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THE
CANADIAN AGRICULTURIST,

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OF THE

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VOL. VIII.

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Agriculture, &c.

DEEP PLOUGHING.

Ultraism in agriculture is one of the greatest obstacles to judicious practice. A good illustration of this fact is presented in the ideas which have been promulgated in regard to ploughing. "Plough deep, you cannot plough too deep"—is the unqualified advice of some teachers. No discrimination is made in reference to the character of the soil, the kind of crop to be cultivated, the quantity of manure to be applied, or any other circumstance. Others soften the tone of the doctrine so much as to admit that deep ploughing is not everywhere best, though they still recommend it generally, because it is supposed to be applicable to a "majority" of cases! But why should not every kind of soil be ploughed just as it ought to be! What would be the thought of a physician who should adhere, undeviatingly, to a special course of treatment because it is adapted to more than half of his patients, when at the same time he knows it is more or less unsuitable to the remainder? The more intelligent practitioner would be surprised at such a disregard of the maxim, that there are no specifics in medicine—the proper management for each case depending on the peculiar temperament, organization or condition of the individual. There should be a similar modification and application of the principles of agriculture, as success must ever depend on the judgment exercised in devising the course of practice for every case which occurs.

Every farmer may have noticed the great difference there is in the texture and composition of soils. Some are physically too heavy and others too light: some are naturally rich,—the earth to a great depth containing abundance of the elements of plants; others are naturally barren,—whatever fertility they possess being the result of artificial manuring and limited to a few inches of the surface. These different conditions suggest different courses of cultivation. Heavy soil should be made lighter and light soil heavier. Deep tillage and pulverization are required for the first object, and a more shallow tillage and consolidation for the second. The one is as necessary as the other, according to the nature of the soil. In deep soils, we supply new sources of food or plants by bringing to the surface the fresh and unexhausted substratum. On poor and thin soils, the same oper-

ation would only bury the fertile matter beneath a covering of sterile earth.

These remarks relate to ploughing by the ordinary method of reversing the furrow slice, or that part of the soil moved by the plough. The effect of the subsoil plough is different from this, inasmuch as it loosens, without otherwise changing the former relations of the soil. This is advantageous where the subsoil is too compact for the roots of plants to penetrate readily, and may be useful in various situations where deep ploughing by the ordinary mode would be unadvisable.

Our ideas on this subject have been heretofore given more in detail; the object at the present time is to support them by reference to good authorities. At a late meeting of the Cirencester Farmers' Club, the subject of deep ploughing was discussed, and from a report of the discussion published in the *Agricultural Gazette*, we take the following extracts:

Rev. J. S. Haygarth, Principal of the Cirencester Agricultural College, said—

"A great deal [in reference to the depth of ploughing,] must depend on the composition of the soil, for it is clear that no amount of ploughing, stirring, or grubbing, can develop any fertilizing properties if the elements of fertility are not present in the soil. In clay soils, deep culture is so pre-eminently successful, because such soils contain inexhaustible supplies of all the inorganic matters required as food for plants, which are rendered soluble by coming into more frequent and more perfect contact with the air, and because such stiff and heavy soils more than any other, require to be rendered more porous. But in purely silicious land, deep ploughing cannot possibly be attended with any benefit, since it is too porous already, and does not contain any constituents which, in contact with air, are rendered soluble. On the whole, deep culture will be found the more successful in its results the more the land resembles, in composition and mechanical condition, heavy clay, and its advantages will be less perceptible the more it approaches purely sandy soils."

Mr. Haygarth, however, admitted the advantages, in some instances, of subsoil ploughing, especially where acids are formed within the reach of that implement. At the same meeting, Mr. Lawrence said—

"I am no advocate for radical reform, and turning matters upside down, and bringing the subsoil to the

surface; but merely that it should be loosened by the common subsoil plough, and rendered accessible to atmospheric influences, and thus gradually prepared for vegetable nutrition. When so prepared the ordinary plough may be set from time to time a little deeper, and the subsoil, be thus gradually incorporated, with the surface soil. Subsoils of sand, and of some gravels, are exceptional cases, but in nearly all clays and in all subsoils of an aluminous or tenuous nature and into which we know the roots of our crop will extend themselves in search, of food, common sense would seem to point out the advantage of adopting those means by which that food can be most readily supplied."

The editor of the *Mark Lane Express*, speaking in reference to ploughing and pulverization, observes:

"On very light land it is not so much mechanical tillage as abundant manuring that is the principal agent in producing crops; so that our observations will mainly bear upon the culture of loams and clays. Where the plough can turn up only a thin staple of loose, weak sand or peat, or flinty loam, the pulverization of the soil becomes almost a secondary point to the preservation and even increase of its fertility; hence the great value of the presser and roller upon such land, and the endeavour to perform as much as possible of the tillage without the plough, which always lightens and turns over, whether the ground needs it or not."—*Boston Cultivator*.

THE SELECTION AND CULTURE OF TURNIP-SEED.

BY A PRACTICAL FARMER.

To obtain, and preserve from intermingling a true stock of good Turnips is of great importance to every farmer; and but few know what course to pursue to insure good seed from a well provided variety, or care much about the subject, generally confiding themselves to a purchase from the nearest seedsman or market gardener, who, in his turn, receives his usual annual supply from his "London seed-man," from "the old stock," which, in reality, is in a great measure literally too true, it being sufficiently notorious that "old stocks" are continually mixed off, to the no small loss of the growers. I have more than once lost a crop, in my early days of business, from this cause; but since I have adopted the practice of growing my own seed, I have never lost one, or indeed had a defective crop; and this plan I have followed for many years so that my "stock," from careful selection and close attention, has become well known, and long been in high favour in many districts.

The stock of any peculiar variety, if really good and hardy, should not be crossed with other like stocks; but if defective in any one point, i.e., size, form, colour of flesh, quality, hardness, habit of growth, quantity of top, length of neck, &c., &c., it may be profitably crossed under judicious care. I have grown in competition many varieties, in separate rows, along side each other, both of the Swedish and common sorts (having, on one occasion, twenty-four Swedish varieties, besides many of the common varieties), taking care to note their peculiarities; and my judgment has at last, settled down upon two principal varieties for my own growth: the Purple-top Swede, improved by myself, and the Red round or Globe, from a known stock of fifty five years' standing. The Swedish variety is a cross from a very hardy and well formed globular stock, with the best formed and largest bulbs of Skirving's

first new stock; combining, therefore, advantages of both. The Red round is of hardy growth, buries itself deeply in the soil, and produces a heavy crop. Both varieties are of excellent quality of flesh. It may be thought unimportant to the general reader to name these matters, but it is surprising to what extent growers will go to obtain first class stocks, and at great expense. I once saw a large and beautiful bulb of a purple Swede variety, from which the grower was about to obtain a stock, and for which he assured me he would not take £100. This individual did subsequently show some fine specimens at the Smithfield Club Show, and his stock has long stood deservedly high.

There are so many good "stocks," throughout the country, that it would be envious to name any single one; but it does behoove farmers to look closely after a good stock, and to procure growing seed, come from whence it may. It is not desirable to be sowed of the first year, the second year is better; it is more liable to run wild, and not to turn seed which kept well, grow freely in the fourth or fifth year; but never sow without trial, if it is odd.

The common practice of procuring seed by the London house is, to have it grown by contract. The seed-man finds the seed, and the grower is bound by contract to deliver it, in marketable condition for a certain price per bushel, subject to the supervision of the seed-man during the period of growth.

The district of Romney Marsh, in Kent, is the most resorted to by the London house, and as much as 2000 acres of seed are said to have been grown there in one season. The usual course is to sow the stock on the hills, and take the plants to the marsh to set. This is called transplanting, and is indeed to be preferred. Many, however, prepare the soil, and merely drill in the seed, taking care to look the plants carefully over in flowering time. I do not attach such great importance to the system of transplanting the bulbs as is generally given to it. It is often adopted from convenience as giving more time to prepare the soil. The stock may be kept, quaere true by the ordinary drill course, under judicious care. The great thing is, to prevent intermixture and inoculation: hence, no two similar varieties ought to be grown near together. Swede seed may be grown near to a common variety, without much danger, as the latter sort will be mostly out of flower before the Swede comes in. It is, however, best to be far apart in cases as bees are very industrious inoculators, and in this kind of propagation work injurious.

CULTIVATION AND MANAGEMENT.—I shall detail my own course of management of this crop throughout, which I think, will suffice for every useful purpose, although, in minor points I may differ from others.

SOIL, &c.—This should consist of good strong loam, but rich soil of any kind will produce a crop. It should be prepared in the autumn by deep ploughing and pulverisation, but not reduced to too fine a tilth. A somewhat open state, so as not readily to run together from heavy rains, is best.

SELECTION OF BULBS FOR STOCKS.—To keep up a good, a regular, and true stock, I select from the field crop of turnips as many of the best bulbs of like character and form with the stock I cultivate as I require; and occasionally [as last year] I obtain a renewal of my stock from a single turnip. These are planted in a square or plot to themselves, in the midst of the general crop, taking care to have the intervals wide enough to prevent the intermingling of the pollen. From this "best selected," I grow my own crop out of which my selection is again made

year by year. By this course, not only a uniform, but an improved stock may be kept up. It would be better to grow this "best selection" elsewhere, if freedom from inoculation could be insured. I find, however, small plots are in this way most injured, and have therefore, adopted the above course, *i. e.*, to plant them in the midst of the general crop. They are but slightly affected in this way—generally true to their stock.

PLANTS FOR TRANSPLANTING—In the early part of August, I prepare a large seed bed, or plot of ground, sufficiently large upon which to grow the number of plants I require for transplanting. An acre of land well filled with young, strong plants, will transplant a large breadth possibly 15 to 20 acres. The land should be brought to a fine stilt, as for turnips. I sow from the stock of my "best selected;" and if nicely sown, or equally dried, and not too thickly, they will not require further attention till the season for transplanting. If they come up too thickly, they will require thinning, as it is necessary to have a good bulb to each plant: but a small one, of walnut size, will suffice.

TRANSPLANTING—The season for transplanting may be taken to be any open weather prior to the month of February, and even in that month I have succeeded; but the operation ought to be completed in November, or earlier if convenient, as the more the plants grow before the severe weather sets in, the firmer hold they have upon the soil, and the greater is their safety. My practice is, to plough the prepared land immediately before setting, in about ten-inch furrows. When all is in readiness, and the weather suitable, I carry on the whole operation together. The bulbs are drawn and planted the same day. In setting, each setter is attended by a lad, who, carrying a quantity of plants in his basket, carefully deposits one in each hole, or rather cleft made by the setter. The setter, with his spade advancing along every alternate furrow, makes a cleft at about 12 to 15-inch intervals, according to the size of the plants—the larger the plants the wider the interval. With his foot he closes one cleft upon the plant as he advances to make another, and in this way he proceeds expeditiously and satisfactorily. In dry open weather during the winter they should be looked over, to see that all the plants are fairly earthed up, and all vacant spaces renewed. Early in the spring they should be well hoed and cleaned, and the bulbs kept firmly pressed to the soil by the foot, if needed.

FLOWERING.—This is an important part of the management, and if neglected many evils arise: bastards and intermixtures will show themselves in succeeding crops. Like many secrets in business, this is simple enough when known. Yellow-fleshed turnips produce a light pale yellow-colored flower. White-fleshed sorts, a bright deep gay yellow colour. This is the chief distinction. All bulbs therefore, bearing a flower differing from the general stock must be pulled up and destroyed as soon as they appear. This will require almost daily attention, as the pollen would, immediately on appearing, inoculate its neighbours. The varieties of white-fleshed turnips produce the same coloured flowers. The detection of Red Rounds amongst White or Green Globes is, I believe out of the question—it must be detected in the setting; but yellow-fleshed turnips, particularly Swedes, are easily seen: but the Scotch yellow, and some of the hybrids, are with difficulty detected.

HARVESTING.—The period of ripening is from the latter end of June to the beginning of August, according to the variety. Swedes are the latest sort. The ripening may readily be known by the change

of colour. A good rule is this, when the undergrowing pods are of a deep-purple colour, the overgrowing pods will generally be dead ripe. The whole may then be cut. My practice is to cut the crop into reaps, and tie them into small sheaves. If the weather is hot and fine, I generally thrash from the field; but if unsuitable, I put the crop into stack in the same way as the mustard crop, *i. e.*, commencing with a round shock in the middle of the steddle, and lying round to the outside. In this way the stack may be built so as to allow the bottom end of the sheaves at all times to droop downwards, so as to shoot off rain.

THRASHING AND DRESSING FOR MARKET.—The thrashing may be either by flail or machine. I prefer the flail, as less is thereby split. On a large cloth, five or six flails will thrash much seed in a day; and dressing may most advantageously proceed at the same time. This I generally complete with proper seed sieves by aid of wind only, as but few dressing machines are well calculated for dressing seeds properly. Of course it will require passing through the sieves till it is well dressed. The sieves I use are of wire; the meshes, from four to eight strands to the inch. A common corn-ridge will do to separate the seed from the cob. The seed if thoroughly dry, will keep well for years; but if in the slightest degree damp, it is best to let it remain in stack till the following spring.—*Mark Lane Express.*

GREAT FRAUD IN GUANO.

[From the Country Gentleman.]

Every one acquainted with the guano trade of Great Britain is aware that adulteration is carried on to an enormous extent. The laws are stringent, and the penalties in case of detection severe, yet the profits are so large and the difficulty of proving the fraud so great, that numbers of dishonest men are willing to brave the chances of detection. The agricultural press, when in the hands of honest, independent men, untrammelled by business connections, is the great safeguard against these and other impositions; but, though the British agricultural journals are mostly of a high tone and character, their price prevents an extensive circulation; and, indeed, comparatively few farmers take any agricultural paper whatever. Under such circumstances, therefore, it is no wonder that fraudulent manure dealers reap a rich harvest.

We have long been convinced that there were parties in this country engaged in manufacturing various artificial fertilizers which are of little value—and we have done our part towards exposing their fraudulent practices. We were also aware that inferior guanos are often sold under an assurance that they are equal or superior to the best Peruvian, but we had no idea that there was any one in this country engaged in the manufacture of guano. We are sorry to say we have been deceived. Numerous as are our agricultural papers, great as are their circulation and influence, they are found insufficient to prevent unscrupulous men from attempting to palm off on the credulous farmers of our broad domain a comparatively worthless article, at a high price, under a false name, and, what is most to be regretted, it is one of the professed friends and teachers of scientific agriculture, that is engaged in this deception.

How we discovered this fraud, we are not at liberty to state. Suffice it to say, that some six weeks ago, we were informed that an article known as

Mexican guano was taken to an establishment, near Newark, N. J., and there mixed with plaster, salt, sugar-house scum, Peruvian guano and quick lime, the whole ground up together and put in bags marked "CHILIAN GUANO."

Following the directions of our informant, we proceeded to Newark, and there found a large heap, of about 250 tons of Mexican guano, and some 200 tons of the manufactured article in bags, marked "Chilian guano," as we had been informed. We also learned that a considerable quantity had already been shipped to New-York and Boston, and one gentleman said he believed a good portion of it had been sent to England.

In New-York we were offered the Chilian guano, if we would take it in quantity, at \$35 per ton.

We took samples of both the Mexican and Chilian guano, and made careful duplicate analyses of them in the laboratory of Prof. Carr, of this city, chemist to the New-York State Agricultural Society. The following are the mean percentage results of the analyses.

MEXICAN GUANO.

Sand,.....	0 5
Organic matter.....	5.0
Phosphate of lime.....	26.0
Carbonate of lime.....	68.0
	99 5

CHILIAN GUANO.

Water,.....	4.0
Sand,.....	2.4
Organic matter,.....	15 3
Phosphate of lime,.....	24 5
Sulphate of lime, (plaster).....	9 5
Chloride of sodium (common salt).....	6.2
Carbonate of lime (chalk).....	37.6
	99 5
Ammonia,.....	1.06

Having obtained these results, we proceeded once more to Newark, and there received the following account of the modus operandi, adopted at the factory.

The bags are first marked "CHILIAN GUANO;" they are then moistened with water, and laid in a heap, in layers, with a quantity of Peruvian guano between each layer.

The sugar house scum is pounded fine. Three barrowfuls, of "five half-bushels" then are mixed with six barrowfuls of Mexican guano. To this are added $1\frac{1}{2}$ bushels common salt, 1 bushel of plaster, 3 bushels of Peruvian guano and $\frac{1}{2}$ bushel of quick lime. When the Peruvian guano and lime are added, "they make it tremendous strong." In other words, the lime sets free the ammonia of the Peruvian guano, and gives the manufactured Chilian guano a strong smell of hartshorn, which, to the unreflecting, is a sure indication of a valuable guano.

The floor where the bags were filled, was covered with Peruvian guano, in order to make the article look as like genuine guano as possible.

What is Chilian Guano, and why is this name given to it instead of the better known Peruvian Guano? The only genuine Peruvian guano in this country comes thro' the hands of Barré Brothers, and has their mark upon it; so that it would not be easy to sell a spurious Peruvian guano. Chilian guano is subject to no such regulations, and the books describe it, when "fine,"—and the manufactured article is made fine by grinding—as a "very valuable variety, equal to that of the very best Peruvian."

The name therefore, has been chosen with consummate cunning.

We have now presented the facts in regard to this Chilian guano manufacture, so far as we have been able to obtain them. Our readers can draw their own inferences. Even was the article itself valuable, it would be a gross deception to palm it off as genuine guano; but the article is comparatively worthless, as our analysis fully proves. Thus a ton of it contains 190 lbs. insoluble phosphate of lime, which at two cents per lb—a high estimate—is \$9.80; 124 lbs. of salt, worth say \$1; 190 lbs. plaster, 50 cents, and 21 lbs ammonia at 12 cents per lb., \$2.52. This is \$13.82 per ton. Allowing that the non-azotized organic matter, and carbonate of lime is worth \$1.18, we have fifteen dollars as the outside value of a ton of the so called "Chilian guano." And for this the farmers are asked \$40, and are told that it is better than Peruvian guano!

Since writing the above, we have received the May number of the American Farmer, containing the report of the Inspector of guano at Baltimore, Md. He says, "two lots, consisting of 100 bags each, were consigned from New-York and Boston, purporting to be 'Chilian Guano,' and so marked. An average sample of that from New-York contained ammonia 1.78 per cent and bone phosphate of lime 21.10 per cent. That from Boston contained 2.56 per cent ammonia and 21.10 phosphate of lime." This is a little more ammonia than we found, and a little less phosphate of lime. The analyses show, however, that the article is comparatively worthless, even taking the highest figures.

 THE HESSIAN FLY.

We hear complaints from the western parts of the Province of the ravages of the "Fly", but from the imperfect notices in the local press it is difficult to determine the extent, or even the nature of the attacks complained of. We presume the fly spoken of is the HESSIAN FLY, so long the dread of wheat-growers in the United States. Five or six years ago the Hessian Fly appeared in this vicinity, and did considerable injury. But the last few seasons we have not observed it in the field, nor heard complaints of its ravages. We see it stated in a Hamilton paper, that in some parts of the Niagara District, the wheat is pronounced not worth harvesting. We hope these accounts are exaggerated, and from the very slight notice taken of the matter by our correspondents, we are inclined to think the extent of the calamity has been over estimated. We hope some of our readers, in those neighbourhoods that have suffered, will give us some specific statements for our next number.

