed, salt hay, old

tan, saw dust, or coarse litter, which is excellent, as it keeps the land moist and light, and, when decayed, makes manure.

All trees set out in the Spring should have a mound of earth raised about the trunk from twelve to fifteen inches high in the Fall. This is much better than staking, and is the best preventive to keep off mice, and protect the roots from severe frosts. This should be removed in the Spring when mulched.

Great benefit will be derived by raising a mound around the trunk of the tree, as before stated, each Fall and Winter, for a few years after transplanting; as young trees are injured when the frost is leaving the ground in the Spring, by disturbing the fibres of the previous season's growth.

The soil around the roots of the trees is usually mellow, or should be, in which (unless guarded) water will lodge, to the great detriment of the tree, which may be avoided by attending to the rule aforesaid.

FALL TRANSPLANTING should not be practiced in severe climates such as ours; but inasmuch as it is easier and safer to procure trees in the Autumn, they should be bought in October, and buried in the earth during Winter, as follows: Choose a dry spot, and digging a shallow trench, say six inches, or one foot deep, throw the trees into it, and cover them entirely, root and branch, with earth; cover the roots more deeply than the tops. Here they may remain until the frost leaves the ground in the Spring.

If these simple directions are followed, you will lose few or no trees, and save much blame which is sometimes bestowed upon the Nurseryman.

STRAWBERRY PLANTS should be set in the Spring, but if received in the Fall, should be taken from the bundles and laid in the ground, packing the earth close about the roots, but not covering the leaves. At the commencement of freezing weather, say about the 20th of October, cover them with a few inches of leaves, (leaves are the best covering for all tender plants); thus protected, let them remain until early Spring, when they should be set out in the beds.

EVERGREENS do best planted in May, but if set in Autumn, should be protected by placing a barrel, with the heads out, over them. The roots should never be allowed to get dry.

PLANTING GRAPES.

Many persons suppose grape vines require more skill and care in planting than fruit trees; this is not true; the same principles and practice being applicable in both cases.

The soil must be mellow and friable (not wet) at the time of planting, and kept in this condition all the summer, by frequent stirring. Dig the holes about six inches deep, spread the roots out evenly in every direction, covering with not more than six inches of earth. Use no water either at time of planting or afterwards. Procure if possible, strong one, or two year old vines, covering with earth the whole of the vine, except two or three eyes, at the time of planting. Allow only one shoot to grow the first season. Grape vines should never be cut in the Spring, they would bleed to death, or nearly so. Cut in the Fall.

Great care and discretion is necessary in the location of a Vineyard, but, for the amateur, all that is usually required is to select a dry border—not highly manured—with a full exposure to the sun and air.

If you have a large number of vines to grow, procure a copy of PHINN'S OPEN AIR GRAPE CULTURE, published by D. M. DEWEY, Rochester, N. Y., and follow carefully the directions for after pruning and management.

HINTS ON PRUNING.

The pruning of young trees should be attended to; removing all the sprouts below the head, and thinning out the top

by severing such branches as cross or rub against others, and such, as in your opinion, may afterwards require removal; as branches cut out while small will readily heal over, whereas, if left to grow until they become large, cutting them, then will very much injure the tree — By judicious pruning we have more thrifty trees, larger foliage, and larger and finer fruit, and the sun and air are admitted into the top to improve and perfect the crop.

A great deal has been said and written about the proper time for pruning, a great part of which is mere theory. Many prune in the Winter and Spring, from custom, and others in June, because the wound heals quickly, not reflecting that it is of more importance that the wound heal soundly, than quickly. We give directions according to our experience for twenty years. The removal of small limbs may be performed when most convenient at any season.—February, March or April we believe to be the best season for pruning, the wood will become hard, sound and well seasoned, soon healing over, and remaining in a healthy state.—*Exchange*.

THE MELON. (1)

The aroma and flavour of this fruit have caused it to be propagated and to be in great demand in all parts of the globe. In warm countries, its quality is always superior. It is therefore necessary to give it the warmest exposure, and to protect it against cold winds, which are as injurious to its quality as to its vegetative power.

CULTIVATION.

