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AGRICULTURAL JOURNAL,

AND

TRANSACTIONS

OF THE

Lower Canada Agricultural Society.

VOL. 1.

MONTREAL, JANUARY, 1849.

NO. 1.

THE Council of the Lower Canada Agricultural Society having determined to publish their Journal, in conformity with the Resolution adopted at the General Meeting in June last, conceive that the present is a suitable time to commence, as farmers will have more leisure now, and during the winter, to devote to reading and study, than when occupied in the work of spring, summer, and harvest. The Society will endeavour by means of this Journal to supply useful information for the farmer's reading and entertainment; and it shall be enlarged in size, in proportion to the encouragement given by the number of subscribers, as the Society have no desire to make a profit by the publication. There is abundance of useful matter on Agricultural subjects to select from, to fill a sheet of double this size, monthly, provided adequate support is obtained. The sole object of the publication will be to promote the interest and prosperity of the farmers, and the country generally. Political subjects are to be strictly excluded, and all subjects that are not of a useful character. The degree of support, therefore, which the Journal obtains, will show clearly how the improvement and prosperity of Canadian Agriculture is generally estimated. If the trifling subscription of five shillings annually is withheld for a publication of this description, and the only one in Lower Canada, Agriculture cannot be very highly estimated by the Canadian community, or its improvement considered of any importance. We know that few will deny, in words, the importance of Agriculture to this country, but this admission

alone will never produce the improvement required to make our Agriculture of real importance to every class of this community. It is only when our Agriculture is in such a healthy and flourishing condition as to produce a large surplus beyond the consumption of those engaged in it, that it becomes beneficial to the country generally. The best means to ensure this surplus should be an interesting subject to every resident in Canada. A country yielding a large produce will have more to expend in every way than one which yields only a scanty produce. At no former period was there so great an inducement to improve the system of husbandry, and augment the quantity of human food. Indeed we might say there is an obligation upon us to improve to the uttermost the advantages of climate and soil we possess, in order that we may have a surplus for our fellow subjects who may need it. In almost all other countries, great efforts are now being made to advance the improvement of husbandry, and there is no good reason that we should not follow this general example. The population of the world is rapidly augmenting, and if food is not augmented in the same proportion, other countries thickly populated, may be subjected to the same dreadful calamity that was brought upon the Irish people last year for the want of sufficient food. No modes of cultivation or farm management shall be recommended in this Journal, that every farmer may not adopt, so far as his capital will admit, and those of limited capital will be able to adopt such improvement as their means will

allow. Every farmer, we trust, may have confidence in the information and suggestions that will be submitted in this Journal. As far as it may be possible for us to judge, it is only what may be practicable that shall be recommended. Its columns shall at all times be open to useful communications on Agricultural or industrial subjects, and such communications are earnestly solicited. Every individual who thinks he can contribute to the improvement or welfare of his country, will have it in his power to communicate his views, subject, of course, to the approval of the Journal Committee, previous to publication. The publication is not private property, but will actually belong to those who contribute to its support, and it shall be conducted for the general good. To all Agricultural Societies we particularly appeal; their object is to promote Agricultural improvement, and the Lower Canada Agricultural Society have no other object in this publication, or in any other measures they may adopt. This number of the Journal will be addressed to those who, we hope, will subscribe. We must necessarily omit many who may be willing to subscribe, but we beg this omission may not be attributed to any wilful neglect or disrespect on our part. We shall be most happy to receive orders for the Journal from any individual we may have omitted to send the present number to. It is intended to publish advertisements of lands, stock, farm implements, seeds, and other matters having reference to Agriculture, at moderate rates; such advertisements to be sent to the Secretary a few days previous to the first of each month. The Journal will be published regularly about the first of each month. An index and title page will be given at the end of the year. All communications to be addressed to the Editor, Post Office, Montreal, post-paid, or to be left at the Publishers, Messrs. Lovell & Gibson, St. Nicholas Street.

At this particular period, after we have witnessed the ravages of typhus fever in Montreal,

it may be proper to enquire what remedy may be possible to adopt against the recurrence of such a calamity? The country generally is interested in this matter, because if towns have typhus fever, it will certainly extend to the country. Mr. Guy, in his lectures on the health of towns, endeavours to establish the following propositions:—

“1st, That towns are unhealthy. 2nd, That one of the leading causes of their unhealthiness is defective cleansing and drainage. 3rd, That the refuse of towns, which, when allowed to accumulate within their precincts, impairs the health of their inhabitants, and gives rise to severe and fatal diseases, may be most advantageously applied to Agricultural purposes. The principal statistical facts, by which these propositions are proved, cannot be too generally known, or too deeply impressed on the mind.”

The following is a brief recapitulation, that, we hope, may be acceptable to our readers:

“If we compare one million of the inhabitants of large towns with the same number of those of rural districts, the inhabitants of towns lose nearly 8,000 more every year than the inhabitants of the country. The average duration of human life in town is much lower than in the country. The mean duration of life in the county of Surrey is 45; in London, 37, and only 26 in Liverpool. The inhabitants of the metropolis, therefore, taken one with another, when compared with those of Surrey, lose 8 years of their lives, and the inhabitants of Liverpool, 17 years! In a single metropolitan parish—that of St. Giles’ and St. George’s, Bloomsbury—while the gentry, who inhabit the open squares and broad streets, live, on an average, 40 years; the working class, who inhabit narrow lanes, blind courts, and dark cellars, live only 17 years; that is to say, they lose, one with another, just 23 years of their lives.

“In treating of his second proposition, Mr. Guy states, ‘In regard to the town of Preston, that in streets, which are well cleansed and drained, the mortality among children under one year old, is 15 in the 100; in streets moderately cleansed and drained, 21 in the 100; and in streets badly cleansed and drained, 44 in the 100; being, as nearly as possible, three times the mortality of streets kept in proper condition. * * * The diseases which prevail in these neglected places are of the class of contagious disorders. Pestilence has always haunted scenes of filth.’ The plague, the black-death, the camp, jail, and ship fevers, the cholera—all have made these scenes their favourite resort; and typhus fever, our modern pestilence, forms no exception to the rule. ‘The districts in which fever prevails,’ says Dr. Southwood Smith, ‘are as familiar to the physicians of the fever hospital as their own names.’ What is the character of these districts? ‘There is uniformly bad sewerage, a bad supply of water,

a bad supply of scavengers, and a constant accumulation of filth.'

"The inducements to correct this lamentable state of things are twofold: First, the removal or mitigation of contagious diseases, which, by finding a stronghold in such places as have just been alluded to, endanger the health of an entire population; and secondly, the valuable purposes to which the substances causing these diseases can be applied in Agriculture. The fruitful cause of disease may thus be made a source of fertility; we may thus minister to the health of our towns, and the fruitfulness of the surrounding country, by one and the same means."