The Hessian Fly is well known in the United States, and is supposed to have been introduced into that country by the Hessian troops at the time of the Revolution. It may be interesting to many of our readers to learn something of its history, and we therefore present the following, collected from good authorities:—

This insect is one of the most formidable enemies of the wheat crop, with which the farmers of the United States, and, as it now appears, of Canada also, have to contend. It is a small gnat or midge, which naturalists have placed in the family of gall gnats. (*Cecidomyiade*.) Mr. Harris' *Report on Destructive Insects*, and Herrick's valuable paper, published in *Siliman's American Journal of Science*, vol. 42, furnish the most reliable statements in regard to the character and habits of this insect. So far back as 1797, Dr. Isaac Chapman, of Philadelphia, published a history of its transformations which substantially agree with later observation.

"The head and thorax of this fly are black. The hind-body is tawney, and covered with fine grayish hairs. The wings are blackish, but are in reality tinged with yellow at the base, where also they are very narrow: they are fringed with short hairs, and are rounded at the end. The body measures about one-tenth of an inch in length, and the wings expand one quarter of an inch, or more. Two broods or generations are brought to maturity in the course of a year, and the flies appear in the spring and autumn, but rather earlier in the Southern and Middle States than in New England. The transformations of some in each brood appear to be retarded beyond the usual time, as is found to be the case with many other insects; so that the life of these individuals, from the egg to the winged state, extends to a year or more in length, whereby the continuation of the species in after years is made more sure. It has frequently been asserted that the flies lay their eggs on the grain in the ear; but whether this be true or not, it is certain that they do lay their eggs on the young plants, and long before the grain is ripe; for many persons have witnessed and testified to this fact. In the New England States, winter wheat, as it is called, is usually sown about the 1st of September. Towards the end of this month, and in October, when the grain has sprouted, and begins to show a leaf or two, the flies appear in the fields, and, having paired, begin to lay their eggs, in which business they are occupied for several weeks. The following interesting account of the manner in which this is done, was written by Mr. Edward Tilgham, of Queen Anne county, Maryland, and was published in the eighth volume of the *Cultivator*, in May, 1841. 'By the second week of October, the first sown wheat being well up, and having generally put forth its second and third blades, I resorted to my field in a fine warm forenoon, to endeavour to satisfy myself, by ocular demonstration, whether the fly did deposit the eggs on the blades of the growing plant. Selecting a favourable spot to make my observation, I placed myself in a reclining position in a furrow, and had been on the watch but a minute or two, before I discovered a number of small black flies alighting and sitting on the wheat plants around me, and presently one settled on the ridged surface of a blade of a plant completely within my reach and distinct observation. She immediately began depositing her eggs in the longitudinal cavity between the little ridges of the blade. I could distinctly see the eggs ejected from a kind of tube or sting. After she had deposited eight or ten eggs, I easily caught her upon the blade and wrapped her up in a piece of paper. I then proceeded to take up the plant with as much as I conveniently could of the circumjacent earth, and wrapped it all securely in a piece of paper. After that I

continued my observations on the flies, caught several similarly occupied, and could see the eggs uniformly placed in the longitudinal cavities of the blades of the wheat; their appearance being that of minute reddish specks. My own mind being thus completely and fully satisfied as to the mode in which the egg was deposited, I proceeded directly to my dwelling, and put the plant with the eggs upon it in a large glass tumbler, adding a little water to the earth and secured the vessel by covering it with paper, so that no insect could get access to the interior. The paper was sufficiently perforated with pin holes for the admission of air. The tumbler with its contents was daily watched by myself to discover the hatching of the eggs. About the middle of the fifteenth day from the deposit of the eggs, I was so fortunate as to discover a very small maggot or worm, of a reddish cast, making its way with considerable activity down the blade, and saw it till it disappeared between the blade and stem of the plant. This I have no doubt, was the produce of one of the eggs, and would, I presume, have hatched much sooner, had the plant remained in the field. It was my intention to have carried on the experiment, by endeavouring to hatch out the insect from the flax-seed state into the perfect fly again; but being called from home, the plant was suffered to perish. The fly that I caught on the blade of the wheat, as above stated I enclosed in a letter to Mr. John S. Skinner, the editor of the *American Farmer*, of Baltimore, who pronounced it to be a genuine Hessian fly and identical in appearance with others recently received from Virginia.

"Dr. Chapman agrees with the writer, in saying that the Hessian fly lays her eggs in the small creases of the young leaves of the wheat. 'The number on a single leaf,' says Mr. Herrick, 'is often twenty or thirty, and sometimes much greater. In these cases many of the larvae must perish. The egg is about a fiftieth of an inch in diameter, cylindrical, translucent, and of a pale red colour.' Mr. Tilgham was correct in supposing that the eggs would hatch in less than fifteen days, under favourable circumstances; for, if the weather be warm, they commonly hatch in four days after they are laid. The maggots when they first come out of the shells, are of a pale red colour. Forthwith they crawl down the leaf, and work their way between it and the main stalk, passing downwards till they come to a joint, just above which they remain, a little below the surface of the ground, with the head towards the root of the plant. Having thus fixed themselves upon the stalk, they become stationary, and never move from the place till their transformations are completed. They do not eat the stalk, neither do they penetrate within it, as some persons have supposed, but they lie lengthwise upon its surface, covered by the lower part of the leaves, and are nourished wholly by the sap, which they appear to take by suction. They soon lose their reddish colour, turn pale, and will be found to be clouded with whitish spots; and through their transparent skins a greenish stripe may be seen in the middle of their bodies. As they increase in size, and grow plump and firm, they become imbedded in the side of the stem, by the pressure of their bodies upon the growing plant. One maggot thus placed seldom destroys a plant; but two or three are fixed in this manner around the stem, they weaken and impoverish the plant, and cause it to fall down, or to wither and die. They usually come to their full size in five or six weeks, and then measure about three twentieths of an inch in length. Their skin now gradually hardens, becomes brownish, and soon changes to a bright chestnut colour.

This change usually happens about the first of December, when the insect may be said to enter on the pupa state, for after this time it takes no more nourishment. Mr. Herrick informs me, that the brown and leathery skin, within which the maggot has changed to a pupa or chrysalis, is long, egg-shaped, smooth, and marked with eleven transverse lines, and measures one-eighth of an inch in length. In this form it has been commonly likened to a flax seed. It appears, then, from the remarks of Dr. Chapman, Mr. Herrick, and other careful observers, that the maggots of the Hessian fly do not cast off their skins in order to become pupae, wherein they differ from the larvae of most other gnats, and agree with those of common flies; neither do they spin cocoons, as some of the Cecidomyiids are supposed to do. Mr. Herrick, in one of his letters, observes that the pupa gradually cleaves from the dried skin of the larva, and in the course of two or three weeks, is wholly detached from it. Still enclosed within this skin which thus becomes a kind of cocoon or shell for the pupa, it remains throughout the winter, safely lodged in its bed on the side of the stem, near the root of the plant, and protected from the cold by the dead leaves. Towards the end of April and in the fore-part of May, or as soon as the weather becomes warm enough in the spring, the insects are transformed into flies. They make their escape from their winter quarters by breaking through one end of their shells and the remains of the larvae around them.

Very soon after the flies come forth in the spring, they are prepared to lay their eggs on the leaves of the wheat sown in the autumn before, and also on the spring-sown wheat, that begins at this time to appear above the surface of the ground. They continue to come forth and lay their eggs for the space of three weeks, after which they entirely disappear from the fields. The maggots hatched from these eggs pass along the stems of the wheat, not only to the roots, become stationary, and turn to pupae in June and July. In this state they are found at the time of harvest, and when the grain is gathered, they remain in the stubble in the fields. To this however, as Mr. Haven, remarks, there are some exceptions; for a few of the insects do not pass so far down the stem of the stems as to be out of the way of the sickle when the grain is reaped, and consequently will be gathered and carried away with the straw. Most of them are transformed to flies in the autumn, but others remain unchanged in the stubble or straw till the next spring. Hereby, says Mr. Haven, it appears evident that they may be removed from their natural situation in the field, and be kept alive long enough to be carried across the Atlantic from which circumstances it is possible that they might have been imported, in straw from a foreign country. In the winged state, these flies, or more properly gnats, are very active, and, though very small and seemingly feeble, are able to fly to a considerable distance in search of fields of young grain. Their principal migrations take place in August and September in the Middle States where they undergo their final transformations earlier than in New England. There, too, they sometimes take wing in immense swarms, and, being probably aided by the winds, are stopped in their course either by mountains or rivers. On their first appearance in Pennsylvania, they were seen to pass the Delaware like a cloud. Being attracted by light, they have been known, during the wheat harvest, to enter houses in the evening in such numbers as seriously to annoy the inhabitants.

Various means have been recommended for pre-

venting or lessening the ravages of the Hessian fly; but they have hitherto failed, either because they have not been adapted to the end in view, or because they have not been universally adopted; and it appears doubtful whether any of them will ever entirely exterminate the insect. It is stated in the before-mentioned report to 'the Philosophical Society,' that Miss Morris advises obtaining fresh seed from localities in which the fly has not made its appearance, and that 'by this means the crop of the following year will be uninjured; but in order to avoid the introduction of straggling insects of the kind from adjacent fields, it is requisite that a whole neighbourhood should persevere in this precaution for two or more years in succession' (Harris.)

It seems to be generally admitted that the variety of wheat called *Mediterranean*, introduced a few years since into the United States, where it is now extensively cultivated, resists the attacks of the Hessian fly. Hence it may be sown very early in the fall, long before it would be safe to sow the common varieties, by which another great advantage is gained, in its escaping the rust and mildew so apt to affect crops which are backward in the time of ripening.

SHEEP HUSBANDRY—No. III.

COTSWOLD SHEEP.

The following account of this breed is by Mr. Spooner:—

"This is an ancient and celebrated breed, its wool being spoken of very favorably by many old writers. Cotswold signifies a sheep-fold and a naked hill. The Cotswold hills, the native tract of the breed, are of moderate elevation, possess a sweet herbage, and though formerly consisting mostly of bleak wastes, have been latterly much improved. Camden speaks of the breed as having fine and soft wool. Drayton writes of its fleeces as more abundant than those of Sarum and Leominster. Speed writing 200 years ago, speaks of the wool as similar to the Ryeland, and rivaling that of Spain. Indeed, some imagine it was the origin of the merino sheep, as in 1464 Edward IV, permitted a number to be exported to Spain, where they greatly increased and spread. Spain, however, before this, was celebrated for the fineness of its wool. Markham in the time of Queen Elizabeth, speaks of Cotswold as having long wool, and Mr. Marshall and other writers consider that they have always been a long-wooled breed. It is difficult to reconcile these differences of opinion; for my own part, I am disposed to think that the present are the descendants of the old race; be this as it may, we have no evidence, either oral, written, or traditional, of the change having been made.

The Cotswold is a large breed of sheep, with a long and abundant fleece, and the ewes are very prolific and good nurses. Formerly these bred only on the hills, and fattened in the valleys of the Severn and the Thames; but with the enclosure of the Cotswold hills, and the improvement of their cultivation, they have been reared and fattened in the same district. They have been extensively crossed with the Leicester sheep, by which their size and fleece have been somewhat diminished, but their carcasses considerably improved, and their maturity rendered earlier. The wethers are now sometimes fattened at fourteen months, when they weigh from 15lbs. to 24lbs. per quarter, and at two years old, increase to 20 lbs. to 30lbs. The wool is strong, mellow, and of good color, though rather coarse, six to eight inches in length,

and from 7 to 8-lb. the fleece. The superior hardiness of the improved Cotswold over the Leicester, and their adaptation to common treatment, together with the prolific nature of the ewes and their abundance of milk, have rendered them in many places rivals of the Leicester, and have obtained for them of late years more attention to their selection and general treatment, under which management still further improvements appears very probable. They have also been used in crossing other breeds, and have been mixed with the Hampshire Down. It is, indeed, the improved Cotswold that, under the term New or Improved Oxfordshire sheep, are so frequently the successful candidates for prizes offered for the best long-wooled sheep at some of the principal agricultural meetings or shows in the kingdom. The quality of the mutton is considered superior to that of the Leicester, the tallow being less abundant, with a larger development of muscle or flesh. We may, therefore, regard this breed as one of established reputation, and extending itself throughout every district of the kingdom."

MERINO SHEEP IN ENGLAND.

George the III, was distinguished as an ardent promoter of agriculture, and determined in 1787, to make a fair trial of this renowned breed; and accordingly a few were ordered and placed on his farm at Kew. They were selected in Estremadura, on the borders of Portugal; and this, at that time was a sort of smuggling transaction, as no Merinos could be sent from any Spanish port without a license from the king; therefore they were obliged to be shipped from London. The sheep were hastily chosen from among different flocks and various districts, and consequently exhibited but little uniformity, and not fully the true character of the breed; the king then retere, soon disposed of them to others.

Subsequently, it was determined to make a direct application to the Spanish monarch for permission to make a selection from some of the best flocks. This was promptly granted; and a small number was taken from the Negrette variety, then deemed the most valuable of the migratory sheep. This flock arrived in 1791, and was immediately placed on the king's farm.

From ignorance, they were at first badly managed. Having been placed on a moist and luxuriant soil, many soon became affected with foot rot, and others died from attacks of liver rot. This calamity was a triumph to the prejudiced, but a change to dryer pasture proved a remedy, which soon led to a change of opinion in their favor. In a short time it appeared that they were no more subject to disease than British sheep.

Crosses took place with several varieties of the native breeds with various success. Dr. Parry crossed with the Ryeland, the most superior short-wooled sheep in England, and the fourth cross produced a wool equal to pure Merino.

Mr. Coke, the renowned English agriculturist, also experimented on both the Ryelands and South Downs, and affirmed that the cross with the latter was superior to that of the former. It was but a few years afterwards, that he expressed the following opinion, in an address before the Merino Society, Holkham:—"I feel it my duty," said he, "to state my latest opinion on the effects of the cross of a part of my South Down flock with Merino tups, and I wish it could be more favorable. From the further trial which I have made, (this the fourth year,) I must candidly confess that I have reason to believe that, however one cross may answer a farther progress

will not prove advantageous to the breeder." This opinion of Mr. Coke should be duly considered by every American breeder.

But, sometime antecedent to this decision of Mr. Coke, very many who had entertained apparently insurmountable prejudices were bold to acknowledge the merits of the Merinos, and became fully satisfied that neither the climate nor herbage of their new home were incompatible with perfect success. Sir Joseph Banks and Lord Somerville were amongst their staunchest and zealous advocates, and the latter duly tested the sincerity of his opinions, by importing a considerable flock of them.

Thirteen years after the king's importation of the Negrette flock, a public sale by auction was made of Merinos. The rams averaged about fifty dollars per head, and the ewes thirty. In 1808, four years after the price averaged 130 dollars for rams, and 100 dollars for ewes. In 1810 the Merinos arrived at the climax of public favor. In this year, at another public auction sale, rams commanded nearly 300 dollars per head. "One full-mouthed Negrette was sold for over 800 dollars, and another for nearly 700."

A Merino Society was instituted in the following year, at the head of which was placed Sir Joseph Banks, with fifty-four Vice Presidents, and local committees were established in every county in England, Scotland, Ireland, and Wales.

Mr. Youatt observes—"No more striking instance can be produced of the fallacy of human expectations and judgment, than the establishment of this society. From this period is to be dated the rapid decay of the Merinos in public estimation." After a passing tribute of just praise to the breed, he proceeds to say, "In Great Britain, nevertheless, where the system of artificial feeding is carried to such great perfection—where the sheep is so early and so profitably brought to the market—that breed, however it may ultimately increase the value of the wool, can never be adopted, which is deficient, as the Merinos undeniably are, in the principle of early maturity, and general propensity to fatten."

Other reasons for the abandonment of the Merinos are given by Mr. Plint, a distinguished agriculturist. He says—"I always thought the speculation of cultivating the Merinos a decidedly foolish and unprofitable one. We can consume all the coarse, wool we grow, and more if we could get it; and taking carcass and weight of wool together, the long-wooled sheep is more profitable by far than the Merino. Besides, if the English breeds were to any considerable extent superseded by the Merinos, the price of that wool would fall, and long wools would rise; and the advantage of growing fine wool, on account of its high price, would slip through the fingers of the agriculturist. If we could grow more of both kinds, well and good; but in present circumstances, a profit by foreign wool is as good as a profit by fine wool, and we can only have one; and it is the part of wisdom to take that which is easiest got."

The above are the substantial reasons for the downfall of the Merinos in great Britain, and not altogether, as many have supposed, from the humidity of the climate. Long after their introduction, the wool of the Merinos was carefully compared with the best samples of pure Spanish, and no deterioration was perceptible. A dry climate is best suited to the Merino, but many years would elapse before a humid one, without other causes, would produce any essential change in the properties of its fleeces. High feeding is altogether a more potent cause of deterioration.

POTATOES AND THEIR CULTURE.

Say what people will of the value of the potato as an article of food—of the cost of the nutriment it furnishes, so small in amount when compared with many other vegetable products—it is a fixed fact that it is an indispensable article for the table—a dish missed if absent, whatever else may attempt to take its place. So too, most people who have land for the purpose, grow them at least for home use, and of late years the demand has ever been such as to make Potatoes a profitable crop to the general farmer. The rot has prevailed more or less, almost everywhere, but for the last three years not to any great extent or fatality. We do not propose to offer any theory, or solution of its cause, but merely remark on the culture of the "tuber."

The best soil for the Potato is a rich sandy loam but any well drained soil will answer. A stiff tenacious clay or a very light sand, however, should not be chosen, when any other can be had. As to the best potatoes, both for quality and quantity, have been raised on sward land, plowed for the first time, and hence rich and unworn, well worked and planted in good season. Many farmers are in the habit of selecting such a spot when it can be had, and thus secure not only a good crop of potatoes, but fit their land in the best possible manner for after cultivation. Those who have only old land should select a field well exposed to the sun, made rich by manures formerly given or by well rotted compost, now applied. Unfermented manures are very apt to injure the quality of the product. We have seen very good potatoes grown on a mucky soil, and should think much a valuable application to uplands designed for this crop. Indeed, we know it to be so from actual experiment.

Deep and thorough tillage is essential to the success of the Potato crop. A good course would be to plow green sward in the fall, deeply and neatly, cross-plow in the spring, but so as not to disturb the inverted sod, and then harrow thoroughly—it is thought best to plant in hills—before marking out. The planting may be done with the plow, more rapidly, and nearly as well as with the hoe but only in drills, or with rows but one way. Then a light furrow, then drop the potatoes in drills—as is best for this method—about ten or twelve inches apart, then turn another furrow upon them, covering from two to three inches deep. Sometimes the whole surface is plowed over at this time, potatoes being dropped only so as to have the rows about four feet apart.

Potatoes should be hoed and dressed in the early stages of their growth. As soon as they appear above ground run the cultivator through, following with the hoe, but not making much of a hill, as, indeed such are not needed at any time, on a suitably dry soil.—Flat culture is very generally preferred by those who have tried it. Give them as a top dressing a small handful of ashes or lime, and after the second hoeing, one of plaster. The last named fertilizer has been found very beneficial and should not be omitted. Keep the ground mellow and free from weeds; the potatoes will grow more rapidly, and the vines soon so cover the surface that no further care will be needed.