The melon may be cultivated in two different ways, under glass, in a hot bed; and in a cold frame, in the open air. In a hot bed, the seed may be sown from the 15th of March, to the 15th of April, either directly in the bed or, what is better, in pots of from 2½ to 3 inches, putting 7 or 8 seeds in each pot. These pots should be entirely buried in the bed and placed in the centre, the temperature there being always more even. When the seeds are sown in the bed, they should be put about three inches apart; the earth should be rich, but light: a mixture of leaf mould and well rotted turfy loam is still better. The lights should be kept closed and well covered over until the seed is up. The plants must be allowed gradually to see day light, and, should the heat be very great, the lights must be raised one or two inches from the top. Should two plants grow together, one must be pulled up, leaving the stronger. The bed should be surrounded with hot manure, so as to preserve the heat in the bed at all times. When the seeds are well up, fresh hot beds must be made, into which the plants should be finally transferred. The first beds would by that time have become too cold for active vegetation. Care should be taken to remove a lump of mould with the plant, so as to save the delicate roots from being crushed. When sown in pots, the transplantation is much easier and more effective. In both cases the earth round the plants should be thoroughly saturated with water, so that the mould will adhere to the roots. For two days after transplanting, the beds should be kept closed and partly covered over, so as to insure the taking root of the plant, and to prevent it from wilting. After this the bed must be uncovered every morning, and the lights raised whenever the sun is very hot, until the weather gets so warm that the lights may be removed entirely. As long as the cold weather lasts, the beds must be covered up at night, and in

(1) Our regular French contributor, Mr. Cochois, sends us this paper, which, by request, he prepared for the next report of the Montreal Horticultural Society. We have translated it and publish it as an advanced sheet of this report, which promises to be very valuable.

bad weather, either with straw mats, or with old carpets. Straw mats are the most convenient, and they can be made with ease. Only 3 or 4 plants should be left at last in each pot.

MELONS GROWN WITHOUT HOT BEDS.

For these, beds should be dug two feet broad, and from 6 to 8 inches deep, which should be filled with any kind of manure, leaves &c., the manure rising from two to three inches above the level of the earth, and covered over with about four inches of rich vegetable mould. On these beds, plants can be set out, but not before the 15th of June, or seed can be sown, whenever the ground is thoroughly warmed, which, in the district of Quebec, hardly occurs before the end of May, and sometimes as late as the 15th of June. The seed must be covered over about one inch, putting 10 or 12 seeds to each hill, and leaving a space of about four feet between the hills. When the plants are well up and the first nipping or pruning becomes necessary, all useless plants should be removed altogether, after selecting the best 3 or 4 for growth.

NIPPING AND PRUNING MELONS.

As soon as the melon has developed its third leaf, the plant should be nipped right over the second leaf, in order to bring out the two lateral branches, often the second leaves, or *cotyledons*, appear at the same time; they should be removed with the point of a pen-knife. The lateral branches should be nipped at the fourth leaf, when the fruit begins to form. After this stage no further pruning should be attempted, as this would cause the fruit to drop.

As soon as the fruit is well knotted and about the size of an apple, two or three melons only should be left on each plant, according to its strength of vegetation. At this stage, pruning becomes necessary; this consists in the removal of the rejected fruit and of such branches as are useless, and would live at the expense of the fruit. From this time, care must be taken that no new fruit be allowed to grow, as it would not mature, and would take from the strength of those already formed. It takes from six to seven weeks, in Canada, for melons to arrive at full maturity. This fruit should be allowed to drop from the vines before being eaten, and not broken off. The reason why so many melons, purchased on our markets, are of inferior quality is that they are broken off, from eight to twelve days before they are ripe.

WATERING.

On the hot bed, and as long as the plants are young, watering should be done in the morning only, between eight and ten o'clock. A small quantity only of water should be used, and it should not be cold, but of the temperature of the hot bed, as near as can be. When the weather is damp, or rainy, watering should be omitted. When the hot weather has set in, watering should not take place before four in the afternoon; from six to eight o'clock is still better. The water should be drawn before hand and exposed to the sun, so that it may be warmed; the water should be applied round the stem and not over it, as it might cause the plant to rot. A small quantity of liquid manure, mixed with the water, has an excellent effect.

For melons grown without glass, it is better, in most cases, not to water at all. However, when the plant is young, especially if it has been transplanted, a little watering is necessary, should the weather be very dry. After the plant has been pruned the second time, watering is entirely useless.

E. COCHOIS.

Spencer Wood.

We should, we must say, prefer gathering the melons, say 3 days before they are dead ripe, and placing them in a sunny window. Ed.

GOVERNMENT HOUSE, OTTAWA.

Wednesday, 21st day of May, 1879.

Present: HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL.