The above extract is well worthy the attention of our city authorities. Every means should be adopted, both in Montreal and Quebec, to perfect the drainage, and provide for regularly cleansing the streets and the cities generally. We have the typhus fever in the country now, and it is most essential that all possible precautions be taken to prevent its spreading further, and every remedy be applied to cleanse the cities and country of this dreadful pestilence. In conclusion, we give the following few lines from an article published on "the necessity for rational and sanatory methods of sepulture." In reference to Ireland, it remarks:—

"Will the results of the famine now devastating Ireland disappear this season? No! nor for twenty years. Could food, even by a miracle, be placed now, and in perpetuity, and in profusion, at the command of every living being in that wretched, most wretched country, health or rather freedom from disease and pestilence is beyond their possible attainment. The source of future typhus "lies festering" at the very feet of the unwary passenger, a few inches of soil only hide, and barely hide, thousands of corpses that lie stricken by the pestilence; and these will rise again in foul miasmas, in putrid gases, and spread desolation on future occupiers of that unfortunate land."

This is another subject that should be a warning to us to be cautious how the bodies of those dying of typhus are disposed of after death.

The following we copy from "The Farmer's Note-book," No. 16, published in the "Transactions of the Highland Agricultural Society of Scotland."

"Richardson, on the Domestic Fowl.—This little work is a cheap and compendious summary of nearly all most deserving to be known, respect-

ing our domestic poultry, by one who seems to have considerable acquaintance with the subject. We believe that the management of poultry has been a good deal improved of late; but much may yet be done, especially in improving the breed, and selecting the most useful varieties. Among the small farmers, a very poor and degenerate race of fowls are generally found, and these occasion just as much trouble and expense, in keeping, as a more valuable race. Were they made sensible of this, and facilities afforded for introducing an improved breed, which can be so easily multiplied, no inconsiderable benefit would accrue to them. The author shows, that, besides being an interesting recreation, the breeding and rearing of poultry may be rendered a very profitable pursuit; considerable profit may arise from the disposal of superfluous stock, especially if the attention be confined, as it ought, to the more valuable varieties. The Spanish fowls are perhaps the best layers. Mr. Richardson recommends the expediency of improving the breed, by an intermixture of Malay, Spanish, and Dorking fowls; he describes no fewer than twenty-three varieties of domestic fowl. At the head of these stands the Malay fowl, as the most excellent of the poultry yard, but the author is of opinion that, by crossing with the Dorking, an improved breed might be obtained. One of the most remarkable kinds of fowl, existing in the British Isles, is named the Ostrich, Cochinchina fowl. This gigantic bird, says Mr. Richardson, has only very recently been introduced into Great Britain, and it is to that royal patroness of poultry fanciers, the nature-loving Victoria, that we owe their addition to our stock of domestic fowls. Our beloved Queen was graciously pleased to send a brace of these noble fowl to the Royal Dublin Society's Show; and Mr. Nolan, of Dublin, a poultry fancier, has also imported several specimens. Her Majesty subsequently presented her fowl to the Lord Lieutenant. This variety of fowl so far surpasses, both in size and power, all that we have ever yet seen in the shape of poultry, as to lead many, who have been permitted to inspect them, to prefer them to the family of bustards. They are, however, genuine poultry. Their general colour is a rich, glossy, brown or deep bay; on the breast is a marking of a blackish colour, and of the shape of a horse-shoe; the comb is of a medium size, serrated, but not deeply so, and the wattles are double. Besides their gigantic size, however, these fowls possess other distinctive characteristics, among which I may enumerate the following:—The disposition of the feathers on the back of the cock's neck is reversed; these being turned upwards, the wing is jointed, so that the posterior part can at pleasure be doubled up, and brought forward between the anterior half and the body. I am not aware whether trial has yet been made of the flesh; but from the white colour and delicate appearance of the skin, I feel confident they will afford a luxu-

rious and princely dish. The eggs laid by the hen of this variety are said to be large, of a chocolate colour, and to possess a very delicate flavour. One of the hens, Bessy, exhibited by Her Majesty, laid 94 eggs in 103 days. What a noble crop might be produced between this prodigious variety, and the plump, short-bodied, and useful Dorking."

We shall again give selections from this little work.

CHEAP POTASS MANURE.—CRUSHED GRANITE AND LIME.

Granite contains varying proportions of potass, sometimes as much as 10 per cent.; but in too hard and compact a state to yield readily to the weather, or to the decomposing agents of the soil; but by turning it whilst red hot into water, it is rendered quite brittle and crumbly; and being then mixed with fresh slaked lime and water, is made much more susceptible of decomposition, and easily yields part, at least, of its potass. The surface granite, already softened by the weather, will not do, having lost part of its alkali.

The chippings and fragments of the solid stone, accumulating at the granite quarries, may be heated with turf or other fuel in common lime kilns, and raked down into water as fast as they get just* red hot, in which manner many tons per day may be done in one kiln. Thus rendered brittle, it may be rapidly crumbled by a water-power crushing mill; and as turf and water-power are both plenty about the granite hills, this rough powder might be sold to the farmer at a lower price than lime.

A ton of this powdered granite mixed with a ton of fresh lime, being heaped up on a thick bed of earth, and closed in all round with earth, leaving the top open; water is to be poured on, gradually enough to slake the lime entirely, and then all covered in; the bed of earth at bottom being about two feet thick, and round the sides eight or nine inches, making good the cracks produced by the swelling of the lime in slaking. After two or three days it may be uncovered, the granite and slaked lime well mixed up with more water to soft mortar, and again all covered in close with earth. In this state it may be left two or three months at least, and better if longer, keeping it still wet and soft, that it may not clot into lumps. When wanted to use, the whole heap should be well mixed together, including the earth, which will contain solution of potass, leaked out of the mixture. It is then fit for spreading.

A ton of granite per acre thus prepared, applied once in ten years, will keep the land fairly supplied with potass in a fair course of cropping; and the wheat crop may be the best place for its application.

J. PRIDEAUX.

* If overheated it does not answer so well, rather binding the potass than loosening it.

CALF REARING AND COW FEEDING.

The following extract, which will be read with interest, we take from the 5th edition of the "Irish Small Farmer;" by William Kelly:—

"The true way for the poor man to rear his calf is from the dish or pail. As soon as the calf is dropt, some oatmeal mixed with a little salt should be shaken over it, which will induce the cow to lick the young animal perfectly clean and dry. It should be then taken from the cow and fed with 3 pints of new milk—the foremilk at each time, morning and evening, with a quart, heated milk-warm, in the middle of the day. The second week it should get 2 quarts, morning and evening, with a quart in the middle of the day. The third week a pint of hay tea may be added at each time; the fourth week, bean-meal boiled into gruel, linseed meal made into a jelly, or oatmeal gruel may be added, and the feed at the mid-day taken away and the milk gradually decreased; the seventh week skim milk only need be used with the other mixtures, and as the calf advances in age, the bean-meal may be increased, and the milk decreased; the calf may be weaned at 15 weeks old.