Every neighborhood has its choice varieties, most kinds succeeding better in one place than in another, and hence there preferred. Our recommendation in the matter would have no greater weight than many another man's, so we do not need to name our favorites here. Of one thing we are quite sure, and

that is, that the "bug" has nothing to do with the very choice and costly varieties, sometimes cried up so highly. Plant what you like—take good care of them, enjoy them when they are produced, and if you have a surplus be satisfied with a reasonable price for it.—*R. N. Yarker*

CASHMERE WOOL.—The *Rural New Yorker* says We are indebted to Mr. Richard Peters, of Atlanta, Georgia, for a sample of Cashmere wool, similar to that described in the following paragraph from the Washington Union. We were shown at the Agricultural Bureau a sample of the wool of the Angors or Cashmere goat, sent to the patent office by Mr. Richard Peters, of Georgia. This specimen was taken from the progeny of one of the animals imported from Persia by Mr. James B. Davis, of Columbia, S. C., in 1849. This wool is about ten or eleven inches in length, of a fine silky texture and pure whiteness.—The clip of wool to each animal in this country is from four to four and a half pounds—being a somewhat larger yield than that of Persia. The experiment thus far has proved highly satisfactory, as the entire flock has increased from seven females and two males to upwards of fifty; but, unfortunately, the births in most instances have been males. They breed annually, and usually give two kids at one birth. Mr. Peters has recently purchased the entire stock; and Mr. Davis is on the point of embarking for Asia, with the object of importing more.

THE HAYFIELD.

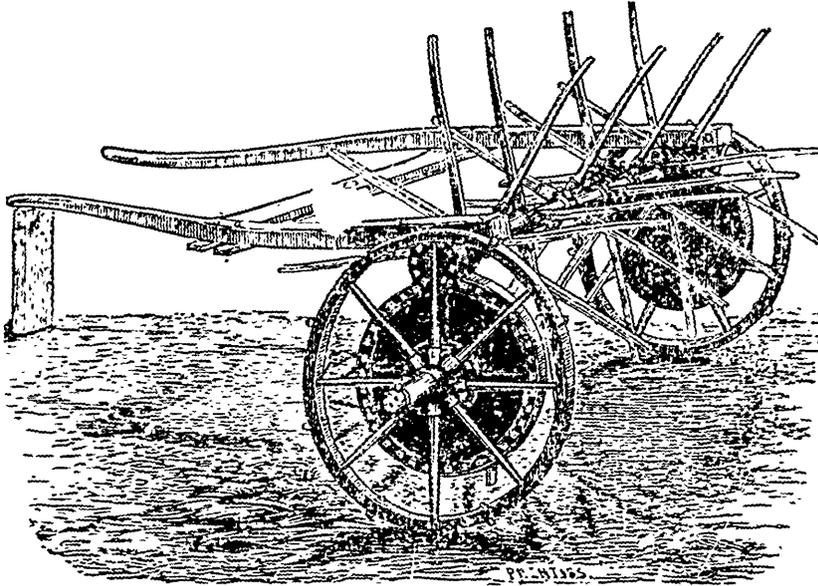
The high price of hay during the past season is a pretty conclusive proof that this important crop has been too much neglected by farmers generally. We fear the continuance of the war in Europe, and the consequent high prices of grain, will increase the evil already of sufficient magnitude. With wheat at two dollars and a quarter per bushel, it is perhaps useless to warn the Canadian farmer against the "bad practice" of growing *too much* wheat. Nevertheless we venture to suggest, that wheat after wheat, and wheat after oats, with but a scanty application of manure,—a "rotation" too often practised in this country is neither *good* nor *profitable* farming.

The Hay crop in this neighborhood will be very light this season. The absence of rain during the latter part of April and beginning of May, kept back the early growth, and it has never fully recovered. We learn from other parts of the Province that much less than an average crop may be looked for. We may, therefore, expect to see hay commanding a high price for another season. Those who grow it should be careful to make it go as far as possible. A ton of *good* hay is worth two tons of poor hay, and three of *bad* hay. It may not *last* as long, but it will go further towards building up the animal,—in supplying the material for muscle and fat.

In the common mode of cutting grass and making hay, much of the nutritive property is lost. A common evil is that of cutting *too late*. The proper time is when the plant is in *full flower*. At this time the nutritious juices are more abundant, and diffus-

ed throughout the plant. It is well known that the saccharine juices of a plant disappear in the process of ripening its seed, and this should, therefore, never be permitted in grass intended for hay. Another cause of serious injury to the quality and value of the hay, is imperfect curing. Exposure to rains, heavy dews and a burning sun is capable of making hay of less value than good straw. But this is an evil that every farmer understands and will, we doubt not, in view of scarcity and high price, endeavour, this year, to avoid.

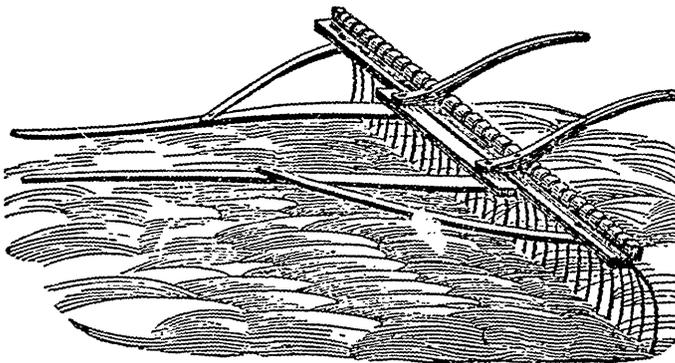
The introduction of machinery into the hay-field, has been productive of much saving in the value of the crop as well as of manual labor. We gave last month an engraving of a *Mowing Machine*, an implement which is coming into very general use. These machines leave the grass so evenly spread that, when not unusually heavy, it requires little or no spreading or shaking. We give below a cut of a new spreading or *tedding machine*, which is said to answer a good purpose where the grass is heavy and requires to be shaken up.



HAY-MAKER.

The above machine is evidently a modification of Smith's (English) tedding-machine, but of simpler construction, and probably quite as efficient. It is made by Messrs. Ruggles, Nourse, Mason & Co., of Boston, and can be ordered through McFutosh and

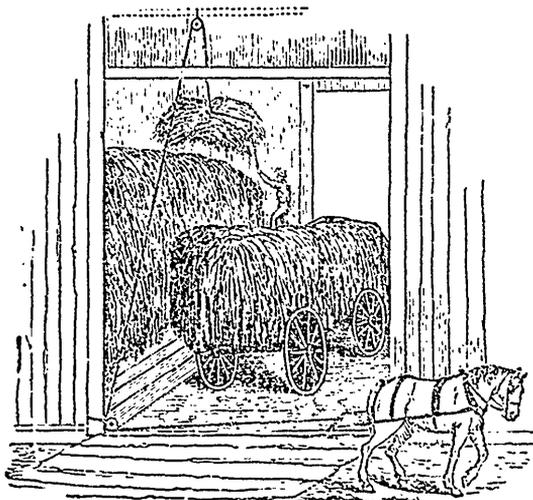
Walton, of this city. We are not able to state the price as we do not find it in their catalogue. By using the Mower, and Hay-maker, grass can frequently be cut in the morning and taken to the barn in the evening.



HORSE-RAKE.

The spring or coil tooth Rake, when well made, is the best for rough land. But the common revolving rake, which is now pretty generally introduced into

the older townships, is well suited for smooth meadows. No farmer whose fields are in a tolerable condition should be without the horse-rake.



HORSE-POWER FORK.

The above cut represents another "improvement" that has been found useful on large farms. Pitching hay, as we know by experience in our younger days, is not easy work. By a little ingenuity and trifling expense this severe operation may be rendered almost a pleasant pastime. Besides the unloading may be expedited, often an important consideration in haying time.

The cut sufficiently explains the mode of applying the horse-power. The fork is, of course, made strong, the handle being about $2\frac{1}{2}$ feet long and $2\frac{1}{2}$ inches square. The handle is about 5 feet, well mortised and secured by straps of iron. The prongs, 4 in

number, are of steel, about 20 inches long. A rope extends from each end of the head to a ring on the handle $2\frac{1}{2}$ feet from the head. A single rope connects with these and passes over a pulley in the rafter as seen in the cut. A rope on the end of the handle is in the hands of the man on the load, and when the fork full is drawn up to the proper height, and by the person in the mow swung to the proper spot it is allowed to drop, and is more compact without treading than with it when pitched in the common way. Six tons an hour have been pitched 20 feet high with this fork and by changing hands in a hurry, twice that quantity may be unloaded.

HAY FOR COWS IN SUMMER.—An observing, intelligent and successful farmer informs us that he is in the practice of feeding his Cows with hay in summer, particularly if the season is such as to afford lush pastures. His reason is that a full, rapid and vigorous growth of grass gives to cattle that feed upon it, a desire for something to absorb the excess of the juice in their food. Dry hay they devour greedily, and though in ever so small quantities, evidently with the most beneficial effects. Every farmer must have observed that in dry seasons, horses, cattle and sheep keep in good condition upon herbage parched and apparently scant, while in wet seasons, in all pastures, though always full, the process of fattening with them was slow. Dry fodder in such cases is required to give substance and tenacity to the green, and can be profitably used by feeding it to horses and cattle.—*Newburgh Telegraph*.

HILLING CORN.—Hilling corn is an attempt substitute for deep plowing. If corn land is plowed deep, there is no need of hilling. The roots will strike down instead of stopping at a hard pan, and waiting for mellow earth, in the form of hilling, to be put over them. By deep plowing you give the roots a chance to go down, and they will go as deep as nature requires without having the earth piled over them. Never disturb the roots by plowing after the tenth of July. If weeds, or grass are getting up, cut them off, but it is better to "let the wheat and tares grow together, lest while ye dig up the tares, ye pluck up also the corn with them."—*Ex.*

CHEESE MAKING.—A few months ago, I visited a lady friend in the country; her table was continually supplied with most delicious cheese, of her own making. I asked, as a particular favor, that she would communicate to me her peculiar method of making it, and wherein she differed from others. She replied that she followed the method she had been taught generally, prepared the rennet in the same way, but felt sure that she had discovered the reason why cheeses were strong, both to taste and smell, which consists in the single circumstance of putting the curd to press warm. She did not use any artificial means to cool the curd, but after he had been chopped and scalded, allowed it to remain spread upon the cloth until it was cool as the surrounding atmosphere, and thus put it to press.

There is a great deal of probability in the above statement, for I have frequently noticed that some cheeses from the same dairy would be strong and offensive, and others mild and agreeable, which may be owing to the circumstances of the dairy woman getting her cheese to press early some days, and being hundred others, until the curd had time to cool. It may be well for dairy women to try the experiment so as to ascertain the fact.—*N. E. Farmer*.

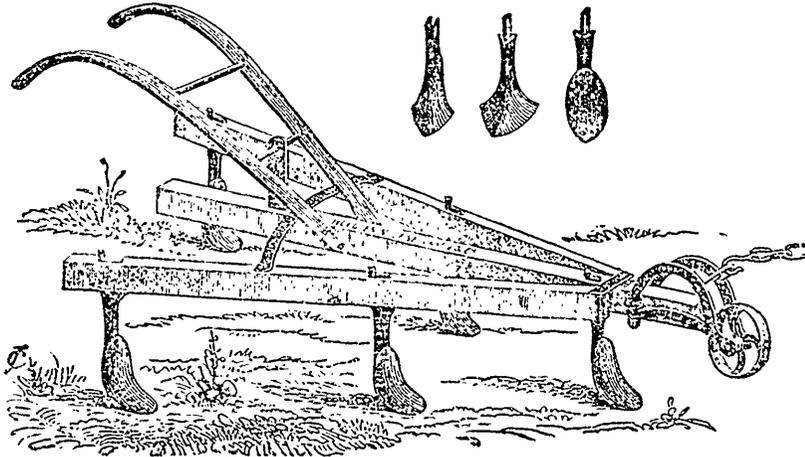
At a late meeting of the Ohio State Board of Agriculture, composed of some of the most intelligent farmers of that state, a committee was appointed to examine the hedges entered for premium, which resulted in the most unanimous award to Mr. McGrew for the most perfect hedge in the State.

CULTIVATORS.

The use of the CULTIVATOR is becoming very general among good farmers, and it is found to be a labour-saving machine. The large wheel-cultivator seems to be preferred, but there are several

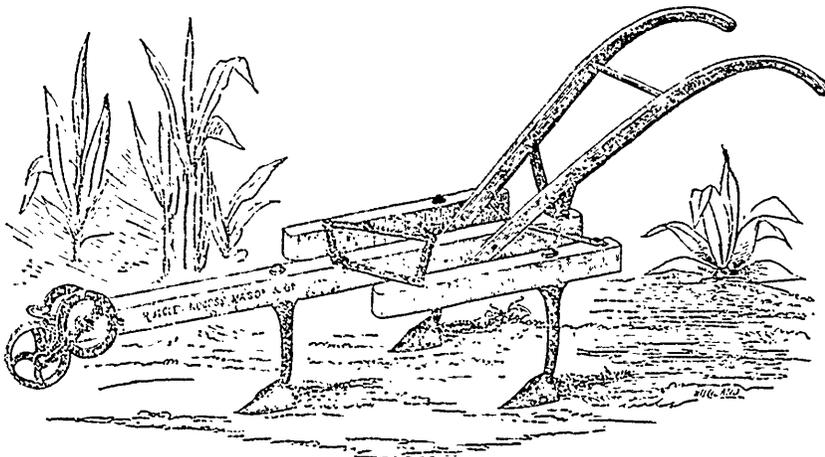
other kinds of lighter and of cheaper construction that are coming into favour.

The following is a common variety, and from its low price is likely to retain the good opinion of those who use it:—



EXPANDING AND REVERSABLE TOOTH CULTIVATOR.

The teeth are sometimes made of cast iron, but as in other kinds, they may be part or all steel. They are sold at from \$5 to \$7 when the points or shares are made of steel. They can be reversed and are very durable. Different kinds of teeth are adapted to the same mortice.

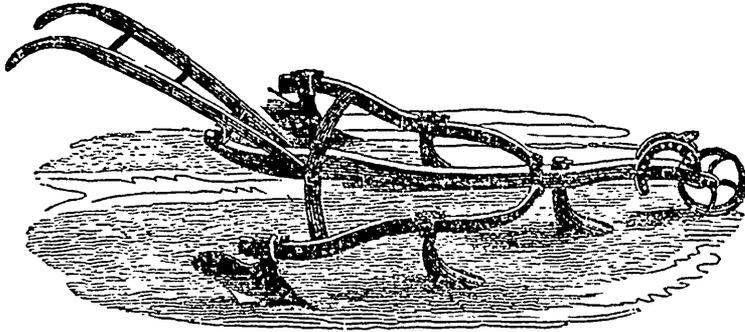


PARALLEL EXPANDING CULTIVATOR.

The Parallel Expanding Cultivator is a recent invention by Ruggles, Nourse & Mason, of Boston. The teeth stand in the same relative position whether the frame is expanded or contracted, and always work in a direct line forward. Both steel and cast iron shares are made to fit the teeth. These shares being fastened to the upright standard by bolts and nuts, may be shifted to use steel or iron ones at pleasure, or new ones may be substituted

for those worn out,—an economical arrangement, as this part of the tooth is subject to the greatest wear, and is used up long before the remaining portion begins to fail. The teeth have high standards which elevate the frame-work so far from the ground as to prevent the instrument from clogging with sods, &c.

The price ranges from \$4½ to \$6.



UNIVERSAL CULTIVATOR.

This is an excellent implement. It is made long and all of iron except the centre beam and handles; the side beams, of wrought iron, are so curved, that as they are expanded or contracted, each tooth, by loosening the iron key which confines it in its place, may be moved forward or back to a point that will again cause it to work parallel with the centre beam, and at proper distance from the others. To the beams are fitted several sets of different forms of teeth and scarifiers, of wrought and cast iron, and one or more sets are supplied to order.

There is also one pair of teeth calculated to work in the rear, represented by the Figure, which may be used instead of the common teeth; they are in form like small ploughs, turning the furrows in opposite directions, and fitting alike both sidebeams;

they may be placed to turn the furrows to or from the centre or rows of vegetables. If the forward teeth are used at the same time, they finely pulverize the soil, and if the ploughs are set to turn inwardly, a beautiful light bed is formed in which to plant any kind of seeds. The farmer or planter using this cultivator can have any form of wrought teeth he may desire, attached to the frame, by his blacksmith, as the manner of fitting them to the beams is very simple and easy.

The price of this sort ranges from \$9 to \$12. All these are drawn by horses or oxen, but they are guided and the depth is regulated, in part, by hand.

We believe either of these implements may be had of McIntosh & Walton, of this City.

CULTIVATION OF MILLET.

EDS. RURAL:—In your paper of April 7th, I have read an article under the head of "*Cultivation of Millet*," which, without an explanation, might lead some of your readers to embark in the cultivation of a crop in which they may be disappointed. There are the three species of *Panicum* cultivated as millet besides two or three species of the *Sorghum* under the same common name.

Two of these species, *Panicum Germanicum* and *Panicum Italicum*, have round heads, much resembling what farmers know as pigeon grass. I have cultivated these two varieties in Western New York, but have not found them profitable. The common or German millet grows with a stalk four or five feet high, as large as a wheat straw and coarser as feed for stock. The *Panicum miliacum* grows about three feet high, with a broad leaf at each joint, the stalk terminating in a panicle, somewhat like a panicle of Poland oats. There are two varieties of this species, one having brown and the other yellow buds. This species is found to be more profitable for cultivation than the two first named. From the small size of the stalk and the great proportion of leaves, cattle and horses seem more fond of the straw of this species than they are of the best timothy hay.

An acquaintance of mine, summer before last, raised an acre, from which he harvested and threshed thirty bushels of seed, and the straw he considered

equal to three tons of timothy hay. I conversed with a farmer the past week, who raised it the last summer, who said his crop was considerably injured by the drought, yet he considered it the most profitable crop he raised upon his farm, as both his cattle and horses were more fond of it than they were of his best hay.

From the above, you perceive that the profit of the cultivation of this crop depends upon the species cultivated.—*Cor. Rural New Yorker.*

SCOURS IN CATTLE—This disease generally arises from too much milk being obtained from the cow—sometimes from some deleterious quality of the milk of the mother.

If occasioned by the first cause, change, by not allowing it to have much at first, but give it some caraway, cinnamon, or ginger tea, combined with some gentle astringent, such as a decoction of blackberry twigs, blackberry root, oak or hemlock bark. If the quality of the milk is the cause, change the food of the mother. If the calf is weaned, or is fed by hand, boil the milk a little, and combine it with common black tea, and also cinnamon, ginger or caraway seed. If the discharges are fetid, there is probably some inflammation, and danger of gangrene. Pulverized charcoal, or yeast, would be useful, if mingled with the tea.—*Maine Farmer.*

SHORT-HORN CATTLE.