On the recommendation of the Honourable the Minister of Agriculture, and under the provisions of the Act passed in the Session of the Parliament of Canada, held in the 42nd year of Her Majesty's Reign, chaptered 23, and intitled: "An Act to provide against infectious or contagious diseases affecting animals,"—

His Excellency, by and with the advice of the Queen's Privy Council for Canada, has been pleased to make the following Regulations to provide against the possibility of diseased animals being carried from place to place through Canadian territory, or conveyed and shipped from Canadian ports:

1. An inspection of animals will be made at any place or port in Canada to which such animals are carried in the manner prescribed by the instructions which may be given from time to time by the Minister of Agriculture.

2. Such animals as may be found to have been exposed to contagious or infectious disease, or to be laboring under contagious or infectious disease, shall be either detained or slaughtered in pursuance of the provisions of the said Act under direction of the Minister of Agriculture.

3. The officers appointed to carry out the law and the present regulations shall have free access to any boat, ship, vessel, car, van, or other vehicle, or to any place where animals may be found, in order to inspect the same, and, under instructions from the Minister of Agriculture, deal with animals having been exposed to disease or with diseased animals, and the articles employed in their service in the manner contemplated by the said Act, under the penalties prescribed thereby against any person contravening any of the provisions thereof or of any regulations made thereunder.

4. The said Inspectors or officers may, if it be deemed necessary, order the cleansing and purifying of any place, vessel, vehicle or other article having been made use of to receive or transport animals, and direct such precautionary measures to be taken as may be considered advisable.

5. Proprietors of or dealers in stock having moved animals towards a port of embarkation in Canada for export must give notice to the inspector appointed for such port by telegraph or by letter, at least twelve hours in advance of the time of arrival of the said animals for shipment, and during the progress of inspection, will, with the hands at their disposal, give assistance to the Inspector at such port, and move the animals according to the direction given to them by the said Inspector. In case the owner refuses or neglects to furnish the necessary assistance, the inspector may employ men at the cost of the shipper which shall be paid to the Inspector before a clean bill of health is given.

6. In order to prevent the danger of contagion or infection resulting from the overcrowding or overlading of animals on board ships in any port in Canada, the Inspector shall not permit cattle or animals to be laden on board any ship in such port, until he shall be satisfied that suitable space and provision has been made for the number of cattle or animals to be shipped on board such vessel, and that a greater number of animals shall not be shipped than such ship can safely and properly carry, and such Inspector shall not grant a clean bill of health to such ship, until all such provisions as aforesaid shall be made to his satisfaction.

7. The Collector of Customs of any port where such inspection as aforesaid is adopted, shall not give a clearance to any ship having animals on board for exportation without being shown a clean bill signed by the Inspector to the effect that the measures provided by the said Act and the present regulations have been obeyed and carried out.

8. Any person refusing to submit to the present regulations, or avoiding their being carried into effect, or impeding any Inspector or officer in the discharge of the duties assigned to them, shall be guilty of an offence against the Act "to provide against infectious or contagious diseases affecting animals," and shall be punished according to the provisions of the said Act.

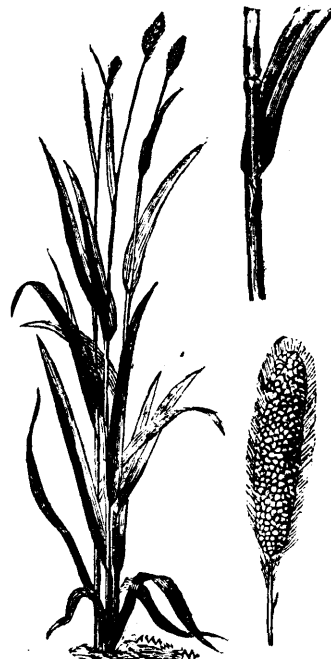
W. A. HIMSWORTH, Clerk Privy Council.

The Gathering of Butter in Granules.

Several correspondents, who inquire about gathering butter in the granules, says the *New York Tribune*, are informed that the process differs from the common method of gathering in a mass chiefly in dropping the temperature of the cream five or six degrees at the finishing of the churning, instead of keeping it at the same temperature until it is done. The

mode of procedure is this: The churning goes on as usual till the butter is about ready to gather, when cold water enough is put into the churn to reduce its contents to 54 or to 55 deg., and the churning is then slowly finished. The water is generally put in at two or three different times, at intervals of a few minutes. By reducing the temperature so low at the close of the churning, the butter, instead of adhering in a mass as is common, requiring the buttermilk to be worked out, gathers, in granules or pellets of solid butter. At 54 deg. the granules will be about as large as grains of wheat, and at 56 deg. about the size of peas; the lower the temperature the smaller the granules, and the higher it is the larger they will be till they adhere in a mass. The utility of gathering butter in the granular form consists in enabling the operator to wash the buttermilk out of the butter without any working. This is done by draining the buttermilk out of the churn, and then turning in cold water and stirring the butter, carefully, and then drawing off the water, repeating the operation till the water will run off clear.