"Cow feeding should be attended to with the greatest exactness, the feeds should be given exactly at the same hour every day; watering regularly, and cleanliness at all times should be strictly attended to. Mangel-wurzel with bean, pea, and wheat or oat straw will constitute the winter provender for cattle on all farms above 3 acres; on those of less than 3 acres, some hay must be purchased. Five stone of mangel-wurzel with 2 stone of pea, bean, or oat straw per day will keep a cow in good milking condition, during the winter and spring months. It should be given in 4 feeds; viz:—1st feed early in the morning before milking; 2nd, at eleven o'clock; 3rd, between 2 and 3 o'clock; 4th, between 6 and 7 o'clock at night. The animal may be turned out to water, or into an open field, for a few hours, every day, but this is not absolutely necessary: take particular care, however, to give water regularly. In summer the cow may be fed, six times every day, with clover or vetches, which should, in every case, be cut at least six hours before being used, and, in the mean time, kept free from wet; about 2 stone weight may be given at each time, with a little fresh straw between each feed, and a little extra at night; very little water will be requisite, but it must be given regularly. I take this opportunity of remarking, that in every instance where house-feeding has failed, where the cattle get scouring, &c., within the extent of my observation it was consequent on neglect, on giving too much at one time and too little food at another time, and not giving the feeds at the regular hours every day. Keep the cows particularly clean by currying and fresh bedding of straw, sand, or turf-mould. Young cattle should have their liberty in an enclosed yard, which would be

much better by having an open shed on the south side, where they should be fed and watered as regularly as the cows; but, of course, getting less food of every kind."

SHED FEEDING.

Being advocates of no se-feeding sheep, as well as every other description of stock, on all suitable occasions, knowing from experience, the great advantages derived from the practice we wish to give our readers the benefit of all the pros and cons we can collect from the experience of others as well as from our own. We, therefore, invite the attention of our readers to the following from the *Agricultural Gazette* :—

"You will confer a great favour upon ordinary farmers by inducing those gentlemen who have so zealously encouraged the system of feeding sheep in stalls, to explain more minutely the actual profits thereby obtained. Both Sir Richard Simon and Mr. Huxtable have recorded the weekly increase in weight of stall-fed sheep, but have by no means explained the comparative profit obtained between their mode and that of those farmers who take proper care of their sheep upon the turnip land. Sir Richard Simon's average increase weekly appears to be 3 lbs., that of Mr. Huxtable, 3½ lbs. How much of this, being live weight, is actual profit to the farmer is the question. I have recently weighed three sheep just before being slaughtered. I again weighed them when reduced to meat, to that state from which I calculate their value when sold. The following was the result :—

	Alive.	Dead.
No. 1.....	155 lbs.....	84 lbs.
2.....	170	100
3.....	160	102
	495	286

"The alive was to the dead weight, therefore, as about 5 to 3. Taking the above as a standard, Sir Richard Simon's sheep gain weekly in meat, 1½ lb.; Mr. Huxtable's, a trifle more, which, at 6d, per lb., would amount to about 10½d. It is true this latter gentleman is of opinion that the increase of half-fed sheep is mostly fat or meat. I, however, doubt the fact, and consider it as assertion without proof. I know not how to test it. [We have lately sold some 290 fat sheep by weight, and our result is much the same as yours, that the carcase is somewhere between 11½-20ths and 3-5ths of the live weight; but do you suppose that if the sheep had not been fully grown, and in fair order, it would not have been less? If a fat sheep weighs when alive 170 lbs., its carcase may weigh 100 lbs., and its offal, therefore, 70 lbs., but that sheep when lean and weighing 120 lbs., would have a great deal more than 2-5ths of it offal; its carcase would probably not weigh more than 45 lbs., and its offal 55; and, if so, the offal of a full grown sheep will have increased from

55 to 70 lbs., only, while its carcase has increased from 45 to 100; and we believe that in the case of an old sheep nearly fat, its growth is almost wholly in the carcase.] If my calculations are nearly correct, I cannot discover the great advantages of feeding sheep in stalls. I should be much disappointed if my best sheep did not gain upon turnips and cut clover in the field, 10d. I am certain they do. I am saved the expense of hauling home my turnips, and of dragging back my manure—a matter of serious import. If in error, I should like to be corrected; but a statement leaving out some of the most important items for the consideration of practical farmers, ought not to induce us to alter a known good system for another, which may, but has not been proved to be better—*A Lincolnshire Farmer*. [For the last four or five years we have had 200 to 400 fattening sheep under roof during the winter, and we do not intend to give up the practice. The main advantage consists in the less quantity of food which a sheep when sheltered will eat.]"

COMPOSITION AND EFFECTS OF DECOMPOSABLE MANURES.

BY MR. TOWERS.

The subject of manure appears to be inexhaustible; it has been treated of by men of the first order of science, and examined in all its bearings, while the merely practical farmer has gone on in the ordinary routine, applying decomposable substances to the land, which experience has taught him, as well as the most inquiring philosopher, to consider the *pabulum* of vegetable life, the restorer of land deteriorated and impoverished by vegetable crops.

Of late years, the theory of nutrition by the *absorbent powers* of the leaves has rapidly advanced, and now we can hardly take up a paper or periodical wherein the imbibation and assimilation of carbonic acid are not spoken of as facts established upon conclusive evidence.

I am not prepared, nor do I desire to impugn this doctrine; but I may be permitted to question its accuracy, simply because the plants, or portions of plants, which have been made the subjects of experiment, were either placed in unnatural situations, under glass, exposed to sun, and frequently surrounded by gases foreign to their constitution, or they consisted of parts and mutilations, and detached from the parent stem, and thus utterly deprived of any connection with the roots. A cutting is in truth a member of a vitalized body that will act in a manner wholly different from its original. Let such member be placed in any coloured infusion, and it will imbibe that fluid, and exhibit the tint thus absorbed partially throughout its entire length. But let a perfect small plant of the same kind, growing in a pot of the most simple earth, be watered with the same fluid, and then no colour whatever will pass through the organism of the roots. I have tried this

experiment repeatedly, and suggested the results to the late eminent Mr. Knight, who once admitted the fallacy of all results obtained by experiments with mutilations. Thus, also, rooted plants or suckers, examined *under water* covered by bell glasses, exposed to the influence of a glaring sunbeam, cannot reasonably be expected to exhibit any of the natural phenomena of vegetable vitality. The *modesty of simple doubt* may then be permitted to those who cannot wholly assent to all that has been asserted.

To drop this subject—which I consider to be, on the present occasion, merely introductory to the notice of another subject established upon far more certain evidences—we will come at once to the *composition and effects of decomposable manures*, as applied to the soil. The following owe their origin to the perusal of a very interesting essay by M. Girardin, profound in its reasoning, and to which they will serve as a commentary.

Our essayist takes for his basis, that ordinary manure which is obtained from healthy stall-fed cattle, to whom an abundant supply of good food partly dry, partly green, is given, the animals being also supplied with a sufficient quantity of litter to absorb the excretions.