There has been of late in this country no considerable amount of prejudice and misconception evinced on the difficult, yet most important question of the relative merits and value of the different breeds of cattle. We have no great sympathy with the mere partisan, who is always disposed to overlook the imperfections of his own favorite stock, and to magnify those of others. The mere abstract question, which is, *per se*, the best breed, apart from all considerations of climate, pasturage, markets &c., carries on the face of it, as we think, a palpable absurdity. The great variety of which the ox-tribe is susceptible, either by nature or art, proves to demonstration that this portion of the animal kingdom, through the varieties of breeds, is wisely and beneficially adapted to the varying circumstances of nature and man. As a general rule, the small and swift animal of the mountain would not find a genial home by being transferred to the warm and luxuriant plain; nor on the contrary, would the heavy and fast-growing denizen of the valley, have his characteristic points and qualities developed by exposure to the bleakness and scanty herbage of more elevated regions. Hence the importance of adapting the animal to the conditions of external nature.

Within the last half century an extraordinary amount of labor and capital has been expended, particularly in Great Britain, in improving the different races of domesticated animals, with a view of obtaining a few prominent breeds, which should be well adapted to ordinary circumstances. Among neat-cattle the improved Durham has been sufficiently proved to stand in the foremost rank, for the general purposes of an advancing husbandry. No disparagement is hereby meant to be made of any other breeds, such as Devons, Herefords, Galloways, &c., which are excellent and often profitable animals. But for general purposes, in a country of ordinary expanse and pasturage, when butchers' meat commands a good price, and early maturity is, therefore, a primary consideration, the modern Short-horn stands unrivalled. The high prices which this world-renowned breed command in all countries, where agricultural improvement is cherished, is a fact which clearly testifies the public appreciation of their worth. Several important sales of short-horns, lately made in England, indicate the great and general interest which is felt for this kind of stock, and some of the very choicest specimens of the best blood that England or Scotland can

produce, have reached this side of the Atlantic. The simple fact that people continue to buy and sell this breed of stock at continually advancing prices, through long periods of time, sufficiently speaks for itself. As a specimen of what is doing at home in this way, we append an extract from a recent number of the *Scotsman* Newspaper.

SALES OF SHORTHORNS.—During last week several sales of shorthorns took place in England. The most important of these was Mr Tanqueray's, Hendon, near London. As at previous sales of shorthorns America competed successfully, giving high prices for several of the first-class animals. Among these a two-year old heifer at the price of 480 guineas; a cow, five years old, 180 guineas; two two-year old heifers, one at 160 guineas and one at 140 guineas, one cow 90 guineas, &c. The highest priced cow, six years old, was purchased by an Englishman, Mr Gunter, at 500 guineas, who also purchased a year-old bull, at 200 guineas. The highest priced bull was purchased by Sir Charles Knightly at 280 guineas. One one-year-old bull calf was purchased for Australia for 200 guineas. The highest priced animal for Scotland was a two-year-old bull purchased by Mr Cruikshanks, Aberdeen, at 155 guineas. Several of the highest priced animals were purchased at Earl Ducie's sale in August 1853. The highest priced cow was then purchased at 250 guineas and now sold for 500 guineas. Another cow was purchased at 180, now sold at 480, guineas. The highest priced bull at Earl Ducie's sale was 650 guineas, and was expected to have been exposed at the present sale, but had died since the catalogue was published. Some animals of the same blood, descended from Charles Colling's herd "Duchess," and purchased at his sale by Mr Bates, have been sold, bulls at 1000 guineas and upwards (one also by Mr Bates, for America, at 2000 guineas.) One cow of this family was sold at Earl Ducie's sale for 700 guineas, and her calf at 350 guineas. The first of these was purchased for America, as were also the highest priced bulls. It is now seventy years since the progenitor of the improved shorthorns, "Hubback," first came into the hands of Mr Charles Collings, and was thought high priced at £8 when near a year old!

HOW MUCH MANURE DO WE USE ON AN ACRE?—

An acre of land contains 43,560 square feet, 4,840 square yards, or 160 square rods. By those who have used guano, it is said 300 pounds is sufficient to manure an acre; 302½ lbs. would just give one ounce avordupois to the square yard. One cubic yard would give a trifle over one inch to the square foot. A cubic yard of highly concentrated manure, like night soil, would, if evenly and properly spread, manure an acre very well. A cubic yard of long manure will weigh about 1,400 lbs.; a cubic foot not far from 50 lbs. A cord contains 128 cubic feet; a cord and a quarter would give about a cubic foot to the square rod. If liquid manure be used it would take 170 bbls. to give one gill to a square foot upon an acre, which would be equal to about 50 pipes or large hogsheads. It would be quite useful if farmers would be a little more specific as to the amount of manure applied.

THE MONTHS—JULY.

“The groves, the fields, the meadows, now no more
With melody resound. ’Tis silence all,
As if the lovely songsters, overwhelm’d
By bounteous nature’s plenty, lay entranced
In drowsy lethargy.”

This month, which was the commencement of the Celtic year, was called by our Saxon ancestors *Henmonath*, that is, *Foliage Month*, as at this time the derizens of the forest attain to the greatest luxuriance of their leafy covering. The name of July is from the Latin, *Julius*, an appellation given to the month by Mark Anthony, in honour of Julius Cæsar, whose nativity fell within its range.

There are few days of importance in this month connected with national or ancient observances that call for special remark. The “Dog-Days,” according to our mode of reckoning, commence on the third of July and end on the eleventh of August. They derive their name from the annual phenomena of the conjunction of the Sun and Sirius, or the Dog-star, when they rise and set together, and continue to do so without much variation for several days. It is probable that many of the popular notions of the Dog-days had their origin in that ancient and interesting land, com rising the valley of the Nile. As the star came in conjunction with the sun about the time of the summer solstice, when that river began to rise, the ancient Egyptians imagined that it influenced in some mysterious way the overflowing of the waters, a circumstance, on which then, as well as now, the fertility of that country mainly depended. The Egyptians, therefore, had the most interesting associations connected with Sirius, and worshipped it as something holy. Other nations, however, held the occurrence in a different estimation, as the harbinger of intense heat and disease, and hence arose many popular superstitions, some of which have come down to the present day. We are told that the ancient Romans believed that at the rising of Sirius, the seas boil—wines, in the coolest places, ferment—standing waters are put in motion, and dogs beyond all question go mad. In more modern times the belief that the intense heat, characteristic of this season, proceeds from Sirius, must have been deeply rooted, since Gassendi gravely argued, that as the Dog-star, which was the symbol of heat to us, was the symbol of cold to our antipodes, and therefore it followed that the heat came from the sun, and not from the star.

St. Swithin’s Day occurs on the 15th of this month, and has long been retained in the popular

memory as well as in the calendar, from a notion that if any amount of rain fall on this day, it will rain more or less for forty days in succession. This vulgar notion is not so absurd as at first sight it might appear to be, since it is at this period the solstice rains, in the climate of the British Islands, usually occur, which, when once they begin, are likely to continue for a considerable time. Hence the delay and difficulty so commonly experienced in securing the hay and grain harvests; inconveniences and losses of which we, in the drier and more regular climate of Canada, know practically but little.

The origin of the popular belief in the watery influences of St. Swithin, who was bishop of Winchester in the ninth century, may be traced to the following circumstance:—

The Bishop, it is said, often expressed a desire, that when he died he might be buried in the open church-yard, and not in the chancel of the minster, as was usual with other bishops, and his request was complied with: but the monks, on his being canonized, considering it disgraceful for the Saint to lie in a public cemetery, resolved to remove his body into the choir, which was to have been done with solemn procession on the 15th of July; it rained, however, so violently for forty days together at this season, that the design was abandoned.

The following description of the heavy summer rains, so common to this season, from the pen of Leigh Hunt, will not be thought out of place here:—

“The strong rains which sometimes come down in summertime, are a noble interruption to the drought and indolence of hot weather. They seem as if they had been collecting a supply of moisture equal to the want of it, and come, drenching the earth with a mighty draught of freshness. The rushing and the tree-bowing winds that precede them, the dignity with which they rise in the west, the gathering darkness of their approach, the silence before their descent, the washing amplitude of their out-pouring, the suddenness with which they appear to bear off, taking up, as it were, their watery feet to sail onward, and then the sunny smile again of nature, accompanied by the “sparkling noise” of birds, and those dripping diamonds of the rain-drops—there is grandeur and beauty in all this, which lend a glorious effect to each other; for though the sunshine appears more beautiful than grand, there is power, not ever to be looked upon, in the orb from which it flows; and though the storm is more

grand than beautiful, there is always beauty when there is so much beneficence."

July is usually the warmest month of the year, for although after midsummer the intensity of the direct solar heat begins of course to diminish, the reflected heat of the earth more than compensates for the loss. The increasing temperature rapidly brings the crops to maturity, and in these northern latitudes, whether in the Old World or the New, July may be considered as *the summer month*.

Hay-making, the most delightful of rural occupations, is now engrossing the attention of the farmer. It is carried on in the earlier climates of Britain, as has already been remarked, in the "very spring and play time of the year," when the fields, and meadows, and lanes are covered with a rich carpet of grass sprinkled with flowers, and the trees of the forest have put on their full livery of green. This, too, is applicable to Canada, as well as the following quotation from Bishop Mant's *British Months*:—

"Here, as the swarthy mowers pass
Slow through the tall and russet grass,
In marshall'd rank from side to side,
Before the scythes' wide sweeping sway
The russet meadows' fall array
Falls, and the bristly surface strows,
With the brown swathe's successive rows "

Hay making is as healthful as it is delightful. The smell of the new-mown grass and flowers is refreshing to the senses, and the soft green sward is pleasant to walk on.

"The grateful sweetness of the new-mown hay,
Breathing refreshment, fans the toiling swain "

There is probably no rural occupation so much desired and enjoyed by the children and inhabitants of crowded cities as hay-making, an operation in which even ladies may healthfully engage, if they are not afraid of giving their fair skins a still finer tinge of the sunny, which when not carried to excess makes them no less beautiful. Allan Ramsay makes his lover become enamoured of the "Lass of Patie's Mill," while helping to make hay:—

"A tending of the hay,
Bareheaded on the green,
Love 'mid her locks did play,
And wanton'd in her e'ea."

Nothing (remarks Leigh Hunt) is more lovely than a female head uncovered out of doors. It looks nymph-like, and a part of the fertile landscape.

Theocritus has used it with exquisite grace and nature in a passage imitated by Virgil.—A goat-herd and shepherd are boasting of their popularity with the village lasses:—

Comatus.—There's Clearista, when my goats go by,
Pelts apples, and then hums me something sly.
Lacon.—And Cratis meets and maddens me; her hair
Shakes at her throat in curls with such an air.

As to a seat against a haycock, on the side farthest from the sun, with the odour of the new-mown grass perfuming all the air, and a sense of slumberous beauty breathing from the warm sky above, and the green earth below,—it is a luxury which has still survived for the lover of the field; and we accordingly nestle to it in our fancy, and with half-shut eyes rest from our own pleasant work.

We have referred to hay-making simply in its poetical associations; as a rural art and pursuit it demands the care and closest attention of the husbandman. In this country it is shorn of a portion of its beauty and attractiveness by the scarcity of labourers, the frequent intensity of the sun's heat the very limited variety of our cultivated grasses, and the hurry and often slovenly manner in which the work is performed. The great point with our farmers is to get the grass collected together as soon as possible after mowing, and then into the barn. Hence every new and efficient mechanical appliance, by which this process can be facilitated and cheapened, is welcomed with delight. Mowing-machines are now getting into use in many places, and the horse rake is generally employed. An improved hay-rake was shown us the other day, which appears to deserve the attention of farmers at this busy season. It is manufactured and patented by Mr. Wm. Niblock, near Brockville. The teeth are so adjusted as to adapt themselves to an uneven surface, and it is said that this rake does not roll the hay as the *Revolvers* usually do: and that a horse and boy can easily rake fifteen or twenty acres of meadow in a day, doing the work perfectly clean.

Although the grain harvest commences in Canada during this month, want of space obliges us to defer our reflections till August, which is emphatically the *harvest month*. Meanwhile it may not be amiss to remind our readers of the importance of attending to the ripening and timely securing of their crops, whether of hay or grain. The operation of cutting is too commonly deferred too long (grass should be mown when the plants are in bloom, and before they show any signs of forming seed. The nicest experiments and careful observations show that to secure the greatest quantity of nutritious matter, of the best quality, it should be cut immediately after it has passed through the milky state. For if allowed to stand longer, the

starch and sugar of the grass, or grain becomes gradually converted, by the ripening process, into woody fibre, a substance that possesses little nutriment for animals. In a country where labour is scarce and consequently high, and where the climate so rapidly forces the growth and ripening of the grain, it is of the utmost consequence that our farmers should undertake and practically obey the important law to which a brief reference has been made. By waiting too long, much of the grain becomes scattered and lost, thereby diminishing in quantity as well as deteriorating in quality.—B.

Horticulture.

THE APPLE-BORER.

I have suffered from the effects of the "Apple Borer," having lost some seventy beautiful trees during the space of three years. I made use of all the preventives suggested by others that I could get hold of, but all to no purpose. I came to the conclusion four years since that the tree must be protected by a covering in order to prevent the little animals from making a deposit. My process was this, and so far successful to the extent of the covering. Early in May, which is the proper time for this region, I examined every tree, and if nits or grubs were there, I followed them with a knife and removed them. I lifted the earth from the collar or base of the tree to the depth of two or three inches, and made use of worn wool bags, of little value, for wrappers, which, when cut into stripes, are very convenient. I commenced two inches below the surface and wound the extent of two feet, giving the tree two thicknesses of sacking, and securing the same with slender twine. I then replaced the earth, and the work was done for the season.

It is necessary to loosen the sacking or covering early in May every succeeding year, and wrap the tree again as above stated. When the animal is prevented from piercing between wind and water," its favorite haunt, it examines for some vulnerable point, but his depredations above the protection, with me have been exceeding rare, and when committed easily detected. Should it be necessary, it is an easy matter to wrap the tree to and around the forks, as there is nothing effectual short of a complete protection.

Since pursuing the above course, I have not lost one tree that was not too far gone to recover, and no new deposits under the covering has come to my notice.—WM. MCKIE, *Salem, N. Y., in the Horticulturist.*

THE OSAGE ORANGE FOR HEDGES.

"A correspondent of the *Country Gentleman*, N. Bancroft, of Medina, N. Y. communicates the following to that journal:—

"A farmer from Hadley, Mass, is making inquiry in relation to the hawthorn for fencing purposes, and also for other plants for the same purpose. It is but little I could say in favor of the hawthorn if I should undertake it; consequently, I will leave that for

those who wish to advocate its qualities for that purpose. But I have a little to say to those farmers who wish to cultivate beautiful, durable and living fences, in favor of the Osage Orange. In 1852, I was traveling to the south and west about four months, and one of my objects in traveling was to learn what could be said in favor of the Osage Orange for fencing purposes. I found no objection to it by any person that had any experience in its cultivation.

"Since that time, I have been engaged in raising the plants from the seed, and lining my own farm as well as my friends and neighbors, with this beautiful hedge. Its growth is rapid when young, and it will mature in four years. But I have seen it protect corn fields in three years after the plants were set. The foliage is a dark shining green, and every leaf is guarded with a stout sharp thorn. The blossoms are very fragrant and the fruit is large and resembles the common orange.

"The seed should be sown in rows about eighteen inches apart, and the next spring they are ready to be transplanted in the hedge. My price for setting them in a hedge, is sixty cents per rod, after the ground is prepared. I would here state that a great share of the orange seed brought into this country is spurious or bad seed, owing to the manner in which it is cured or put up for market. For this reason I intend to embark for Texas in October, to procure seed that I can rely upon. If any of my friends wish to procure good seed, they can send in their orders to me.

PLANT A GRAPE VINE.

Every person who has the control of a square rod of ground whereon plants may grow, can scarcely do better than to set a grape vine of the Concord, Isabella or Dina varieties. The first cost is trifling, and the after-care of them, more of a pleasure than a task. The grape is not only palatable and nutritious for those who are well, but is exceedingly grateful to the sick, giving tone to the digestive organs, and healthy action to the whole alimentary canal.

Before setting the root, throw out the earth, to the depth of two or three feet and fill up ten inches with coarse manure of any sort, old bones, oyster shells, &c., and then throw in rich loam; into this rake a few quarts of house ashes, then fill up with loam and composted manure, and the soil is ready for the root.

After the plant is set scatter on strawey manure, or leaves, and through the summer occasionally throw upon this the contents of the tubs on washing days. A. J. Downing, late editor of the *Horticulturist*, says; "I have seen the Isabella grape produce 3,000 fine clusters of well ripened fruit in a season, by the liberal use of soap-suds from the weekly wash."

The effect of soap-suds on other plants is sometimes surprising. A cypress vine which had remained stationary for a fortnight, when about two inches high, immediately commenced growing after a good watering with soap-suds, and grew about six inches the first five days.

With a little care this may all be well done by any one who has never attempted it before. Under this treatment in the course of three or four years you will be amply repaid by a most beautiful crop

of luscious grapes, and a vine greatly ornamental to the grounds and dwelling.

PRUNING.—The grape vine bleeds readily. Never prune at all, until the vine has grown one or two years for it needs the aid of the small branches in order to push forward large and vigorous roots. Late in October or in November is a proper time—never when the sap is in motion in the spring. As the fruit grows on new wood every year, in pruning it is necessary to cut back the branches to within two or three eyes of the main stem. The cultivator will find plain directions in *Cole's Fruit Book*, which costs but fifty cents, and it will enable him to see the whole operation illustrated by engravings.

Never pinch off the leaves to aid the ripening of the fruit, as they are placed there for the very purpose you desire to accomplish.

Plant a grape vine, and before long some of you will be thankful to him who gave you the hint.—*N. E. Farmer.*

PRUNING.

We commend the following to the owners of orchards. It is copied from the "N. E. Farmer," and accords with our own views:—

A Correspondent says:—I have lately noticed some of my neighbours, with jack-knife, handsaw and hatchet in hand attacking their fruit trees as though they were enemies whom it was their purpose to wound and mutilate and disable by all the means in their power. After the battle has been fought I have seen the ground covered with branches, and in some cases, with heads and trunks lying scattered in all directions around the scathed and bleeding trees, that remain like wounded and maimed soldiers, after a hard fought conflict. And the trophies of the victory thus obtained are carried off by whole cartloads, in the shape of sound, healthy sprouts and branches, covered with leaf and fruit-bud, and consigned to the wood-pile.

It seems to me that these good neighbours of mine are trying an experiment to see how much injury they can inflict upon their trees, without destroying their lives. When the Inquisitors stretch a heretic upon the rack, they place a physician by his side, with his fingers upon the pulse, to decide when the torture has been carried to the limits of human endurance. But not so with our tree-trimmers. They seem to think there is no limit to the endurance of vegetable life. This subject has often been referred to in your paper, and the evil consequences of such a course have been frequently pointed out. But the fact that this practice still continues, shows that enough has not yet been said. "Live upon line and precept upon precept," seems to be the only way in which truth can be fixed in the public mind. If those who pursue this course will watch their trees carefully, and observe the effects of their treatment for two or three years, I think they will be satisfied, that it is not only useless, but highly injurious. When the trees are trimmed in March, April and May, as soon as the warm weather comes on, and the sap presses into

and distends the sap-vessels, it bursts out of the recently wounded vessels, and runs down and blackens and poisons the bark, and causes it to crack and separate from the underlying albumum, and thus effectually prevents the healing of the wound. Gangrene and the death of a portion of the wood must necessarily follow. Where several such wounds are made in a tree, its whole constitution will soon become impaired. It ceases to grow, and in a few years droops and dies.