It is better to have the last washing done with strong brine, and to let the butter lie in the brine from half an hour to an hour, or longer if it can be kept at 54 deg. to 55 deg. When butter is gathered in this way there is no buttermilk inside the pellets of butter, and hence it is easy to rinse the buttermilk off without injuring the grain in the least. If it be not convenient to draw the buttermilk from the churn, the butter may be dipped ut with a skimmer, or a ladle, into a tub of water at the right temperature, and the rinsing repeated till it is clean. If it be desired to keep butter for a period either long or short without having it deteriorate, when the washing and soaking in brine has been done as described, the butter in its granular form may be put into clean and sweet vessels containing brine as strong as it can be made from pure salt, and when it is full of brine and butter, headed or sealed air-tight, and the butter will keep, with all the rosy freshness it had when it came from the churn, for as long a time as canned fruit, requiring only similar conditions. If wanted for packing or immediate use, it may be taken, as soon as it has been rinsed, and treated with brine, and salted in the usual way; or, what is better, laying it on an inclined table to drain, stirring the salt in among the granules, and then pressing it together.—*Massachusetts Ploughman*.

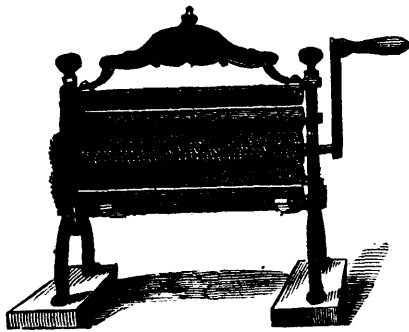


Hungarian Grass. (See page 26.)

BEE CULTURE.

ARTIFICIAL COLONIES.

Attempts have been made in all ages to prevent the bees from swarming altogether, or to regulate the time of swarming. But, complete success in this particular has been



Comb Foundation Machine.

obtained with movable frames alone.

As a rule, artificial colonies should be formed only from strong, healthy colonies, after the honey has been secured; conditions which generally happen about the middle of June, when white clover is in flower, although in certain circumstances, artificial col-

onies can be obtained sooner.

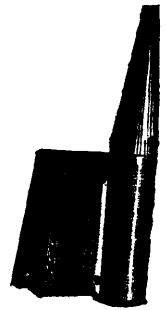
To form an artificial colony, take a movable frame of brood comb, which place in the centre of an empty hive, filling up both sides with empty frames; now take this new hive and place it on the bottom board of the old hive; this you must carry to some distance from its old stand. The old hive is now without a queen and should, therefore, have queen cells or what is still better, a fecundated queen given to it. In a few days, the two colonies will show an immense activity.

Such is in as many words, the simple but useful method of forming artificial colonies. The operation thus described should take place in the middle of a fine day. The two hives having changed places, the following happens; the working bees of the old hive, which are out collecting stores in the field, will return to the new hive, and finding the same bottom board and the same queen, continue their work as if

nothing had occurred; the old hive, through this exchange, has lost half its population, but as it possesses a great number of young bees, and a large supply of brood, in a few days its activity will equal that of the new hive.

In the empty frames old combs can be used, or artificial combs, called *foundation*. This is made by pressing through two cylinders (made for the purpose) a thin sheet of wax, which is thus moulded of the exact form of the box of workers, or drone, combs. This artificial foundation is quickly extended and worked out by the bees, to the advantage of the bee-keeper, who thus secures a larger quantity of honey.

We have given, above, one of the methods used for the introduction of a queen in to a queenless colony. There are several others, none of which are infallible. Here are, however the two methods which have succeeded best with me. After the successful formation of an artificial colony, take a selected queen, an Italian if possible, sprinkle her with honey from the queenless hive, and let her drop amidst the frames. Some advise keeping the queen in a cage, in the hive, for two days, before sprinkling her with honey and allowing her to go loose.



Smoker.

Cook's Manual of the Apiary.

We have perused with great pleasure this *Vade Mecum* of the bee-keeper. It is replete with the best information on everything belonging to apiculture. Professor Cook, of the Michigan State Agricultural College, is, evidently, thoroughly conversant with the practice as well as with the theory of the art he has taught for many years in the above named institution. To all taking an interest in the subject, we say: obtain this valuable work, read it carefully, and practice as advised.

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