An important question is here presented—“What is the best state in which manure can be employed—is it better to allow it to ferment, or to lay it on the land at once?” To answer this question, the component parts of dung coming immediately from stables must be understood. This fresh manure is a gross mixture of straw and other vegetable refuse, which have been used as litter, with the solid excrement and urine. Fresh manure which has undergone scarcely any fermentation, contains the following substances:—

Water,.....	75
Soluble vegetable and animal matter, and salts,..	5
Insoluble do.,.....	} 20
Insoluble salts,.....	
Vegetable fibre and straw,.....	100

Reduced by long fermentation to black “spit-dung”—manure according to Boussingault, contains:—

Water,.....	72.20
Organic soluble matters, and soluble salts,....	1.50
Insoluble salts,.....	10.27
Straw converted into peat,.....	12.40
Finely divided peaty matter,.....	3.62

100.000

Here the water is decreased by 2.80 parts in the hundred, but the vegetable matter is changed to the condition of what is termed “peat.” To say nothing of the dissimilarity of reduced manures dependent upon the components of the excretions, and the activity, greater or less, of fermentation in the masses, I should be inclined to substitute the word *humus* for that of peat, a substance which is formed by the long protracted decay of very old vegetable masses. However, either the one or the other will furnish a decisive proof of the invaluable corrective qualities of quick or shell lime.

I have, on many occasions, taken advantage of the excellent article published in this Journal, some months since, on lime, and its reclaiming influences, by Mr. Rowlandson. My own experiments, founded on that article, were conclusive, and one or two of these I shall again adduce, as open to every one, and therefore more likely to be useful. *Humus*, and *humic acid*, were terms generally in vogue some years since, and employed to express those substances formed by long decay, and which were supposed to be the *prepared food of plants*; hence, old spit-dung, very rotten leaves and wood, and the black matter of heath-mould, or moor-peat whereon “heather” grows, were supposed to represent humus.

If any one of these substances be digested, hot or cold, in a watery solution of pearl-ash, soda, or ammonia, particularly if in a caustic state, the colouring matter will be extracted, and the alkali become more or less neutralized. Caustic ammonia excels in this extracting and combining power, and it is the basis most appropriately applied, because, by combination with that part of humus which is called *humic acid*, the pungent ammoniacal odour is subdued, and thereby furnishes a sensible proof of the neutralizing process.

The dark fluid thus obtained, resembles that of the liquid manure, which floats abundantly to waste in five-sixths of the farm-yards in England: and both one and the other are affected by quick-lime, or even by strong lime-water in the way now to be described.

suffer the brown ammoniacal humate to stand after been drained from the substance digested, till the liquid become clear as possible; do the same by the drainage from a dunghill; place a cupful or more of it in a deep glass vessel, and stir into it a small quantity of powdered lime, or pour in so much lime-water by slow additions, as long as it throws down dingy grey flocks. Stir the former vessel, and then let both settle, and thus proceed till the lime and the lime-water produce no further change, and then the results will be an almost total destruction of colour, leaving the liquid of a pale hue. That wherein lime-water was used will have a sediment below it, more flocculent, but less in quantity, because the matter deposited is a pure *humate of lime*, whereas that in the other vessel combines with it the surplus or excess of powdered quick-lime.

To render the experiment conclusive, take any of the substances named, and rub into them about the same proportion of powdered lime as was used in the first operation; then pour so much boiling soft water over the mass as will make it fluid, and enable it to deposit the muddy sediment. The floating liquid will then be pale—wholly void of that deep porter colour which was produced by the three alkalis before named. The lime, therefore, has combined with the humic extractive, fixed it as an insoluble humate, and in a condition to be acted upon by the soil or by the roots of plants by slow degrees.

Thus, then, lime is a corrector—one which combines with, and fixes redundant vegetable matter, or at least that portion of it that is in any degree soluble in water, or in the solution of soda, potash, and ammonia; and by the substantiation of this great fact, the fixture of the nutritional quality of humus and humic acid has been proved, and the reclaiming power of lime upon old inert mosses and peat-bogs, established upon philosophical principles.

If it be admitted that lime acts beneficially upon surplus vegetable matter, and in peaty or rusty bogs, chiefly by the paramount affinity which it possesses for *humic acid*, the advocates for a very moderate degree of fermentation in the masses of dung, acquire a strong position, since it is obvious that a protracted fermentation terminates in the production of a cold humus mass, which consists of little else than black carbon, effete inorganic matters, and the said humic acid, soluble in the saline alkalis, but fixable by the action of lime. But, independent of the final conversion of manure into a substance replete with matter injurious to crops, the loss sustained in actual bulk is very great, amounting to at least one-fourth. From observing the decrease of a common hot-bed, 5 feet high, the dung of which cost, at the first purchase, 7s. per two horse-load, I should infer the loss to be much greater, for in the space of a year this depth of farm-yard dung was reduced to a little more than a foot, and in substance, to a moderate cart-load. Davy insisted upon the efficacy of absolutely fresh dung, and thought he had prevailed upon the late Lord Leicester to adopt the use of it at Holkham. He, however, was to a certain extent under error, as Mr. Coke himself assured me by a letter, wherein he detailed the method employed to form his compressed manure mass, which, subsequently, obtained the name of Norfolk pie.

Numbers of agriculturists are practically acquainted with it, but others may be curious on the subject; therefore, I refer to the latter itself, which, however, it is extremely difficult to decipher.

“My custom is, to carry out all the manure made in the separate yards during the winter, as opportunity may offer, into the fields intended for turnips, calculating the quantity at 10 loads per acre. In the first instance, I make a platform of earth, (to receive the manure,) and then I cart over it a proportion of cow-dung, which I deem to be the weakest manure; upon that pig, which I hold to be the best; then some from store and fold cattle, followed by horse-dung, and then more of the pig, always compressing the heap by carting over it. Then I plough round it, and throw a light coat of earth over the top and sides to keep it from fermenting. It remains in this state to within a fortnight of sowing the turnips, when I turn it over, and in its fermented state it is put into split ridges of 27 inches, the ground turned over it by the plough, and the seed sown

immediately after.”—*Quarterly Journal of Agriculture.*

Rural Chemistry. By Edward Solly (2nd Notice.)

In our further notice of this work we extract the following on “*Manures*,” which is of a practical and useful character:—

Amongst the principal animal substances employed as manures are urine, and dung of all kinds, the flesh and blood of dead animals, fat and oily matters, hair, wool, skin, and lastly horns, hoofs, and bones. These substances are all more or less valuable, as yielding to the soil a large quantity of the substances which constitute the food of plants; they putrify, and their elements form new combinations with great rapidity. Those which change most readily of course yield ammonia and carbonic acid most rapidly, and these constitute the most powerful manures; those which decompose more slowly are less powerful, but more lasting in their effects.

Urine, dung, and the decomposing carcases of all animals are excellent manure; they are for many purposes considered to be too strong, and means are adopted to diminish their power. These manures involve, during their rapid decay, a very large quantity of ammonia, carbonic acid, &c., far more in fact than plants require or can absorb. The excess is hurtful and must be prevented.

There are two ways by which this may be effected; the one is to mix strong manure with a considerable quantity of some substance far less prone to decomposition, so as to dilute it, or check its putrifaction; the other, and certainly infinitely the worst way is to expose it to the air for some time, and not to use it until a great part of the ammonia evolved by its decomposition is dissipated, or combined with acids; acids remains is then sufficiently mild to be used with safety.