Trees that are trimmed the least, will generally be found to be the most vigorous, and to develop the best formed and most beautiful heads. Now and then, a limb that is putting forth in an inconvenient direction, or in a direction which will injure the symmetry of the head, should be taken away. A limb that is shooting out more vigorously than the rest, may be shortened, and when two limbs are chafing each other, one may be removed. Shoots that grow from the trunk, will generally cease to grow, when nature has no further service for them to perform. The idea of cutting out the whole centre of an apple tree, to let in the sun, is wholly erroneous. The tree is thus deprived of a large portion of its lungs, as well as of many of its best bearing branches. In our climate the fruit, so far from requiring the direct rays of the scorching sun in mid-summer, requires to be protected from its rays by the foliage which nature has provided. The directions given in English books for the cultivation of fruit, are adapted to the moist and cloudy atmosphere of England. The attempt to apply them to the cultivation of fruit in our climate has led to the adoption of much erroneous practice.

The best time for general pruning is a mooted question among intelligent men. But my own belief is that the proper time, in this climate at least, is in June and July, when the leaves have attained their full size, and are in full health and vigour, and are elaborating an abundance of sap. In this State a fresh wound will commence healing at once. New bark is rapidly formed to cover the wound. It is the descending the sap from which the new bark as well as all the other tissues of the tree are formed. When this sap, properly elaborated in the leaves, is not furnished to the formative vessels, no new growth of any kind is effected. Hence it is only when the leaves are in a condition to perform their proper office, that the new growth necessary to effect the healing of wound can be accomplished.

WASH YOUR TREES.—All fruit trees should be scrubbed or scraped clean of moss, old rough bark, etc., and washed with a mixture of weak ley, soot and sulphur. Say to one common water-pail full of ley, put one-fourth pound of powdered sulphur, and one quart of common chimney soot or lamp black. Washing the bodies of all trees with this at this season of the year, will destroy insects, open the pores of the bark and rapidly increase the growth and vigor of the tree. Lime-wash should never be used; it closes the pores of the bark, and is unsightly to any cultivated taste.—*Ohio Farmer.*

Red—The name *tulip* is derived from the Turkish, and the flower is so called from its fancied resemblance to a turban.

BOILING WATER ON FRUIT TREES.

MR. EDITOR:—Can you tell me anything of the effect of boiling water poured around the roots of choice fruit trees? A lady from New Jersey, who is much interested in horticulture, says, if poured over the roots of the cherry tree in spring, it destroys the germ of insects deposited there, and makes the tree fruitful. I have never seen the experiment made, but I once rather mischievously poured a pailful of boiling water over the roots of a large grape vine, which had shaded the window inconveniently for many years, without yielding fruit, for the purpose of destroying it; and the result was, that it matured fruit that season, and continued to, for many successive ones.

If it is useful, at what season is it best, and how much may be applied with safety? F.

East Charlemon, May, 1855.

REMARKS.—The above enquiry and remarks are evidently from one of our numerous female readers, who are becoming interested in what relates to the garden and farm. Hot water poured upon the roots of peach trees will prevent the curl of the leaf, and rejuvenate the whole appearance of the tree. We have never tried it on plums or cherries, but it is not clear to us why it would not be as beneficial to either of them as to the peach. Apply it in April.—*N. E. Farmer.*

TO FACILITATE THE GROWTH OF FOREIGN SEEDS.—Mr. Humboldt has found that seeds which do not commonly germinate in our climate, or in our hot-houses, and which, of course, we cannot raise for our gardens, or hope to naturalize in our fields, become capable of germinating when immersed for some days in a weak, oxygenized, muriatic acid. This interesting discovery has already been turned to advantage in several botanic gardens.—*Glasgow Mechanics Magazine.*

AMONG the red currants, the large red Dutch are very fine; the cherry currants grows large and beautiful, but it is intolerably acid. The New White Dutch is a superior variety—not so acid as the Red Dutch, and quite large.—*N. E. Farmer.*

CUCUMBERS, MELONS, &c.—Lay off the ground in squares, three yards on a side; that is, with rows three yards apart each way. Dig for each hill a hole, a yard square, twelve inches deep, and throw a large wheel-barrow load of compost, consisting of equal parts taken from the pig-stye and the horse stable, cover to the depth of eight inches with rich mould, and the seeds, sown in number, planted one inch below the surface will with due care, produce a hundred-fold.

Unstirred earth, striped bug and the cutworm, are the three enemies to be encountered. Activity will expell the first—a solution of the fresh droppings of the cow-yard in water sprinkled over the plants with an old broom during a brief period, will expell the second, and personal inspection around the roots, in the season of the cut worm, with the finger or a sharp stick, will bring to light a brown ringed worm, about one inch in length—a foe the most insidious and destructive that the gardener has to fear. He is a glutton, gorging himself to suffocation during the night, and like a coward hiding himself from sight by day. Some with a lamp after dark overtake the marauder and inflict on him merited vengeance. Cucumbers for pickles should not be planted before first of July.

Communications.

PREPARATION OF VITRIOLIZED BONES.

MR. EDITOR.—If we were asked what chemistry had done to improve the practice of the farmer, we would at once reply, that, to the suggestion of Baron Liebig, Professor of Chemistry in the University of Giessen, that bones, when employed as manure, should be dissolved in sulphuric acid, we are indebted for one of the greatest improvements in the agriculture of the last half century. The energy with which the farmers of England and Scotland have in this matter, followed up the proposition of that distinguished chemist, shews us that the time has gone by when the manufacturer, eagerly availing himself of the researches of the laboratory, could reproach the agriculturist with indifference to the advancement of his occupation. We learn from *The Agricultural Gazette*, that in one year, by the farmers in the neighborhood of the town of Spalding in Lincolnshire, the enormous quantity of one hundred and twenty-seven thousand seven hundred and fifty pounds of sulphuric acid were used as manure.

The value of vitriolized bones, as we are accustomed to term the manure produced by the action of sulphuric acid,—the oil of vitriol of the bleacher,—upon bones, has, we consider, been fully established by the experience of several years. It will be useful then to give some directions for the preparation of this compound,—by far the cheapest and most efficient manure which has yet been used by the turnip grower.

Most of your readers, who have directed their attention to agricultural chemistry, are aware, that one of the most important ingredients which a good manure supplies to the soil is that curious, waxy looking substance—phosphorous—which, fifty years ago, was scarcely known except to the chemist, but is now consumed in enormous quantities, in the manufacture of Lucifer matches, and other chemical purposes; 200,000 lbs. of it being yearly sold in London alone. Phosphorous, when burned, as when we ignite a Lucifer match, produces a peculiar sour compound, which by chemists is termed phosphoric acid. This acid exists in urine, and is a chief constituent of the bones of animals; in bones, however, the acid is in combination with the well known substances lime and magnesia, forming what in chemical language, are termed phosphates of lime and magnesia. These phosphates constitute from 50 to 20 per cent, of bones, and serve to give them that strength and solidity so necessary to the frame-work of the body. Every soil which is capable of producing crops must contain some of these important constituents; but in even the most unproductive, they are present

in exceedingly minute quantities, and must, if we would continue to raise large crops, be supplied by the husbandman.

A crop of twenty-five tons of turnips carries away from the field in which it is grown about 36lbs., and two tons of potatoes no less than 96 lbs of phosphoric acid. When we apply to a field farm-yard manure, the refuse of the crops of the farm, we restore only a part of the compounds of phosphoric acid which our cultivated plants require for their development. In the grain sent to market—in the neglected excrements of man and animals,—and in the streams that flow away from the manure-heap, how many tons of these substances are annually wasted!

In bone manure, the farmer is furnished with the most economical supply of phosphates; but as formerly applied, their beneficial effects were not fully experienced. It is now well known by practical men, that it is of great importance in the growth of the turnip, for which crop bone manure is chiefly used, that we should, in the early stages of its growth place within reach of the rootlets of the young plant, an abundant supply of food; until the rough leaves are formed, the greater portion of its nourishment is drawn either from the store of materials contained in the seed, or from the soil. The leaves are the mouths by means of which the plant appropriates the gases of the air, and in proportion as we increase their development, do we enable it to draw in supplies of this cheap and abundant food. But bones, no matter how finely crushed, cannot supply the young plant with sufficient food at this critical period of its growth, because the phosphates which they contain are insoluble in pure water; and are converted into a form in which they can minister to the nourishment of plants only by the slow action of the rain which falls upon the field, charged with carbonic acid.

The employment of sulphuric acid has removed this objection to their use, by converting their insoluble phosphates into a form in which they can readily be taken up by the young plants. The changes produced by the agency of sulphuric acid are easily understood. When that acid is poured upon crushed bones the compounds of phosphoric acid, lime, and magnesia, which they contain, are broken up, a portion of the lime is seized upon by the vitriol which forms with it the well-known substance gypsum (*sulphate of lime*), while the portion of phosphoric acid with which the lime had been combined, being thus set free, unites with the remainder of the lime and phosphoric acid, to form, what is termed by the chemist bi-phosphate or super-phosphate of lime, which differs from the original phosphate in being readily soluble in water.

The following directions for the preparation of the compound we can confidently recommend:

I. *How the bones should be prepared.*—The bones to be used cannot be broken too small; the more extensive the surface presented to the action of the acid, the more rapid and perfect will be the solution. The bones usually employed are in too large pieces; and a higher price should willingly be given for them, when reduced to a powder. In every farm-yard, an old sugar hog-head should be kept, into which all the bones, woolen rags, old hats, and broken leather, should be thrown and preserved, for being reduced to manure in the vitriol vat.

II. *Quantity of vitriol to be used.*—The acid should be purchased of full strength; that is, of the specific gravity at which it is sent from the manufactory viz., 1.845. It should be kept in a closed vessel, as, when exposed it rapidly attracts moisture from the air, and becomes weaker. It must not be forgotten that it will harm both the skin and clothes, if allowed to come in contact with them. When the strong acid is mixed with water, a considerable amount of heat is produced: twenty five pounds of oil of vitriol, mixed with ten pounds of water, will raise the temperature to 266 degrees. The proportion of acid to be used in the preparation of vitriolized bones, is one hundred weight of acid for every two hundred weight of bones to be dissolved. A smaller amount of acid is frequently applied; but the above proportions will give the most satisfactory results.

III. *Quantity of water and mode of applying it*—When undiluted vitriol is poured upon bones, violent action is produced, but continues for a very short time, as the gypsum, which is the first new compound formed, covers the surface of the pieces of bone with a crust, which prevents the acid from coming into contact with the unaltered portions, and in consequence its action is retarded, and a perfect solution is not procured. If you drop some concentrated vitriol upon a piece of limestone, there is a bubbling up, or effervescence from the escape of carbonic acid gas; but it continues only for an instant. A crust of gypsum forms and protects the stone from the acid; but, if you use vitriol diluted with water, the action and escape of gas continue for a much longer time. The best plan, therefore, is to thoroughly moisten the bones you intend to dissolve, by pouring over them a quantity of water and allowing them to soak in it for an hour or two before adding the acid. The quantity of water used should be three or four times that of the vitriol to be employed. This mode of applying the water obviates the trouble of mixing together the vitriol and water in a separate vessel as some recommend, and the heat generated by adding the strong acid to the moistened bones, greatly

facilitates the decomposition, and hastens the preparation of the compound.

How the mixture of the above materials should be made.—Six bushels of bones, ground as fine as possible, are to be placed in any convenient vessel: An old iron boiler, or a sugar hogshead even though not perfectly water-tight may be made fit for use by plastering up the holes and seams with Plaster of Paris, or by filling them with melted pitch or asphalt; and even a hole dug in the ground and lined with firm plastic clay may be used, when no proper vessel can be procured. An old sugar hogshead, however, with about a third of its length cut off, and the seams secured by a coating of pitch, asphalt, or plaster of Paris, makes a first-rate vitriol vat. In the first place, 48 gallons of water should be poured over the bones, and after allowing them to remain together for an hour or two, that the pores of the bones may be penetrated by the liquid, 133 lbs. of strong vitriol should be added, as the exact quantity of acid required should be ordered from the manufacturer, to avoid the trouble of weighing and pouring from vessel to vessel, which would otherwise be necessary. When the acid has been added, and the violent effervescence has ceased, the mixture should be occasionally stirred up; for which purpose a two-pronged fork may be conveniently used. As the fumes which are given off are exceedingly unpleasant, the vessel should be placed under a shed at some distance from the dwelling-house. In about three days the solution will be ready for mixing with charred peat mould, saw dust, or any convenient substance; or it may be diluted with fifty or sixty times its bulk of water, and applied with the manure cart. The quantities given above will be sufficient to prepare manure for a Statute acre, and if used with half the usual quantity of farm-yard manure, which is a plan highly to be recommended in convenient situations, there will be a sufficient supply for two acres. The farmer will remember, that where vitriolized bones are the only manure applied, the addition of some alkaline substance will be found a judicious practice.

F. C. S.

The Oaklands, 2nd May, 1855.

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THE GENERAL DRAINAGE AND LAND IMPROVEMENT COMPANY OF UPPER CANADA.

This communication reached us late in the month, or we would have inserted the Act of Incorporation, together with some remarks, which we may probably do in our next—*B.*

It is with unqualified satisfaction that we take the earliest opportunity of announcing that this Company, which we have uniformly advocated, and which, it will be remembered, was introduced with marked favour at the Provincial Exhibition in London, last

September, and spoken of in the President's address on that occasion, has become a reality, under a special Act of Incorporation conferred upon it by the Legislature; and, that our agricultural friends and the public generally may be aware of the facilities for improvement that now exist under its provisions, their attention is requested to the Act itself.

A considerable proportion of the shares required by the Act to be subscribed for are already taken, and from the very generally expressed interest in the Company, it is very probable that actual business will be commenced this season; at least as far as to begin a tilery or two, and shew what can be done in the manufacture of both drainage and sewerage pipes. It is well known that the English Drainage Companies are in extensive and profitable operation, paying good and regular dividends to their stockholders, and at the same time doing their work in an admirable, and efficient, and economical manner to the entire satisfaction of the community; and surely then, this Province, with similar means at command, may reasonably anticipate the same, if not greater results. The Company is under the control of an efficient Board of Directors, of which the Hon. Sir Allan McNab, the Minister of Agriculture, is president, and there can be no doubt but that with judicious management, the prospects of the Company are very encouraging, not only as an investment but as an undertaking calculated to render the most essential public service. We must commend it therefore to our Agricultural friends more especially, and also, with no less confidence to the public, because we know that the modern system of sanitary operations, which will be adopted, far surpass in excellence the practices of former days, as does Railway locomotion that of our worst roads.

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Branch Agricultural Societies—Have they a Right to a Share of the Public Grant?

[The following correspondence is published in order that all the parties interested may see it, and become aware of their rights and duties. The names are omitted, to prevent needless comment; but the points involved in the dispute may have some interest in other counties.]

May 21, 1855.

SIR,—I have been requested by the Directors of our Agricultural Society to ask your opinion relative to the intention of the law regulating the organization of such societies, in its application to township societies. We have a branch society, at ———, which we call the I——l Branch Agricultural Society of the County of ———. The County Society have taken umbrage at us for some unknown cause; and for the past two years

have refused to receive our report, or forward the amount we have subscribed, to enable us to participate in the Government allowance of funds. They say our name is illegal, as the act does not recognize such a name—it only includes *county* and *township* societies; and we have no right to call ours the I—l Branch. It has existed by the same name for the past eight years, and this great discovery was only made last year. We have had no difficulty heretofore, and the Society has gone on prosperously. Our subscription the present year amounts to £130. Will you please state your opinion relative to our position. I believe you were the person who framed the Agricultural Bill, and will have the best idea of what its intentions are.

Yours respectfully,

C. E. C.

Wm. McDougall, Esq., Toronto.

Millbank Farm, Yonge Street,
June 4, 1855.

C. E. C. Esq.,

SIR.—Your letter of the 21st ult., asking, on behalf of the Directors of the I—l Branch Agricultural Society, my opinion of the "position" of your Society, under the Act 16 Victoria, cap. 11, in respect to the Government grant, is now before me.

You state that the County Society has "refused," for the past two years, to receive your report, &c., so as to enable you to participate in the Government allowance. The "reason" of such refusal, you allege, is "unknown;" but you state, at the same time, that they object to your name as "illegal," because "the Act does not recognize such a name."

As you remark, the Act (16 Vic., cap 11) was drafted by me; but it needs no special acquaintance with that Act to perceive, that the charge of *illegality* against your Society on account of its name, is unwarranted. The 33rd section declares expressly that "Township or Branch Agricultural Society may be organized in each township" or in any "two or more townships together." I cannot undertake to expound the "intention" of the Legislature, except as it is to be collected from the words used in the Act, according to their obvious meaning; but I know that my intention was to put "Branch" Societies (several of which I knew to be then in existence) upon the same footing precisely as Township Societies; and such, I apprehend, is the meaning and legal effect of the 33rd and subsequent sections of the Act.

Where a society is limited to a single township, there is an evident propriety in calling it by the name of that township; but the Act does not *prescribe* that designation: on the contrary, it expressly permits the term, "Branch," instead. Township Societies are, *in fact*, "branches" of the County Society; and, if the Act were silent on the point, it would seem preposterous to argue, that calling the society by its true name, would put it out of the Act. It would be equally absurd to hold, that prefixing the word "I—l," or any other descriptive appellation, would make the Society anything else than a "Branch Agricultural Society," "organized in a township," or deprive it of any of the rights of such a Society. I assume, of course, that all the other actual requirements of the Act to constitute your Society a "Branch Agricultural Society" have been complied with.

In that case, the County Society has no discretionary power to withhold your "share" of the grant. You are by law "entitled" to it, and can, no doubt, enforce your rights. The language of the Act on the point is imperative.

I would recommend you to peruse carefully the 33rd, 34th, 35th, 37th, and 39th sections of the Act. If legal proceedings become necessary, you will probably employ counsel, and he will point out the *mode*. I may suggest, in conclusion, that if not already incorporated, your Society may easily obtain the legal *status* of a corporate body by adopting a resolution, &c., as directed by the 42nd section.

I have the honour to remain,
Yours truly,

WM. McDOUGALL.

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IMPORTANCE OF STOCK FARMING.

BY WM. HUTTON, ESQ., SECRETARY OF THE BUREAU OF AGRICULTURE AND STATISTICS.

(To the Editor of the *Agriculturist*)

DEAR SIR,—Having witnessed in the market of Quebec what I considered a very remarkable circumstance, viz., the sale of a calf at the age of 9 weeks, at £4 5s and of several of 5 weeks, old at 50s each, and knowing the general very high price of meat not only here but in the Upper Province, and especially that of calves and lambs. I have been led to the consideration of the relative advantage between selling young animals and those of mature growth—whether black cattle or sheep—and also of the remedy for the present great deficiency in number of stock.

Our every day observation tells us that the most

successful farmers in Canada are those who feed well the greatest quantity of stock. Mr. Mechi's doctrine, "that feeding stock is simply an expensive mode of procuring manure which might be more cheaply procured by means of Guano and artificial manures" is now become exploded—cattle and sheep have become now more than mere manure making machines." At present prices they are *under almost any system* of good feeding—directly as well as indirectly profitable, but a most important point of enquiry has been hitherto very much neglected and that is whether animals should be fattened while yet growing or not until the frame has arrived at full size. This inquiry has with very many led to the decision that with the old unimproved breeds the only method possible to fatten them properly is to let them be full grown but the tendency of our improved breeds, both of cattle and sheep is so decided towards early maturity that both fattening and growth can and do go on prosperously together.