In order to preserve as much as possible the valuable parts of these manures, they should be mixed with a certain quantity of vegetable refuse matter, such as sawdust, weeds, &c. This addition tends to check their too rapid decomposition, and prevents the great loss which ensues when manure decays too rapidly and becomes hot from the effect of its own decomposition; and at the same time the vegetable matters added are gradually brought into a state of decay, which renders them also a most valuable addition to the soil. Farm-yard dung is a mixture of this kind.

The extremely offensive odour of nightsoil is a great obstacle to its collection and use as a manure. In its fluid state the expense of conveying it to any distance is of course great, and accordingly various plans have been adopted to reduce it to the solid form, both to diminish cost of conveyance, and also to admit of its being used with the drill; in these, however, a portion of the volatile constituents is generally lost, though what remains is undoubtedly a valuable manure.

In the manufacture of some of the best of these "disinfected nightsoils," charcoal powder, burnt clay, and other similar porous substances, are used to absorb the gases evolved.

The most economical mode of using nightsoil is, probably, to allow it to putrify, diluted with water, and mixed with a considerable quantity of vegetable matter; and to employ it as a liquid manure. Of course this cannot be done when it is intended subsequently to carry it to a distance.

The dung of different animals varies considerably in its value as manure, depending in great part on the substances which constitutes their food; that of those which live on animal food, being of course richer in nitrogen than that of vegetable feeders. The value of those kinds used as manure are in the following order:—Pig's dung, nightsoil, sheep and rabbits' dung, horse dung, and cow dung; the first being that of most value.

In manuring land, by feeding off with sheep, not only does the land receive a large quantity of valuable manure from the dung, urine, and perspiration of the animals, but it likewise has its mechanical texture materially modified by the constant treading of the sheep.

FATTENING OF CATTLE.

M. Payen read a paper on the comparative advantages of the use of oil-cake from linseed, and the seed in its natural state in the fattening of cattle, at a sitting of the Academy of Sciences, Paris, on the 21st ult. M. Payen concludes from the result of a long series of experiments made in this country by Messrs. Crespel Delisle and Tiburce Crespel, as well as from what has been published on the subject in England, that there is more profit to the fatterer in the use of ground linseed mixed with the other food of animals than in the use of oil-cake, which, although, so much cheaper as to the bulk, is really more expensive when the quantity of oily matter removed by pressure is taken into account. A great deal, however, must, we conceive, depend on the price at which the oil-cake is offered for sale in different localities. There are some parts of France in which the ignorance of the persons who fatten cattle for the markets, as to the advantages of feeding on oil-cake is so great, that they will not purchase it at any price, and in order to obtain a market for it, all the owners of the oil-mills where the seed is are compelled to export it to England. On the other hand, however, it is to be observed that if the value of oil-cake in the fattening of cattle were to be generally appreciated, the price of the article would be enhanced, so it is really important to ascertain the difference that there would be in the cost of feeding with linseed or with linseed-cake at such a price as it would probably realize, if it were used here as extensively as it is in England. According to the table, which was produced by M. Payen, the quantity of azote in linseed in its natural state, is only 3.33 per cent., whereas in the

oil-cake it is six per cent.; but the proportion of what he calls *matière grasse* in the cake, is at 7.5, whereas in the seed it is 35.5, and the experiments that have been made are decidedly in favour of the use of the seed. The reading of this paper by M. Payen, will, we trust, excite the attention of cattle feeders generally, and induce them to try experiments on a large scale. At present the feeding of cattle in France is very badly managed, compared with what is done in England, and it is only by watching what is done there that the feeders can hope to place themselves on a level with the English feeders. We would take this opportunity of suggesting the use of a mixed food for cattle, in which linseed should form the principal ingredient in the form of bread. We have heard of a gentleman farmer in the north of France, who feeds his cattle on bread composed of potatoes, oats, barley and linseed, in regulated quantities, and a much larger proportion of clover or lucerne hay, and straw prepared in a peculiar way. Thus the animal has at once nutrition and bulk, and none of its food wasted, as is the case when fodder is used in the ordinary way.

PETERBOROUGH FARMERS' CLUB

At the monthly meeting on the discussion of "The application of Manures in towns and villages running now to waste, and detrimental to the healthy condition of the inhabitants" the following resolution was unanimously adopted:—"That it is of importance that every farmer collect in a tank all the liquid manure possible, to mix with ashes or soil, and to assist in converting all refuse matter into useful dressing for land." The subject was proposed and introduced by W. E. Griffin, Esq., of Werrington, who remarked that the loss sustained by neglecting to obtain this manure in London alone was not less than one million a year; that is, simply with regard to its value for agricultural purposes, to say nothing of the sanitary improvement to the inhabitants; which, of course, should be a matter of weighty consideration. Mr. Griffin strongly advised liquid manure tanks being fixed in every farm-yard, and spoke of his having this year a good crop of turnips, and that he confidently believed the application of the liquid manure mixed with ashes was the principal cause of their present healthy state. He also remarked at great length upon the necessity of general attention to this subject, stating that much benefit would be obtained. Mr. Webster, Mr. Edgson, Mr. Whitwell, and other members of the club, spoke on the subject supporting Mr. Griffin's views; and after the resolution had been agreed upon, Mr. J. Webster proposed for discussion at the next monthly meeting the following subject:—"Why has not agriculture made the same progress that manufactures and commerce have done? and what are the great impediments which still remain to practical agriculture?"

BOILED FLAX SEED v. LINSEED MEAL.

The following paper, on "Linseed, Linseed Cake, and Linseed Meal, for Fattening Cattle and Rearing Calves," is by Messrs M'Adam and Co., general millers, Donegal-street, Belfast, who have for some years seen it practised with the best results:—

"Almost every person in the habit of feeding cattle for the butcher is acquainted with the fattening qualities of linseed cake, but rearing calves with linseed meal has only been introduced in this neighbourhood within the last three or four years; it is now quite established, and a great saving is the result.

"Half a pound of this meal is sufficient for a calf daily; and this costs from one-halfpenny to three farthings; while a quantity of milk, containing the same proportion of nutriment, would cost eight-pence to ten-pence per day; a saving would be thus effected of at least six-pence per day on each calf, which is 3s. 6d. per week, for one calf, and £3 10s. per week for 20 calves; and this for three or four months, amounts to a sum worth saving.

"The linseed meal is the cake ground; the best way of using it is to steep at the rate of quarter of a pound for each feed, in cold water, for 20 to 24 hours; then to dilute with warm water to the temperature of new milk, making a gruel about equal in bulk to the milk usually given—if any milk be added, a pint each feed is quite enough.

"The general report of our farmers and dairymen, who have continued the use of this meal for rearing calves during the last three or four years is, that the calves are more healthy when fed on it, than formerly when fed on milk, and that they are fewer deaths; it is very nutritive, and at the same time keeps the stomach and intestines in a cool and wholesome condition."

CRIME AND EDUCATION IN MAYO, CASTLEBAR.

At five o'clock, Judge Ball entered the court, and, addressing the Grand Jury, said:—"The calendar, I lament to say, does not exhibit any agreeable representation of the state of society in this county. I find no fewer than 136 prisoners, and am sorry to add, crimes are exhibited comprising every description of guilt which human frailty is subject to, varying from sheep-stealing and larceny—of which offences I find one half the persons for trial are charged with—up to burglary and murder, and a new species of crime in this country, that of piracy, or the plundering of ships on the high seas; but this will be more a subject of other commission, and although we may lament such an extent of crime, we cannot wonder when we see the cause; for the calendar informs us, that of the 137 persons for trial, not more than seven can either read or write. While so gross a neglect of education is permitted to continue, by those whose duty it is to correct it, we can never expect any other return than an excess of

crime in its various appalling and disgraceful consequences, more lamentable than actually felt by the commission. I would not, gentlemen, allude to this topic, but the state of the calendar forces it upon me."

If one thing is more important than another in farming, (*without which it is beyond the force of the best decomposed manures the farmer can produce, or the extraordinary effects of chemical salts, so highly valuable when procured genuine, and judiciously applied to exhausted soils*), it is that of *draining your land properly*; and it is to this improved system and the extended adoption of it in the year 1846, that our crops owe their luxuriant appearance, and heavy weight of grain and straw at the present time; as also the extraordinary instances this year of *cold clay and springy light soils* being fourteen days earlier as to the maturity of their crops than was ever known before; but that is not the only advantage derived from scientific under draining and moderate thin sowing, by which the land can be cleaned in a superior manner by the improved horseshoe, &c., which gives additional employment to labourers' children, cleaning the land equal to a garden, admitting a free circulation of air and sun, and many more essentials too numerous to mention; the last and not the least on this head, *by clearing the land of weeds* (I may say forty different annuals to be seen on close inspection on ill-managed corn lands), for every weed that is allowed to grow (*and particularly seed*) robs the main crop of so much fertilizing support to the plant.

DRY FEET.—A SECRET WORTH KNOWING.—To make boots and shoes impervious to wet, buy a penny-worth of Stockholm tar; warm the sole gradually, but not too much; warm the tar also, and then apply it to the sole and stitches, letting it soak in gradually before the fire, and repeat the operation until the leather will take up no more tar. This process will render boots and shoes impervious to wet, and the cost will not exceed one penny.

VALUE OF LAND.—An extraordinary sale by auction took place in Lincolnshire a few days ago by Mr. Medland, of St. Neot's, when a farm of 420 acres, in the occupation of Mr. Nunsley (nearly the whole of it being under the plough), in the parish of Spalding, being in the Fen, and seven miles from the town, and a very heavy drainage tax upon it, made 22,000*l.*; and 73 acres of dispersed lands in the adjoining parish, averaged 76*l.* per acre. We confess that, with free trade, and the present state of the money market, these facts have surprised us.—*Cambridge Independent Press.*

THE "LABOURING POOR."—The vigorous and laborious class of life has lately got, from the *bon ton* of the humanity of this day, the name of

the "labouring poor." We have heard many plans for the relief of the "labouring poor." This puling jargon is not as innocent as it is foolish. In meddling with great affairs, weakness is never innocuous. Hitherto the name of poor (in the sense in which it is used to excite compassion) has not been used for those who can, but for those who cannot labour—for the sick and infirm, for orphan infancy; for languishing and decrepit age; but when we effect to pity, as poor, those who must labour, or the world cannot exist, we are trifling with the condition of mankind. It is the common doom of man that he must eat his bread by the sweat of his brow—that is, by the sweat of his body or the sweat of his mind. If this toil was inflicted as a curse, it is—as might be expected from the curses of the Father of all blessings—tempered with many alleviations, many comforts. Every attempt to fly from it, and to refuse the very terms of our existence, becomes much more truly a curse, and heavier pains and penalties fall upon those who would elude the tasks which are put upon them by the great Master Workman of the world, who, in his dealings with his creatures, sympathises with their weakness, and speaking of a creation wrought by mere will out of nothing, speaks of six days of labour and one of rest. I do not call a healthy young man, cheerful in his mind, and vigorous in his arms, I cannot call such a man poor; I cannot pity my kind as a kind, merely because they are mer. This affected pity only tends to dissatisfy them with their condition, and to teach them to seek resources where no resources are to be found, in something else than their own industry, and frugality, and sobriety. Whatever may be the intention (which, because I do not know, I cannot dispute) of those who would discontent mankind by this strange pity, they act towards us, in the consequences, as if they were our worst enemies.—*Burke.*

CURIOUS CIRCUMSTANCE.—A curious circumstance in connexion with the habits of cattle occurred a few days ago at Priors Lee Hall, near Shiffnal, the estate of John Horton, Esq., where, on killing a young fat heifer, in a cavity of the stomach forty-four large pebbles were found, varying between the size of a walnut and a small hen's egg, and weighing altogether six pounds. How they got into the stomach is a mystery, Mr. Horton having kept the heifer in a stall a great portion of the six months she was in his possession, and when turned out it was in a piece of meadow land entirely free from stones of any kind. The pebbles resembled those found in brooks, and the only solution of the mystery is, that in drinking at a stream the pebbles were swallowed with the water. The heifer was fat, and in excellent condition, so that the indigestible materials, of which the animal had unconsciously partaken, did not affect either its health or appetite.—*Shropshire Conservative.*

ENCOURAGEMENT TO AGRICULTURE IN FRANCE.

As one means of serving the agricultural interest, it is proposed that the Government shall establish a general system of insurance of growing crops, of sheep, cattle, and horses, and of all other descriptions of farming stock. The immense capital that would be required to cover by insurance all the agricultural stock of this vast kingdom, would, it is believed, be totally beyond the attainment of any private company; and therefore it is proposed that the Government shall take the matter up. It is believed that it might afford insurance to farmers at a most moderate rate; and, whilst protecting them against, or, to speak more correctly, compensating them for all and every injury that might befall their property, realize such large profits as would enable reductions to be made in the taxes that weigh most heavily upon agriculture. It is calculated that every year there is lost in France at least £2,500,000 by the injury done to growing crops by drought, frost, inundations, &c.; and a further sum of £2,500,000 is calculated to be lost in the rearing of poultry, sheep, oxen and horses. And these vast sums do not include the losses of extraordinary visitations from heaven, such as inundations, tempests, &c. A general system of insurance by the Government would prevent this immense loss from falling upon the agricultural interest, and would thereby render it a service, of which the importance cannot be exaggerated. In Belgium the Government is taking measures for the adoption of such a plan.

The cultivation of beet-root for the manufacture of sugar is an important branch of agriculture in France. The vast quantities of beet-root that are required may be guessed at from the fact that from the commencement of the present season to the end of January (a period of about three months) not less than 42,209,034 kilogrammes of sugar were manufactured. The duty paid on the sugar manufactured in the month of January amounted to 2,111,738 francs. The number of sugar establishments in France is 304, of which 296 are in active operation at this moment.