Experience has also long since proved that young animals of good breeds—if fed on food, rich in heat and flesh making elements, rapidly increase in size. But as the absorbent glands can only take up so much within a certain time—whatever food is supplied in excess of that capability—passes off almost unprofitably in excrement—the manure may be richer but not so much so as to pay the farmer. It has therefore been hitherto an important point of enquiry in fattening animals how much and what description of food will lay on the largest weight of meat without this waste. Ahr. Dunn, a large and excellent farmer in the county of Hants lately delivered a lecture at a farmers' Club in which he stated some very important facts with regard to the fattening of young animals, and which owing, to the present great scarcity of cattle in Canada cannot fail to be interesting to your readers, he says:—"Green food equivalent to 25 tons Roots and one ton of Cake, will afford nourishment sufficient to make a steer 800 lbs weight by the time he is 24 months old—this is exclusive of the wearing—1200 lbs is a good weight for a 3 year old ox—the grain in weight is therefore much greater for the food consumed for the first two years.—It will require for the last year nearly as many roots or their equivalent as for the other two years and a much larger proportion of cake *v z.* 1.825 lbs.—The weight gained by the third year's feeding would require to be 600 lbs which is considerably higher than the average gain for any length of time even by prize animals being 11½ lbs per week. I have fattened several at this age and have found that the meat gives satisfaction and that there is a fair amount of offal in the sheep of rough fat. Such being the case we ought to hear no more about the amount of capital required for stall feeding. Forty shillings for a newly weaned calf, and £10 or £11;

invested in food during the 24 months is the whole affair in direct outlay, for which a quick return will be made with interest into the bargain, to say nothing of the manure—Sheep will pay equally as well as cattle when fattened young, indeed the practice is so common to fatten sheep under two years old that old wether mutton is a thing to be talked of but seldom seen. At one year old they can be sent profitably to market with a good quantity of edible mutton on thin backs, all that is wanted to make a sheep ripe at one year old is to take care that there be no standing still and from the day he is weaned till Michaelmas there should be given one-third of a lb. of cake daily, and after that, one half lb per day with cut roots and a little hay. At 12 months old they will be found heavy enough under this treatment to pay 6s per ton for the roots, prime cost for the cake and a fair price for hay and attendance, "(the cake he values at 1d stg. per lb)"—We know that with regard to sheep the best farmers in Canada find the most profitable time for selling to be about 18 or 19 months. In our cold climate Nature provides the sheep with a good fleece early in the winter, in fact very nearly as heavy at Christmas as at the regular shearing time, so that at 19 months we have two fleeces from each sheep and after that period the increased weight of carcass (as Mr. Dunn observes) never pays in the same ratio.

At the present very high prices of beef and mutton these facts are deserving of attention especially as the practice of most farmers hitherto has been to allow their wethers to run to 3 or 4 or even 5 years old, and sell them at that age when the weight of carcass is (under any treatment) more than 50 per cent. greater than at 19 months and seldom 25 per cent. With common grass feeding the average weight at 19 months is about 14lbs. per Quarter, and at 4 years not more than 17 or 18. With the best stall feeding the weight would be much greater but the *ratio* of increase very little greater.

As the primary business of the farmer is the production of food and the object of agricultural knowledge whether the result of science or practical experience is to understand the process by which the plants that he cultivates and the animals which he maintains may be made to contribute most profitably to that purpose the time is undoubtedly come in Canada when much more attention should be devoted to the raising of animal food in greater abundance than we have hitherto done. Not only is the live stock of the country evidently much decreased, but the wheat soils are being over axed by a forced production of grain, the only remedy appears to be a more extended growth of root crops and greater attention to the fattening of young animals, whether black cattle or sheep—the immense price now paid for calves and lambs is a very great temptation to

farmers to sell their young animals instead of keeping them for the stalls or the yard, and the result will materially be a great falling off in the supply of manure, and consequently in wheat and other grain a year or two hence. With the prices now received, farmers, looking to present gain, are very apt to forget how necessary it is for the future well being of the farm to keep up the stock upon it.

"As to the best plan of feeding, Mr. Dann further observes, of all methods of housing cattle I prefer the box system. It allows as much exercise as is required to promote health, it permits no waste in the manure, which is pressed down so evenly and regularly that little fermentation takes place, and consequently small loss is sustained by the escape of volatile gases; the liquid manure is completely absorbed among the solid, thereby saving the expense of tanks and all cumbersome appendages of pumps, hose, water carts, pipes or hydrants, which are all required on the new system of liquifying the manure. "Box feeding" (says Mr. Dunn) has a peculiar recommendation on sheep farms, which is this, that, a much larger quantity of straw can be made into manure in the box than in the stall. It has been proved, too, that a much greater return for the food is to be made by the cattle under this than under any other method of housing. Colonel M. Dowell says 10 per cent. more than the stall and 20 per cent. more than the open yard, but of course all these advantages must be given up when there is not enough of litter, in such a case the stall is better than the box as the cattle would be wet and uncomfortable, and be retarded in their growth.

In order to produce abundance of straw, and the necessary abundance both of grain and straw, for straw produces straw,—the great secret for Canada appears to be—the substitution of green crops for naked fallows. In Great Britain the practice of naked summer fallowing bids fair at no distant day, to be numbered with the things that were,—the high price of cattle and sheep here, ought to lead towards a similar result, — the soil of Canada, in its normal condition, may grow from 15 to 30 bushels of wheat per acre, but in order to increase the produce above that normal ratio —there must be deposited in the land, the material whence the extra produce is to draw its support. The experience of the older States, is every day teaching us that they cannot even maintain the normal ratio without the aid of stall feeding of cattle on root crops — their produce is every year diminishing and so with ours in Canada, if we do not profit by their experience.—The last U States Census shows us, that the falling off of the wheat crop in the old States is enormous, and this has not arisen from any particular calamity of fly or blight, or insect, or particular seasons,—but has been a steady gradual falling off occasioned by overtaxing the normal soil,

and neglecting to supply the required nourishment in the shape of animal excrement enriched by the use of fattening food. It is to be hoped the time is not far distant, when it will be with us as it is now in the best agricultural districts of Great Britain and Ireland, that the estimate of a man's abilities as a farmer, is formed solely by the quantity of live stock which his farm is made to maintain, and the rapidity with which he brings them to early maturity.

It would appear then if the above observations are correct, that the most rational and feasible method of supplying the great deficiency of cattle is to grow green food and endeavor to force forward the few that we have in the country to make them sooner ready for a sharp market, and with all the exertions that can be used, the market is likely to continue sharp for some years before the farmers of Canada can overtake their neglect of cattle rearing. This neglect has arisen from the desire of taking a *short cut* for the production of wheat, which latterly has been more dollar producing, than the growth of cattle, but that short cut will turn out to be no very sensible path.

The only legitimate channel for the increase of grain growing, is by the increase of stock-feeding,—and to bring up on the way as quickly as possible—the rearing of cattle and sheep, that come early to maturity cannot fail to be a most important consideration.

Yours, &c.,

WILLIAM HUTTON.

Office, of Statistics, Quebec, June 21st, 1855.

Hon. Adam Ferguson on Canadian Improvement.

WOODVILLE, June 23rd, 1855.

DEAR SIR,—I beg leave to offer you a few passing remarks upon a portion of the Province, through which I have just passed; in the Backwoods of which, including Guelph, Fergus, &c. I have lately spent a most agreeable week. I left this for Guelph, upon Wednesday week. For the first twelve miles I had a tolerably rough ride, upon a new joint stock road along the Township line of East and West Flamborough. It will no doubt, in due time, be satisfactorily completed, but must be confessed, at present to be sufficiently racking both for springs and loins. The Agricultural improvement, in this quarter, is quite remarkable &c, a general spirit of emulation seems to animate every settler on the line.

Municipal government and remunerating prices have done their work; and the fruit is sufficiently obvious in preparations for building and enlarging Churches, Schools, Mansions, barns &c., &c., while the variety of farm implements, waggons and *spring buggies* at the waggonmakers' doors testify the im-

provement in our roads, and general prosperity, of the certainly not least important class of the community. It was pleasant, too, to note the excellent condition and improved form of the Live Stock, and the host of healthy, chubby yearlings, romping at play, or plodding to and from the Common Schools.

The crops, in general, as an average, may be pronounced promising. I do not think that appearances, at this date, indicate a very early harvest, and should it prove comparatively late, we must leave a fair margin to fill up. Still, *laying that to that*. I don't think our farmers, will have much reasonable ground to grumble, though grumble, they no doubt will, as you know "*'Tis my vocation, Hail!*"

I was well pleased, also, to notice numerous mercantile establishments, of the usual miscellaneous character, every where springing up, which I would fondly hope will tend materially to put down those wretched *grogeries*, so fertile in evil, and give the farmers, a taste for adding to their personal and family comforts, by a useful and respectable expenditure. There can be no doubt, too, that those individuals who established rural Stores, are both able and willing to aid the advancement of agricultural improvement, in various ways, and always afford facilities to the Post Office Department, to multiply important accommodations. Among commercial men who have shown a deep interest in farming operations, I may notice Mr. Stone of Guelph, whose name is not unknown to you. Mr. S. owns several farms, cultivating them in good style, in all departments. I spent a great part of one day with much gratification, upon one of his farms in the Plains of Puslich. The soil is of first rate quality, and by the services of intelligent, skilful farm labourers, the work is done in good style. I never saw a cleaner, better dressed wheat fallow, and the turnip field would have done no discredit to Northumberland itself. Mr. S. has invested a large Capital in Improved Dushams, and friends in England have ably seconded his views. He now possesses a large portion of the BARES & DUCK blood. Last year, a neighbouring farmer, Mr. Hles, went to England on his own and Mr. Stone's account. A very valuable herd was purchased,—the whole of which was swept into the deep, by an overwhelming wave and a serious loss to the parties occurred. Neither of these breeders, however, lost courage. Not very long ago, Mr. Hles purchased, at a handsome price my Bull KOSCIUSKO, and Mr. Stone again resorted to the English market. This great importation, only arrived a few months ago, and in judging of their merits, we must allow them, a few months more, to become acclimated; and to recover the privations of their voyage. With that care which they will now receive, and with ordinary luck, Mr. S. must now assuredly take a high position among Canadian Breed-

ers. He now possesses over 20 head of Herd Book animals. It would be hazardous to name favourites, but I cannot deny myself the pleasure of noting his 2 yr. old heifer DAPHNE and his Cow MARGARET, for whose heifer calf Mr. S. lately refused £100.—A spring bull calf delighted me so much, that I shall not deny a close trespassing on the borders of the tenth Commandment, in regard to him.

Mr. S. is also establishing, by importation from the best flocks in England, the Cotswold sheep, and has every prospect of securing the success, which liberal expenditure and judicious selection, deserve.

The intensity of last winter's frost in this quarter now too palpably exhibits its mischievous effects. Our finer fruit trees and more delicate shrubs, are much damaged. We shall neither have Peaches nor Grapes. Last year we supplied the finest peaches to the pigs in bushel measures, this season not one for the table. Well! thank God, we can live without either.

Our Potatoes have kept remarkably well, and the old, will meet the new (garden) crop. Assuredly we have a noble country, though as an honest settler in the Backwoods, who does not exactly stomach the Village Lot fever, remarked to me a few days ago. "Why Sir, we shall soon find *no country* left, it will be all one great *town*. I hope you don't forget your field or to give us a benefit in this quarter soon, and now, wishing you all health and comfort,

Believe me very sincerely yours,

ADAM FERGUSSON.

To Geo. Buckland Esq &c, &c., Toronto

A NEW HORSE RAKE.

(To the Editor of the *Agriculturist*.)

SIR.—Knowing that you are a friend to the farmer, and ready to encourage whatever lessens his labour, I beg to inform you that I have lately obtained letters patent for an improved Horse Rake, with which the labour is performed with more ease, and more can be done in the same space of time, than by any other Rake now in use in this Province. A man and horse can rake from 15 to 20 acres of meadow in a day, and it is done as well as by hand. This rake has been in use the last six years in the united counties of Leeds and Greenville, where it is held in high estimation by the farming community,—so much so that it has completely driven all other kinds of hay-rakes out of the field and only requires to be known, to be universally approved. I have the strongest certificates as to the superiority of the article. I need only mention the name of John H. Hough, Esq, well known to the principal agriculturists of Canada, whose opinion of such matters may with confidence be relied on. It is easier to rake with this rake than with any other I have seen. It will rake over uneven ground, where the Revolver would be utterly useless. It is easy for both man and horse. The following is a brief

description of the implement.—There are two wheels about 4 feet 3 inches in height; an axletree about 8 feet 2 inches between the shoulders. The shafts are 9 feet six inches long. The slats to which the teeth are fastened, are 4 feet long; the teeth 2 feet 2, fastened to the slats by iron braces. There are twenty slats and teeth; a half inch rod runs over the axletree through all the slats. The slats project horizontally back from the axletrees, from which the teeth descend to the ground, forming an angle rather more acute than in the common rake. The person who rakes rides in front of the axletree, and raises the teeth from the ground by means of a treadle fastened to the axletree, which is done with ease, as the driver unships the load by throwing up the teeth, and immediately lets them down. Each tooth is independent of the rest, and therefore accommodates itself to an uneven surface.

Such, Mr. Editor, is an imperfect description of the Rake I wish to bring before the public through the medium of your widely circulated and useful journal.

N. B.—I am ready to supply orders addressed to me at Brockville. Mr. Haworth, merchant, Toronto and Mr. McDougall, Yonge street, will also receive them. Price with wheels \$25 to 30; without \$11 to \$18.

I am, Mr. Editor,
Your obedient servant,
WM. NIBLOCK.

BROCKVILLE, June, 22 1855.

[One of the above Rakes may be seen at the writer's farm, Yonge street, township of York. We shall put it in operation as soon as possible, and have little doubt of its success. We shall, however, be able to speak more positively *after* trial. Orders left with us may be supplied in four or five days. We understand Mr. Siblock to guarantee them to work well—no work no pay.]

Miscellaneous.

DUTIES OF THE FARMER TO HIS FAMILY.

The following extract from a lecture by Dr. Reynolds, a citizen of Massachusetts, may prove useful to some of our readers in Canada:—

"Order and neatness are among the marks of good farming. Where these are wanting in the arrangements about the house and farm-buildings, they will be wanting on the farm. The farmer is bound to train up his family in good habits, and habits of order, by which everything shall be kept in its place, and everything done in its proper connection, and habits of neatness, which shall lead to the instant detection and removal of every nuisance, are among the good habits in which children should be brought up from their infancy. The health, the comfort, and the respectability of his family demand this at his hand.

Among the provisions which the farmer should make for his family, are all those arrangements and utensils which are calculated to save time and labour and strength. There is much hard work to be done in the family of the farmer, and on certain days and at certain seasons, the females are tasked to the full extent of their strength and powers of endurance. Now, I would not recommend that you should get every new pattern of cooking-stove or washing machine, or churn, that you may see advertized in the newspapers. But I would have you to keep those in good order that you have, and in a condition always ready for use. Have them in a convenient place, and so arranged as to save steps and strength as much as possible.

Provide for the happiness of your family. Many little attentions to their comfort, and arrangements by which their labours may be facilitated, contribute much to promote their happiness. The mistress of the family has many things in the care of her children, and in the labours of the family, to exhaust her strength and to try her feelings, and the good wife will not fail to appreciate all the arrangements you may make for her relief, and will amply repay you by her cheerful smiles, and increased patience and sweetness of temper.

Never require the females of the family to do those things which properly belong to the other sex. They should not be required to split the wood, or even to carry it into the house; to shovel the snow from the clothes-yard, or to sweep the paths and alleys around the house, or carry pails of food to the hogs, or dig the potatoes for dinner. Many a farmer's wife has been, and now is subjected to drudgery of this sort. But it is to be hoped that the days of such service are nearly ended. All such labours should be considered a part of the daily business of the farm, and should be attended to in their season. The man who loves his wife, and wishes to make his home a happy one, will regard her feelings, and never subject her to mortification or degradation. Nature has implanted in the heart of every woman a desire to appear well in the eyes of others; this desire should never be contravened unless it oversteps the bounds of propriety, but should be indulged so far as your means will justify. It is associated in her mind with the feeling of self-respect, which is one of the best safeguards of a virtuous character. Never, by unremitting toil, render that fair and blooming countenance, and those delicate features, coarse and and harsh, and cause that beautiful, active, and symmetrical form to become bowed, crippled, and distorted by incessant drudgery. Remember that woman is not endowed by nature with the same muscular strength and power of endurance, which she has given to man. Her strength consists in her weakness, which appeals to you for support and protection, and in her beauty and gentleness, which appeal to your love and affection. And in all the arrangements of the household, you should remember that the duties of women are not to be accomplished by muscular power and brute force but rather by skill, by tact, by perseverance; and in proportion to the extent of her labors and cares, should be the facilities and aid supplied to her. Thus will her strength be spared, and her time saved

for the cultivation of her mind, for the instruction of her children, and for the performance of those gentle charities that so beautifully adorn the female character. And how much more cheerful, aye, and successful too, will be the labours of the field, when the sweet and happy smile of the contented and happy wife meets you at the threshold, and sheds sunshine through your dwelling.

Another and most important duty which the farmer owes to his family is to supply them with the means of moral, religious and intellectual culture. Let your children be trained from their earliest infancy to be affectionate, kind, obedient, truthful, industrious, and as fast as their intellect is developed let it receive appropriate culture. Never grudge the cost of books, periodicals or papers, or taxes for the institutions of learning. Money paid for the education of your children is the best investment you can make for them, and remember that as the world advances in knowledge, and the comforts and conveniences of life increase, the standard of education must be elevated from generation to generation. It is not enough that your children are instructed in those things that you learned in the schools of your boyhood. They must be taught those that you now, in your manhood, feel that you need to know. There has been, as you all know, a great revival of interest in the cause of education, within a few years past. Catch this spirit, and let it enter into all the arrangements or the education of your children. But I must cut short my remarks upon this copious theme, and will only add, that you cannot afford to dispense with the institutions of religion, for to these we in New England, are greatly indebted for our worldly prosperity. Teach your children to reverence the sacred word, to remember the Sabbath, and to do to others, as you would that others should do to them; and never forget that in all these respects, your own example is the most efficient teacher, and that the lessons they are thus taught, will make the deepest impression upon their minds."

MACHINE FOR CHOPPING BRUSH.

A correspondent of the *New-England Farmer* gives the following account of an invention of Mr. Daniels, of Vermont, (of Woodstock, we suppose, the inventor of one of the best of hay cutters) which he saw in operation on the farm of Col. Stanley, of Methuen. We do not quite comprehend its form but its efficiency seems very evident. The writer says:—

In passing through Methuen a few weeks since, I had occasion to call on Col. Charles E. Stanley, of that town, when I was shown by that gentleman a machine, or rather, cutter, belonging to him, to which horse-power is applied, for the purpose of cutting limbs and brush at the door. It is called "Daniel's Patent," of Vermont, being very much on the principle of some hay cutters on a much larger scale. Two huge knives, about eighteen inches long; one-half inch thick, and four and a half in width are strongly fastened on the shaft roll. A good feed roll is also applied. Hard wood limbs, without trimming, that are not more than three inches or more that are not more than four and one-half inches through at the butt, are cut with ease. By changing the gearing, they can be cut any length desired from four and one-

half to one fourth of an inch in length. When green pine limbs are cut two inches long and spread upon a floor not more than ten inches in depth, they will dry so as to burn well in a week.