A gentleman residing in the department of Ariège, being at the head of a charitable institution for the education of Protestant orphans, was induced, some years ago, to endeavour to utilise a piece of land by planting on it three crops of potatoes in the course of the year. His experiment succeeded beyond his expectation, and ever since he has made it a rule to plant potatoes every four months; and the consequence is that he has every four months a fine and abundant crop. The plantings for his first crop take place in December, and in May, the potatoes being arrived at maturity, are dug up; the second crop is planted in May, and is ready for digging in August; the third is planted at the latter end of September, and is ripe at the end of December. Three crops a year, and from the same piece of land, too, is a

thing that nobody in France ever dreamed of as possible, and even now it is not known except to a few persons. But the most remarkable circumstance remains to be stated. The produce of each of the three crops was more on an average than any other crop in the neighbourhood. The potatoes were better in every respect; and they did not suffer in the slightest degree from the maldy of the last two years, notwithstanding all the other potatoe crops for miles round were either wholly or partially destroyed,

LAND-DRAINING ACT.

SIR,—You would confer a favour on many of your subscribers by inserting the following statement, showing the comparative advantage of a landed proprietor borrowing money to drain his estate from Government, under the provisions of the Land Draining Act, and borrowing on personal or other security, assuming 4 per cent. as the rate of interest on the latter mode of getting the money for the same period as the government loan—22 years.

Great misconception exists upon the subject, and parties are deterred from availing themselves of the Act in question from ignorance of its advantages.

AGRICOLA.

£100 borrowed for 22 years at 4 per cent will in that period repay in principal and interest an amount equivalent to.....	£237 0
£100 borrowed from Government under the Land Draining Act, and repaid by instalments of £6 10s. per annum, in 22 years will pay an amount equivalent only to.....	222 12

In favour of the Government loan... £14 8

HOUSE RENT IN RUSSIA.—House rent is dearer in St. Petersburg than in any city of Europe, and this kind of property brings in a much more certain return than landed estates. Some houses bring in an annual return of five, ten, or fifteen thousand pounds sterling, which the owner is sure to receive in cash; which is by no means the case with landed property. It is common, on this account, to hear a man spoken of as being the possessor of one or more "stone (i. e., brick) houses," just as his estates or his funded thousands would be spoken of in England, whereas Russian landed property is considered much in the light that West Indian and Irish estates would be with us. And again, even the land itself is never considered as property of an intrinsic value; the number of serfs and peasants on it, which the owner possesses, being judged as the only criterion of wealth. According to the government in which the property is situated, their slaves produce from ten shillings to two or three pounds annually per head; but revolt, sickness, or famine, often render this return uncertain.—*Revelations of Russia, by an English Resident.*

SEWAGE MANURE.—We are glad to know that the intelligence of Parliament has incorporated a body of Gentlemen (the Metropolitan Sewage Manure Company) whose objects are not less philanthropic than lucrative, for it is only through the activity of a public Company that the requisite machinery can be brought into play for the important purposes of cleansing our towns, purifying our rivers, and enriching the soil. The object of these parties is to remove, by appropriate steam power and sewerage, the whole of the liquid refuse of London, instead of turning it into the river; to convey it to a distance, and employ it upon the land. They do not appear to have been backed by men of rank, or by the monied interest; indeed, the Corporation of London, as conservators of the Thames, true to their predilection for filth and all sacred nuisances, endeavoured to strangle their project by successfully opposing the wish to lay down a sewer under the gravel of the Thames, rather than more expensively along the crowded streets. This difficulty, however, has not been too great; the malicious dog-in-the-manger refusal of the river authorities has not prevented the parliamentary incorporation of the company, and ere long it will be actively at work and in full operation. The party commences with the King's Scholars' Pond and Ranelagh sewers, as forming the first section of the great plan. The main pipe is to be carried as far as Hunslow, whence service-pipes will distribute the fertilizer in any direction. We regard this undertaking as one of the greatest and practically the most valuable triumphs of science and humanity among the many startling novelties of a century of wonders. The public are becoming hourly more sensible of its importance, whether as a question of agricultural economy, or as a part of the general sanitary movement of the day. In future papers we propose to state more fully in detail the plans by which the company propose distributing the fertilizing liquid, and their calculations as to price, from which it appears that so desirable an end can be effected at a low rate to the public, and large profit to themselves; the average value of ordinary decomposing manure being nine shillings per ton, and the expected charge for a more efficient article from the sewers being three pence.

The Rev. D. Morton, of Harleston Rectory, says: "Boil half a pound of rice in three pints of water, till the whole becomes thick and pulpy. With this and yeast, and six pounds of flour, make the dough. In this way as much bread will be made, I believe, as if eight pounds of flour without the rice, had been used."

ENORMOUS COW.—Last week Mr. Joseph Clegg, butcher, Yorkshire-street, Rochdale, slaughtered a fat cow, weighing, after it had been dressed, upwards of 1,680 lbs. It was bred by Sir Thomas de Trafford, of Trafford, and took the first prize at the Manchester Agricultural Show.

THE BIRMINGHAM CORN EXCHANGE AND AGRICULTURAL IMPLEMENT MARKET.—We have great pleasure in announcing that there will, in a short time, be erected in Birmingham a commodious corn exchange, to which will be attached an agricultural implement market. Our corn market has long been celebrated as the most important in the midland counties. To the discredit of the borough, and to the inconvenience and annoyance of those who attend it to sell or purchase grain, it has been held in the open air in the Bull-ring! Thanks to the public spirit of Mr. Joseph Sturge, Mr. Chas. Sturge, Mr. Lucy, Mr. Boddington, Mr. Evans, and Mr. Carpenter, Birmingham is about to be emancipated from the discredit, and the farmers, corn-dealers, millers, bakers, and others who attend our corn market, will ere long assemble in a spacious, admirably lighted, and noble corn exchange, erected in the very centre of the borough. A company is formed; £5,000 has already been raised by £25 shares, confined to the corn trade; a committee of management has been appointed; the plans have been prepared; the ground has been purchased, and the erection of the building commenced. The design, which we have seen, is of the Roman Doric order, of the same height both on the outside and the inside. The site of land on which the corn exchange will be erected is at the back of High-street, and about forty years ago was occupied by two rows of butchers' shops, and known as "St. George's Market." There will be two entrances, one from High-street, opposite Union-street, the other at the lower part of Castle-street. At the High-street entrance there will be a vestibule, 40 feet by 21 feet, leading to the corn exchange, which will be a room about 140 feet long by 40 feet wide, divided into seven compartments by means of Doric columns and pilasters, between which the stands will be arranged on each side. The chief feature in this part of the building will be the roof, in which the usual "tie" will be dispensed with, for the double purpose of increasing the apparent height of the building and the space for lighting it. The roof, being semi-circular, will be composed of enriched panels, or coffers, which will be glazed with thick sheets of glass, of great length, to obviate the unsightly and green-house appearance caused by the lap of the glass when in short lengths. The roof will be surmounted by a lantern top, covered with bent glass. The whole of the framing, both in the roof and lantern, will be of the lightest construction consistent with the safety of the building, in order that the greatest possible quantity of light may be obtained. It is calculated that it will take 6,000 square feet of glass for the roof alone. At the Castle-street entrance there will be a vestibule of 50 feet by 16 feet, with enriched columns and ceiling, as at the High-street entrance. There will be accommodation provided in the corn exchange room for one hundred stands, which will be let to the trade at a certain sum per annum—

probably about £8. It will be the largest separate corn exchange in England—calculated to hold 3,000. It will be let for other purposes, holding public meetings, &c. The elevation in Castle-street will be of an ornamental character, having deeply-recessed entrances both to the exchange and the floor underneath, containing about 700 square yards, which it is proposed should be let as a public market for the sale of agricultural implements. There will also be a committee room and a large coffee room attached to the exchange. The total height of the building will be about 50 feet. In our opinion, such a building will be an honor to the corn trade, a credit to the borough, and admirably adapted for the purposes for which it is intended; and we doubt not, that under the superintendence of our talented townsman, Mr. Samuel Hemming, the architect engaged by the committee, it will not only be a well-arranged, but a substantial and handsome structure. The estimated cost of the land and building is, we understand, about £10,000. Mr. Briggs is the contractor.