Col. Stanley says he can cut limbs and brush to the above degree of fineness faster than a smart man, with a good yoke of oxen, can haul and dump them from one-fourth of a mile distant. The advantage of cutting it so fine is that it brings much scraggy and otherwise worthless brush, up to more than the value of its weight in solid wood, which, in these times of scarcity and high prices of fuel, is an object of too much importance to be overlooked. Col. Stanley's neighbors bring brush to him to be cut on equal shares. As near as I could judge, the machine will do the work of forty men.

The reason that the chips dry so quick, is, that they are not cut square off, but obliquely, one side being concave, and the other convex; consequently they are shattered to such a degree, that the air is admitted entirely through them, and the drying process immediately commences.

BEECH FOR HEDGES.

The editor of the *Maine Farmer*, recommends the beech tree for hedges in that State for the following reasons:—"It is a native of our soil—it will bear pruning, and if pruned right, it will become thick and bushy, and be impenetrable to man and beast. It is long lived, and is not infested or attacked by insects."

He quotes from the "Hand Book of Emigrants to New Brunswick," the following confirmation of his views:

"Very solid and elegant hedges may be made with young beeches placed seven or eight inches apart, and bent in opposite directions, so as to cross each other and form a trellis, with apertures five or six inches in diameter. During the first year they are bound with osier at the points of intersection, where they finally become grafted, and grow together. As beech does not suffer in pruning, and sprouts less luxuriantly than most other trees, it is well adapted for hedges. The red beech is reared without any difficulty from the seed; it grows rapidly, and if the soil is in good order, a handsome and sufficient hedge may be produced in five or six years."

The Osage Orange is the principal hedge plant in the Western States but we have seen it stated that this plant does not grow well in Canada. Who can give us the result of a fair trial? We know the beech grows to perfection; who will give it a trial?

QUICK WORK. - It was once the fashion to wear coats, the material of which had not long before been on the back of the sheep. For rapidity of work this way, I know nothing that can compete with the achievement of Coxete of Gwentham Mill, near Newbury. He had a couple of South Down sheep shorn at his factory, at five o'clock in the morning; the wool thus produced was put through the usual process; and, by a quarter past six in the evening, it resulted in a complete damson-coloured coat, which was worn at an evening party by Sir John Throckmorton. A wager for a thousand guineas was won by this feat, with three-quarters of an hour to spare. The sheep were roasted whole, and served up at a splendid banquet. In one day they afforded comfort to both the inward and the outward man.—*Habits and Men.*

USEFUL RECEIPTS.

A correspondent of the *New England Farmer* sends the following receipts to that Journal:—

REARING CALVES—I have sometimes raised calves by allowing them to suckle cows for the first three or four months after birth, sometimes by giving them milk to drink for about the same time, and in one or two instances, for want of milk, have brought them up on gruel. Latterly I have practised the following mode, and think it on the whole, the best of any I have tried:—

Take the calf from its dam when only a few days or a week old, according to the condition of the cow's bag, and learn it to drink new milk, warm from the cow, feeding it thus, twice a day till five or six weeks old. Then begin quite gradually to lessen the quantity of new milk, adding in the place of that taken away, an equal measure of skimmed milk—the milk, previous to skimming, having stood about twelve hours, and, before it is given to the calf, having been warmed to the temperature of new milk. So graduate the reduction of the new, and the addition of the skimmed milk, that the latter shall constitute the entire mess for the calf when it arrives at the age of eight or nine weeks. When the calf is five or six weeks old, give it a few dry oats, say a moderate handful daily, and increase a little at a time, till at and after ten weeks of age the calf shall receive about a pint per day; also, at the age of five weeks, begin to feed a little nice fine hay. When the calf is ten weeks old, the milk it receives may be that which has stood longer than twelve hours before being skimmed; also at and after this age, the quantity of milk may be lessened gradually, and water substituted for the milk taken away, so that when the calf is twelve or fourteen weeks old, the milk shall be wholly withdrawn and the calf shall receive hay, oats and water, or shall be turned off to good pasturage.

Thus managed, the calf will never know when it was weaned from milk—will have no season of rearing and falling away in flesh, or remaining stationary in growth—will have no troublesome habit after the time for weaning, of sucking cows that may chance to be in the pasture or yard with it, and will be quite as large, plump and symmetrical when a yearling, as though it had been raised by the more expensive mode of suckling a cow. During the winter preceding the period when the calf becomes a yearling, it should be fed on the best of fine hay, with one quart of dry oats, or six to eight quarts of mashed roots, daily. It is not a good practice to feed meal to young calves, either before or after weaning, the meal being too heating, injuring digestion and bringing on purging, and worse still, if fed freely, causing the calf to grow out of shape, picked and scrawny. It is also difficult to rear a well shaped calf on gruel, because of the meal of which the gruel is in part made, and because the quality for forming well-developed bone and a well-shaped body, which milk eminently possesses, is too much lacking in the gruel.

CURE FOR PURGING.—Take of pulverized common white chalk, and of ginger, each a tablespoonful, put the same into the calf's milk, and stir it well

while the calf is drinking it—the tendency of the chalk being to settle on the bottom of the pail or trough. I have used this remedy for a dozen years or more, and have recommended it to many persons during the time. However, if a calf is carefully watched from day to day, and fed on proper food, suitably warmed, there will seldom be any occasion to treat him for any malady.

TO CURE THE GARGET.—A writer in the *Ohio Farmer* says that a cow affected by the garget may be cured by rubbing the bag thoroughly, in all parts, with linseed oil; that one application is usually sufficient, if done on the first appearance of the disorder, and that two or three rubbings in any case will effect a cure. He also states that he has seen cows from whose bags, by reason of the garget, no milk could be drawn, so far cured in forty-eight hours that they would give nearly as much milk as previous to the attack, and show no further symptoms of the disease.

TO REMOVE VERMIN FROM CATTLE.—Dissolve camphor gum in new rum, making the liquid pretty strong of camphor, and apply it on various parts of the body of the animal. It is a harmless application, so far as the animal is concerned, leaving the coat free and clear but destroying the lice. In about two or three weeks after the first application, rub on the liquid again, in order to kill the young vermin that may have hatched out after the first rubbing. I know of no safe application which will prevent the eggs or nits from hatching.

TO PREVENT FIELD MICE FROM GIRDLING TREES.—In passing over the farm of Mr. Solyman Cune, of this town, a few days ago, I saw the following plan in use to secure his fruit trees from the depredations of the field mice, they having formerly caused him much vexation and loss by eating off the bark of his trees. Small blocks of slit-workstuff sawed say four to six inches long, are provided, and bored partly through, lengthwise, with a $1\frac{1}{4}$ inch augur; ratsbane and Indian meal are mixed together, in proportion of one-fourth of a pound of ratsbane to two quarts of meal; into the hole in each block is put a teaspoonful of this mixture, and a block is placed near each tree, the bored end lying a little the lowest, to keep out rain; the blocks are covered with boards, some two feet or so long, and of suitable width; and the mice on approaching a tree, run under a board for shelter, eat of the ratsbane and meal, and die, and the tree escapes uninjured. I examined many of Mr. Cune's trees, to see how the plan worked, and in no case discovered any injury to the bark by mice.

DISCOVERY OF GLASS.—The art of making glass is not of very high antiquity, though it appears to have been practised among the Phenicians some centuries before the Christian era. Pliny's account of its origin is very probable—"That the crew of a merchant vessel which entered the river Belus in Syria, having gone on shore, kindled a fire on the sand, and supported the vessel in which they were to cook some provisions on blocks of nitre, that made part of the cargo. The fire which gradually dissolved the nitre, and mixed it with the sand, occasioned a transparent matter to flow, which, in fact, was nothing less than glass."

THE PHILOSOPHY OF RAIN.

To understand the philosophy of this beautiful and often sublime phenomenon so often witnessed since the creation of the world, and so essential to the very existence of plants and animals, a few facts derived from observation and a long train of experiments must be remembered :

1. Were the atmosphere everywhere, at all times of a uniform temperature, we should never have rain, hail or snow. The water absorbed by it in evaporation from the sea and the earth's surface, would descend in an imperceptible vapor, or cease to be absorbed by the air when it was once fully saturated.

2. The absorbing power of the atmosphere, and consequently its capacity to retain humidity, is proportionately greater in warm than cold air.

3. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher we ascend from the earth the colder do we find the atmosphere. Hence the perpetual snow on very high mountains in the hottest climates.

Now, when, from continued evaporation, the air is highly saturated with vapor, though it be invisible, and the sky cloudless, if its temperature is suddenly reduced by cold currents descending from above, or rushing from a higher to a lower latitude, or by the motion of saturated air, to a cooler latitude, its capacity to retain moisture is diminished, clouds are formed, and the result is rain. Air condenses as it cools, and, like a sponge filled with water and compressed, pours out the water which its diminished capacity cannot hold. How singular, yet how simple, the philosophy of rain! What but Omniscience could have devised such an admirable arrangement for watering the earth.—*N. Y. Observer.*

AMERICAN CLIMATE.

Dr. Holmes, in a recent lecture on "the Americanized European," said:—

When a British steamer unloads her living cargo at our wharves, at once is recognized the contrast between the redder and rounder face, the plump developed limb and muscle, as compared with the American. They fill their coats fuller, they walk more briskly, they articulate more vigorously, they are warm, jolly, and athletic.

The change in complexion was attributed to difference in climate. The prevalent early decay of teeth was charged to the same cause. The numerous pale faces to be seen, and languid ailments, so fashionable, should not be attributed to wrong living and wrong habits as they mainly were. There were faults in this respect—lamentable faults—but the invalid was too much scolded. The lecturer adverted to means within the reach of every American, to counteract the baneful physical phenomenon to which he was subjected. The importance of air and exercise, was not, he said, sufficiently understood. The English gentlemen hunt, shoot, ride, box, play at cricket, get up pedestrian matches, and the English ladies leap fences on their hunters, tramp about like dromedaries on foot, drive about four in hand in their equipages. The reason is, they come into the world with good stout solid organizations. Why American ladies do not heartily join in such out-door exercises, is because they have not

vigorous stamina, the overflowing red blood in their veins, the substantial muscles in their limbs that drive to such exercises as a rational outlet for their superfluous vitality. The changeable weather here tended to discourage such exercises. The vacillations of temperature, contrasted with England, were referred to as causing much of the ill-health of America. The vegetative life of the American, and attendant pale complexion, narrow face, faulty teeth, spare outlines, fatigued features, were all only owing to the action of the elements and the impponderable agencies with which he was surrounded.—There was not, however, the lecturer stated, material difference in the longevity of the inhabitants of Old England and the denizens of New England. The American had strength of endurance—few lotus eaters or lazzaroni are among them. The body of the American is chastened and prepared for life, and made bold by the scourges of the lawless elements. There is little blood and much nerve in the sharp featured Roman of the new Republic.

LIME WATER IN MAKING BREAD.—In bread-making, the vinous fermentation sometimes passes into the acid, thus rendering the bread sour and disagreeable. Liebig has lately performed a series of experiments to improve the preparation of bread, from which he comes to the conclusion, that the only effective and innocuous means of improving the qualities of wheat and rye bread, is limewater. In making dough he advises one pint of clear limewater to be used for every five pounds of flour. The limewater is first added to the flour, after which a sufficient quantity of common water is added to work the whole into good common dough—the leaven being mixed with water, can be prepared by stirring some quicklime in a vessel containing pure cold water then allowing the sediment to settle. The clear is then to be poured off, and kept in bottles for use. No care is required respecting the quantity of lime to be stirred in the water, as it will only take up a certain quantity and no more. Those who use saleratus (bicarbonate of soda) in the raising of bread, are recommended to cease its use, and employ pure baker's yeast, and a little limewater. Our bones are composed of the phosphate of lime, and those who use fine flour, require for their health a little more lime than is contained in their food. Cream of tartar and carbonate of soda are inferior to common yeast for making healthy bread.—*Scientific American.*

TOASTING EGGS.—An egg, the adage says, is "*grein gun choimeas*"—that is, *the most substantial of morsels*; and a toasted egg everybody knows to be more nutritious and wholesome than a boiled one—nay, to some certain complaints, as *heart-burning*, for instance, it proves a most efficacious therapeutic. There are many, I have no doubt, who have tried to toast an egg, but who, for a very good reason, would not willingly repeat the experiment. Of this class I myself, indeed, would have been one, but for a discovery in itself very simple. The first time I tried to toast an egg, I had the mortification, not only to hear by report, but with my own eyes to see my hopes literally blasted! The cause of this disaster I leave your more philosophical correspondents to account for; my present purpose is to prescribe a preventive of such a disaster, which in brief, is just to break gently both ends of the egg before putting it in the hot embers before the fire, and also to keep it well turned in order that every part be equally toasted.—L. M. L.

WHAT SCIENCE CAN DO.—Let all the air which enters the lungs pass through a medium of carbon, and you may go to sleep safely under the shadow of the upas tree. The charcoal respirator of Dr. Stenhouse will procure immunity to him who sojourns in a rice-swamp or shoots in a jungle. The betelnut and the pepperleaf chewed together keep half starved races alive in the deltas of the Irrawaddy and the forests of Sumatra. A French traveller "preserved his health during a long and difficult voyage by the habitual use of betel, while his companions, who did not use it, died mostly of dysentery." The nitrogenous compounds to which all nations resort in intermitted fevers have a conservative as well as a curative power; the peppeworts contain "a solid white crystalizable substance, known by the name of 'Piperin,' which is said to equal quinine." The Indian, by instinct, chews the betel and the pepper together; the *rationale* is this, "while in betel chewing the astringent principle of the nut checks the tendency to internal relaxation, the fever-chasing principles of the pepper-leaf preserve the health amid the steaming vapours which the hot sun draws forth from swamps and jungles and irrigated paddy-fields." It stands upon record that a certain military officer, at a certain period critical to health, paraded all his regiments for blue pill at night, and paraded them again for black draught the next morning. See what an additional force is concentrated in a very little knowledge! The time may come when an army shall plunge boldly into the most malarious districts, parading only in the first place for betel-nut and pepper-quid; shall make forced marches of fabulous distance with an "acullico" of cocoa-leaf in their mouths; with a similar preparation, or a fraction of a grain of arsenic, shall climb heights like those which the Zouaves scaled on the day of Alma, and arrive at the summit with ample wind for a charge; shall manoeuvre to get the weather gauge of their enemies, and discharge into their ranks a few rockets charged with cyanides of kakodyle; and, having done this, shall sit down and feast like Britons upon their glory, and, like the Ottomans of Orinoco, upon a roasted ball of potter's earth.

HOME MANUFACTURED GUANO.—In one corner of your barn cellar, or in any other convenient place where it will not be exposed to the rain, build a bin or mortar bed, and into this collect your wood-ashes the scrapings of your hen house, the fine chip dirt that collects in your wood-yard, frequently shovelling it over, and mixing about the same quantity of well-rotted soil, or muck, if you have it; and you will find this to be a valuable compost for almost any purpose for which guano is used. It will be found almost equal to the best, and far superior to many of the patent manures now in vogue. About half a pint of this to a hill will be enough for most purposes. Two years ago, I tried it in my corn field with good effect. I first ploughed under the manure, and put about half a pint of the compost in the hill with it. There was almost doubt of the corn where I planted with the compost in the hill. About eight cords of manure to the acre was plowed under on the whole field. The compost gave it a start that it did not forget the whole season.—*Boston Cultivator*.

DRIED PLUM PIES.—Soak the plums, and stew them gently; season them with spice; sugar; put a puff paste on the plate; then put a layer of the plums, stewed; roll out a piece of paste thin; cover them; add another layer of plums, and cover for the last time.—You may have as many stories to your pie as you choose.

TYPE-SETTING BY MACHINERY.—John F. Trow, of New York, has at work in his office five type-setting machines—all that have been made. They are the invention of a brother of John Mitchell, the Irish exile, and the inventor gives them his personal superintendence. The *New York Mirror* states that the volume of Bancroft's "Miscellanies" was all put in type by these machines, and they are now at work on Irving's "Life of Washington." The same journal testifies that the type setting is done with remarkable accuracy and great rapidity, and adds:—"In fact, these machines cannot make a mistake if the performer upon them touches the right keys. We shall not undertake to describe this wonderful labor saving invention except briefly and in general terms. It must be seen at work in order to be appreciated and admired. The machine is of a triangular shape, somewhat resembling a grand piano forte, only not as large. It has a key-board corresponding to the letters of the alphabet and the 'punctuation marks,' as the keys of the piano represent the various notes in the scale of music; and the work is done by playing upon the finger-board precisely as tunes are played upon the piano forte. This part of the performance is done by girls, who acquire the art with great facility. The letters are supplied by long galleys, each filled with a single letter, which require constant replenishing; and every touch upon the key sends the desired letter into a long line beneath the machine, from which it is taken by a compositor, broken into lines to suit the width of his page or column, and 'justified.' The 'distribution' of the type is as ingeniously managed as the 'composition.'"

INDIAN MUFFINS.—A pint and a half of yellow Indian meal, sifted. A handful of wheat flour. A quarter of a pound of fresh butter. A quart of milk. Four eggs. A very small teaspoonful of salt. Put the milk into a saucepan. Cut the butter into it. Set it over the fire, and warm it until the butter is very soft, but not until it melts. Then take it off, stir it well until it is mixed, and set away to cool. Beat four eggs very light; and when the milk is cold, stir them into it alternately with the meal, a little at a time of each. Add the salt. Beat the whole very hard after it is all mixed. Then butter some muffin rings on the inside. Set them in a hot oven or a heated griddle; pour some of the batter into each; and bake the muffins well. Send them hot to the table, continuing to bake while a fresh supply is wanted. Pull them open with your fingers, and eat them with butter, to which you may add molasses or honey.—*Farm Journal*.

A STARE—"Father, I hate that Mr. Smith," said a beauty, the other day, to her honoured parent.

"Why so, my daughter?"

"Because he always stares at me so when he meets me in the street."

"But, my child, how do you know that Mr. Smith stares at you?"

"Why, Father, because I have repeatedly seen him do it."

"Well, Sarah, don't you look at the impudent man again when you meet him, and then he may stare his eyes out without annoying you in the least. Remember that it always takes two pairs of eyes to make a stare."

Several notices of new publications, as well as some communications, have been necessarily deferred for want of room. We hope to bring up arrears next month.

MARKETS, &c.

Toronto, June 30th.

The market for the leading staples of Agricultural produce has declined within a few days. Wheat has fallen off to 10s., and poorer samples go at less. Flour has come down proportionally; it sells by retail as low as \$9. Oats have fallen to 3s. 3d. and 3s. 6d. Potatoes may be had in large quantity at 3s. and 3s. 3d. Peas keep up; \$1 is readily got for them. Hay \$18 to \$25 per ton.

The approach of harvest and the news of a slight decline in England has depressed the markets here.

We regret to find that the Hessian Fly is doing very serious damage where, until a few days, its presence was not suspected. We think, judging from our own observations, it will lessen the crop at least 20 per cent. in the neighbouring townships. In some western townships it is reported even worse. This is a serious drawback, and will tend to keep up prices. In several of the western States a poor crop is expected, from the fly, weevil and other causes.

NEW YORK MARKETS

Flour—Heavy, and lower for inferior grades—demand limited—sales, 3,600 bbls, \$8 and 8 62½ for common to choice State—\$8.50 and 9.12½ for mixed to fancy Western—\$11 and 12.75 for extra Genesee Canadian heavy—supply small—sales, 400 bbls, at \$9.75 and 10.75.

WHEAT—Quiet, and held above buyers' views.

RYE—Firmer; sales 155 bbls.

CORN—Without important change, and active—sales 40,000 bushels, at 83 and 93c. for mixed Western, closing at 92 and 92½ for shipping parcels.

OATS—Dull.

PORK—Market steady; sales, 300.

THYME.—We have not seen any of this good old herb for years. Formerly every kitchen garden had a bed of it; indeed a garden was not thought complete without it, and every soup and bowl of broth was well seasoned with it. We used to raise it from the seed altho' it takes well from the root.—*Maine Farmer.*

GALLOWAY BULLS FOR SALE.

THE Subscriber will offer for sale at the Provincial Exhibition, to be held at Cobourg, 2 PURE BRED BULL CALVES, from imported Cows; also, 4 IMPORTED CHEVROT RAMS, to be seen at the premises of the subscriber, near Cobourg.

WILLIAM RODDICK.

Cobourg, June, 1855.

7.

VALUABLE REAL ESTATE FOR SALE.

IN the Township of Vaughan, an excellent farm, a quarter of a mile west of the Richmond Hill Station, Northern Railroad, No. 19 in the 4th concession, 18 miles from Toronto, 20 acres, 16½ in a high state of cultivation, 40 acres of the best kind of timber, with a living stream of excellent water, 30 bearing fruit trees of best quality, the buildings good and commodious, one barn 7½ by 4½ feet, with stone stables by lane, one stable and driving house 4½ by 3½ feet with sheds—the house 40 by 38 feet, two stories, with good cellars. Dairy, ice-house, woodsheds and all other buildings necessary.

—ALSO,—

100 acres in the 5th concession No. 23 west half, 75 acres cleared and in an excellent state, 25 acres of the best wood, a new frame barn 6½ by 35 feet, a log house, two wells of never-failing water. The farm is nearly all newly-fenced with 5 rails, and only 2 miles from the above station.

—ALSO,—

6½ acres in the 6th concession of Vaughan No. 24, with a frame house and a good saw-mill in excellent running order. 2½ acres of land cleared; this property rents for £70 a year.

—ALSO,—

100 acres in the Township of Innisfil, No. 13 in the 16th concession, three quarters of a mile from the Railroad. This land is of the best quality and has good living water on it, the wood is of the first quality, and is valuable as it is so near the Railway. Titles indisputable. Terms liberal. For particulars apply to Daniel McDougall on Lot No. 19, 4th concession Vaughan, or to Rupert's Post Office. (Post paid)

Vaughan, 2th June 1855.

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DAVY'S DEVON HERD BOOK,

NOW ready, a LARGE SUPPLY of both 1st and 2nd vols. bound in one book, and containing all the subject connected with the Devon records, of both England and America up to the present time; also as a frontispiece, the beautiful engraving of the celebrated picture known as the "Quarely Testimonial" which is a full length portrait of Mr. Francis Quarely, now living, at 91 years of age. It is also illustrated with two animals, Prize-winners in England. Price, \$5, can be had by enclosing the amount to B. P. Johnson, Cor. Sec. of N. Y. State Society, Albany, N. Y., Luther Tucker, Ed. of *Country Gent.*, Albany N. Y., Sandford Howard, Boston, Mass., D. D. T. Moore, Ed. of *W. G. & S. Register* N. Y., A. B. Allen, Ed. of *American Agriculturist*, N. Y.; Saml. Sands, Ed. of *American Farmer*, Baltimore, Md., A. M. Spangler, Ed. of *Progressive Farmer*, Philadelphia, Pa., Lee and Redmond, Eds. of *Southern Cultivator*, Augusta, Ga., and Wm McDougall, Ed. of *Canadian Agriculturist*, Toronto, C.W. It gives me pleasure to state that Mr. Davy has solicited Mr. S. Howard, of the *Boston Cultivator*, to collect pedigrees and illustrations in this country for the 3rd. vol. and has authorised Mr. H. to obtain information as to any and all mistakes which may have been made as to the recording of American animals in Davy's 2nd. vol., and such corrections will be made in the 3rd. vol. The Plan proposes that a copy of all the pedigrees and illustrations collected by Mr. H., as the Editor in America, shall be forwarded to Mr. Davy, and a copy of those collected by Mr. D. will be sent to Mr. H. in this country. The whole matter will be published in America for our use, and in England for their use, by which means an American and English Devon Herd Book will be united, and the price reasonable, as the expense of English printing and duties will be saved. This concert of action has been brought about by Mr. Davy's good feeling and liberality towards this country; and I am only the instrument through which Mr. Davy acts; and from this time forth Mr. Howard will receive all communications on the subject, as will appear by reference to his advertisement.

All Editors who will give the above three insertions, will receive a copy of the 1st 2nd and 3rd vols.

L. G. MORRIS,

Agent for J. Farmer Davy's Devon Herd Book.

ENGLISH CATTLE
 IMPORTED ON COMMISSION,
 BY
Messrs. THOMAS BETTS & BROTHERS,
 OF LIVERPOOL AND HERTS, ENGLAND,
 EMBRACING
 Pure Blood Horses; Short Horned Cattle; North Devons,
 Hereford; Ayrshire and Alderney Cows; Pure Bred
 South Down, Cotswold and Leicester Sheep;
 Suffolk, Essex and Berkshire Swine;
 HADHAM HALL,
 BISHOPS STORTFORD, HERTS, ENGLAND,
 Residence of Messrs. Betts & Brothers,
 Two Miles from Bishops Stortford Station, on the
 Eastern Counties Railway, and 32 Miles
 from London.

MANY of the best breeders of Stock reside within a few miles of Messrs. BETTS' residence, such as the celebrated breeder of South Down Sheep, and the gentleman who has taken the first prize the last two seasons at the Royal Agricultural Society, for the best entire Farm Horse; also several noblemen and gentlemen who keep the pure bred Short Horns.

Gentlemen will agree with us, that it is better to employ a professional agent in the purchase of stock, they being likely to know where and how to select the best cattle at the lowest price.

Messrs. Betts will always deliver with the cattle an authenticated pedigree.

As soon as they are purchased, information by the first mail will be given, stating the price, and the time they will leave England for America; also the receipt from the owners of the Cattle.

To secure importers against losses that are liable to occur to cattle on board, Messrs. Betts beg to inform gentlemen they can be insured when desired, against all accidents and disease, from the day of purchase in England till the day of delivery in America, on application to our agent.

Commi si n Charged.

Horse, each, - - - - -	\$80
Pulls or ows, " - - - - -	60
Ram or Ewe, " - - - - -	30
Three Sheep from the same owner, each, - - -	2
Ten do " - - - - -	11
Twenty Ewes, " - - - - -	8
Three Swine from the same owner, each, - - -	22
Ten " " " - - - - -	11

Expense of keep and attendance from the time of purchase up to the period of sailing from London for America, including the usual expenses, as follows:

Horse, each, - - - - -	\$40
Bull or cow, " - - - - -	25
Sheep or Swine, " - - - - -	15

Expense by Sea on Board the Steamers.

Horse, each, - - - - -	\$125
Bull or cow, " - - - - -	105
Sheep or Swine, " - - - - -	25

Keep and attendance across the Atlantic on board the Steamer per vessel for 30 days

Horse, each, - - - - -	\$35
Bull or cow, " - - - - -	25
Sheep or Swine, " - - - - -	8

Expense by Sailing Vessels.

Horse, each, - - - - -	\$140
Bull or cow, " - - - - -	80
Sheep or Swine, " - - - - -	18

Keep and attendance by Sailing Vessels provision for 60 days

Horse, each, - - - - -	\$70
Bull or cow, " - - - - -	50
Sheep or Swine, " - - - - -	15

We have been permitted to refer to two of the largest importers of cattle into America, Geo. Vail, Esq., of Troy, and Col. Lewis G. Mills of Mount Fordham, N.Y.; as regards our rate of charge, both gentlemen deem them very reasonable.

If gentlemen prefer, the stock will be selected and purchased, by charging five per cent. and traveling expenses. All other bills, such as fitting up of the Ship, provender, passage and attendance, will be rendered on delivery of the stock in America.

A full and complete list of the best stock to be disposed of in England, will be kept with our Agent,

JAMES M. MILLER,
 81, Maiden Lane, New-York City.

Parties favouring Messrs. Betts with orders, will please make use of the following Table of Specification:

BREED.	Horse.	No. of Bulls required.	No. of ows required.	Wool the year required.	Wool to be shorn by Steam or other Vessel.	If insured.
Horse, - - - - -						
Short-Horned, - - - - -						
North Devons, - - - - -						
Herefords, - - - - -						
Ayrshire, - - - - -						
Alderney, - - - - -						
South Down Sheep, - - - - -	Rams.	Ewes.				
Cotswolds, - - - - -						
Leicester, - - - - -						
Suffolk Swine, - - - - -	Boars.	Sows.				
Essex do. - - - - -						
Berkshire, - - - - -						

Short Horns, Devons, Herefords, Ayrshire, Alderney Cows, South Down Sheep, Cotswold, Leicester, Hampshire South Down Sheep, selected and imported on commission to any part of America, by Messrs THOS. BETTS & Co., Liverpool and Herts, England. Circulars, containing the prices of all kinds of Stock, and the expenses to America, also giving the weight and quantity of wool of all kinds of Sheep, can be received by applying personally or by letter to our agent J. M. Miller, 81, Maiden Lane, New York City.

N.B.—A Model of a Patent which, for future will prevent all accidents occurring to Cattle, can be seen at 81, Maiden Lane, N.Y. and at Liverpool.

In answer to numerous enquiries respecting the prices of the best stock in England, such as should be imported to America, can be obtained at the following prices:

		S.	S.	S.
Thorough Bred Horses, from - 1	to 2	0	12	0
Short Horn or Durham Bull - 4	0	15	7	0
Do " " ows - 2	0	8	4	0
Do yearling Bull - 2	0	1	5	0
Do do Heifer - 1	75	4	25	0
Herefords Bull - 3	0	8	5	0
Do " ows - 2	0	6	25	0
Devons Bull - 3	0	8	4	0
Do Cows - 2	0	5	25	0
Ayrshire Bull - 1	5	3	3	0
Do " ows - 1	0	25	2	0
Alderney Bull - 1	5	225	175	0
Do " Cows - 1	0	15	125	0

Will weigh Will shear when fitted of washed and dressed wool.

Cotswold Sheep Ram - 1	60 to 3	0	13	125	12	0
Do Ewe - 2	5	1	0	3		
Leicester Sheep Ram - 1	0	2	12	13	1	
Do Ewe - 2	0	8		25		
South Down Sheep Ram - 1	0	3	112	125	6	to 9
Do Ewe - 2	5	1	0	3		
Hampshire do Ram - 7	5	125	12	13	1	0
Do Ewe - 1	5	25		2		
Swine Boars - 2	5	5		40		
Do Sows - 1	5	40		25		

Merino Sheep from Spain Mules from Spain. 5

THOROUGH BRED SHORT-HORNS.

THE Subscriber offers for sale, 3 Thorough Bred Short-Horn Durham Bull Calves, descendants of the celebrated Bull, "Redville," champion of England, Ireland and Scotland

RALPH WADE Snr.
 Spring Cottage, Hope.

M-y 22, 1855.

JUST PUBLISHED,

THE Journal and transactions of the Board of Agriculture of Upper Canada, No 1, Vol 1st, pp 160 Toronto: printed and published by Thompson & Co., for the Board of Agriculture. This work will be issued in quarterly parts, four of which will form a volume. The first part embodies the transactions of this Provincial Association from its institution in 1846, down to the commencement of the year 1851. The next number will contain an account of the further proceedings of the Association and the Board of Agriculture, Prize Essays, Abstract of County Reports, &c

The work will be sent free by post for 5s per annum. All communications and remittances to be addressed to the Secretary of the Board of Agriculture, Toronto.

TORONTO, May 1, 1855.

UPPER CANADA STOCK REGISTRY.

To Owners and Breeders of Thorough Bred Horses and Cattle.

THE BOARD OF AGRICULTURE FOR UPPER CANADA, having determined to open a REGISTER, at their Office, in this city, for thorough Bred Horses and Cattle, Notice is hereby given, that any person desiring to avail himself of such register, can do so under the restrictions herein mentioned, furnishing duly certified particulars to this office; and can obtain a certificate of the same, which shall be held as officially correct in all future transactions relating to the stock so registered.

No Animal shall be registered, unless a clear and distinct connection be established, to the satisfaction of the Board, both on Sire and Dam, with the British or American Stud and Herd Books.

Where the Animal to be registered has been purchased by the person desiring to register, or has been imported for breeding purposes, a correct statement must be given of all particulars before a certificate can be issued.

It is desirable, in order to facilitate the taking of entries for the Provincial Exhibition at Oshawa in October next, that persons desiring to register stock should do so at an early date, as all animals for which Register certificates shall have been given will be entered without further inquiry. Owners of stock are recommended to keep Duplicates of Pedigrees.

G. BUCKLAND, Secretary.

Office of the Board of Agriculture }
Toronto, March, 1855. }

DRAINAGE AND SEWERAGE PIPE MACHINE

CHARNOCK'S PATENT.

BY this Machine, Drainage and Sewerage Pipes of all descriptions, as well as perforated and other Brick, Flooring Tiles &c., are molded with the greatest facility and precision.

A man and three boys can turn out from 5, 0 to 15, 00 feet of pipes per day, according to sizes; and if worked by horse, steam or water power, a proportionate increase will be obtained.

This Machine is in extensive operation in England, where, in addition to the testimony of numerous Tile Makers, as well as that of the first Machinists of the day, the following Prizes have been awarded to it.

- By the Yorkshire Agricultural Society, at its annual meeting, 1845, as the first Tile Machine with a continuous motion, ----- £5 0 0
- By the same Society, the following year as the best Machine of the day, ----- 10 0 0
- By the Lancashire Agricultural Society, at its annual meeting, 1845, ----- Silver Medal
- By the Highland Agricultural Society, at its annual meeting in 1846, as the best machine ----- 5 0 0

At the meeting of the New York State Agricultural Society, at Saratoga (1853), a working model of this Machine was awarded the Silver Medal and Diploma; and at the Fall Exhibition the same year of Lower and Upper Canada, held respectively at Montreal and Hamilton, the same Model was awarded a Diploma from each Society. It was awarded the First Prize and Diploma at the recent Exhibition in London Canada West.

The price of the Machine is £50, (half cash and remainder at six months), with five Dies for Pipes. Brick and other Dies at a moderate charge.

The Patentee guarantees the effective working of the Machine.

All orders to be addressed to

JOHN H CHARNOCK,

Drainage Engineer, Hamilton, C. W., the Patentee.

Hamilton, March, 1855.

SPRING STOCK OF IMPLEMENTS.

THE Subscribers beg to inform Agriculturists and Horticulturists, that they have received a large and varied assortment of

FARM & GARDEN IMPLEMENTS

And would solicit a call from parties about to purchase, at No. 77, corner of Yonge and Adelaide streets, Toronto. They have on hand a quantity of the most improved Lap Furrow Ploughs, which have of late been so much in demand. Reaping and Mowing Machines on the most improved principles, will be for sale in their season.

McINTOSH & WALTON.

TORONTO, 1st May, 1855.

TO BREEDERS.

THE Thorough Bred Short-horned Bull, "JOHN O'GAUNT," Second, Bred by John S. Tanqueray, Esq., Hendon, Middlesex., England, imported by Frederick Wm. Stone of Guelph, October last.

This very superior Young Bull will be kept at the Subscriber's Farm, Farnham, Puslinch, five miles from Guelph.

Terms for Service—Thorough bred, Five Pounds; if grade, 5s.

Parties wishing it, can have pasture at a reasonable rate. No risk by subscriber.

His sire, "John O'Gaunt" (1621 English Herd Book), was sold in 1833 for \$4,000.

FREDERICK WM. STONE.

Guelph, April 24, 1855.

COMBINED REAPER AND MOWER.

Monny's Patent with Wood's Improvement.

THE Undersigned are now manufacturing the above Machinery which has been thoroughly tried through the United States, and have given entire satisfaction. In the frequent trials made with every machine that has any claim to reputation it has proved the best in the following points, viz.:

Its perfect adaptation to uneven surfaces—it means of adjustability to various heights of cutting—its lightness of draught—the ease and facility with which it can be removed from field to field upon its own wheels, and changed from a reaper to a mower, and vice versa—the construction, for strength and durability—and its capacity for doing business.

By means of suspending the frame to the axle of the wheels the joint and lever, the driver is enabled at his will to elevate or depress the cutters from one to fifteen inches from the ground; and with the oblique platform the raker is enabled to discharge the grain in gazels, at a sufficient distance from the standing grain to allow the team to pass, so that the whole field may be cut without removing any of the grain.

Price, with two sets knives, \$130. We are also manufacturing Baroll's Reaper, price \$120; and Ketchum's Mower as improved, price, with two sets of knives, \$110, warranted.

These machines are capable of mowing or reaping from ten to fifteen acres per day on smooth land, as well as can be done with scythes or the cradle.

H. A. MASSEY & Co.

Newcastle, May 6, 1855.

THE CANADIAN AGRICULTURIST.

IS PUBLISHED MONTHLY, at Toronto, Upper Canada, and devoted to the improvement of Agriculture, Horticulture, Farm Mechanics, and to the advancement of the Farmers' interests generally. It commences its SEVENTH Volume this year, 1855. Each number contains 32 large octavo pages.

The *Agriculturist* is illustrated with Engravings of Cattle, Implements, Farm Houses, Farm Buildings, &c., and is the only Agricultural paper printed and published in Upper Canada. Receiving as exchanges the leading Agricultural Journals of the United States and Great Britain, the Editors are able to select and lay before their readers every thing of value that may appear in these papers.

The *Agriculturist* contains, beside Editorial and Miscellaneous matter, Reports of Farmers' Clubs Essays, Proceedings of the Board of Agriculture, Prize List of the Agricultural Association, Information and Hints to Agricultural Societies, &c. &c. It is strictly a CANADIAN work, and should be taken in by every Farmer who desires to improve himself, or who feels any pride in the advancement of his country.

Professor BUCKLAND, of Toronto University, continues to assist as Editor.

Some of the most intelligent Practical Farmers in the Province are contributors to this journal.

The *Agriculturist* is not a second edition of the *Genesee Farmer*, nor of any other foreign publication. It is a home production and asks no man's support under a false name. It is a true not a spurious *Canada Farmer*.

TERMS

Twenty copies or upwards, each - - - - - 2s. 6d.
Single copy - - - - - 5s.

* The *Agriculturist* is not liable to Postage.

† Newspapers inserting the above will do us a favour, and entitle themselves to a copy without exchange.

WM. McDOUGALL,

Publisher, Toronto.

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