TREATMENT OF PIGS.—A farmer made the following experiment in the treatment of pigs: He put six pigs together for seven weeks. Three of them he left to shift for themselves, and he had three of them curry-combed and well cared for. At the expiration of the seven weeks the latter consumed five bushels of peas less than the former, and weighed two stone four pound more than they did.

THE BLOODHOUND.—This dog, which is undoubtedly descended from the talbot, which animal has long since been extinct, and was well known by his pendulous ears and spotted skin, is of the same family as the old sleuthhound. His height is about twenty-seven inches, his colour generally a reddish cinnamon, shaded with tan. His use in former times was to pursue the deer when wounded by the keeper, and for that purpose he was hunted in a long cord, called a lyme, from which circumstance he was occasionally designated as a lyme-hound. Thieves, and also poachers, were hunted down by the aid of the fine nose of the bloodhound, which practice has been revived to a considerable extent in modern times. From this stock are descended the hounds of the present day in all their varieties. But modern practice has proved, like the attempt to cross our horses with the Arabs which are now brought to this country, that the re-introduction of the blood only deteriorates, and not in any way improves, the capabilities of the animal. The modern bloodhound is bred more for show than for use; consequently his scenting powers, not being so much an object as his size, colour, and general beauty, have greatly degenerated.—*Bell's Life.*

CROP OF WHEAT.—A man named Elliot, of Swanwick, near Alfreton, having experienced a considerable loss in the failure of his potatoe crop in 1845, was determined to plant a portion of his garden with wheat in the seed-time of that year, and, in order to do this, Mr. Elliot prepared his ground with as even a surface as he conveniently could. He then got a board in which he had fixed a certain number of pegs, two inches long and four inches apart: by pressing this board upon the surface of the ground, every peg made a hole, in which he put one grain of wheat. He then covered it over, and such a piece of wheat was never seen in this country before. The whole has recently been threshed up, and he had the astonishing quantity of one load and half-a-peck from one pint of seed.—*Derby Reporter*.

CHALK AND COAL FIRES.—The practical utility of chalk as an article of fuel has been tested within the last fortnight, according to a Salisbury paper, and with the most satisfactory results. Surrounded with coal, it gives a strong heat and a clear fire, at half the usual expense; so that to the poor in the chalk districts it must be an invaluable boon.—*The Builder*.

SURGICAL OPERATIONS WITHOUT PAIN.—We have been informed that two operations were performed by Mr. Liston, at the University College Hospital, on Saturday last, while the patients were under the stupefying influence of vapour of ether. The one was amputation of the leg, the other evulsion of the nail of the great toe. The vapour of ether was inhaled by means of a proper apparatus, and, when it had produced its full effect, the operation was speedily performed. Neither of the patients knew, when they recovered from their stupor, that the operation had been performed. Mr. Liston observed that the vapour of ether had been used for a similar purpose in America, but only in minor operations, such as the removal of tumours, &c. We hope to have further particulars on this very interesting subject.—*Medical Times*.

HORSE SHOEING.

It is well known that one of the many serious evils to which "horse flesh" is exposed, arises from a vicious mode of shoeing. This is particularly felt in the case where corns are produced by the iron shoe at present used, giving an excessive share of labour to the horny crust from the sole and frog. The author says:—

"But the corn, by whatever means produced, is greatly aggravated by the iron shoe, when so nailed on as to prohibit the relief that the corn, in an unshod foot, would derive from the expansion of the quarters. An inherent evil, therefore, of the iron shoe, is its undue pressure on the

crust. Hence the great severity of the road-work as compared with riding on soft ground. In the former, the crust has to bear nearly the whole burden; in the latter, the soft surface, rising in the hollow of the foot, distributes the pressure over the sole and frog."

To obviate the evils of this system of shoeing, he puts forward his own views, which are well worth attentive perusal. The peculiarity of the invention consists in the provision made for action *behind*, by having the hinder nail holes widened in the direction of the elastic action, to treble the size of the *neck* of the nail.

"The nails inserted in these slits or apertures are termed 'slide nails,' and their heads take hold of the shoe at each side of these apertures respectively, in counter-sinkings, where they work to and fro, with the alternate expansion and contraction of the hoof in which they are fixed, and at the same time hold the shoe tight to the foot. In this way, at every step of the animal, the natural action takes place; and although the extent through which it ranges in any case is very small, not exceeding the sixth or eighth of an inch at either side, yet the beneficial effects of avoiding an interference with the provisions of nature, even to that slight extent, are most striking and indubitable.

"To guard against the effects of gravel or road-stuff lodging in the apertures, an opening is made on the exterior face of the shoe, through which the action of the nail (carried in and out by the motion of the hoof in which it is fixed) expels any foreign substance that may happen to be taken up."

The work is illustrated with engravings of the several parts of the foot of the horse, and of the different sections of the shoe, and the testimonials of the efficacy of the slide-nail shoe are from most respectable physicians and persons connected with agricultural pursuits.

EDITOR'S CARES.—The preparation of a constantly recurring periodical work, especially if conjoined with other duties, is a sure means of making time fly fast. There is no cessation—no pause; the task is never done; the mind never unoccupied. "I'll leave it till to-morrow" cannot be said; pleasant loiterings must not be hoped for; it is on, on, till the account is closed; and so the years' ends come long before they are looked for. An editor's duties, even in a case comparatively unimportant, are onerous and unthankful; those whom he praises "love him less than their dinner," and those whom he finds fault with hate him "worse than the d—l." If he step out manfully, he can scarcely avoid treading on somebody's toes, who will make a point of never forgetting it; whilst those on whom he may bestow commendation even if nothing more substantial, during his journey, will quietly place it all to their own merits.—*The Builder*.

TO THE EDITOR OF THE TIMES.

SIR,—I send herewith an estimate of the deficiency of grain and other crops in the United Kingdom for the year ending September 1, 1846.

This estimate is founded chiefly upon the statistical facts furnished by Mr. Labouchere in his speech of Tuesday evening, the 19th inst. The results are startling, and confirm the views you have recently expressed in relation to the dangers which menace the commercial and monetary interests of Great Britain.

If the estimate be essentially erroneous, it will be easy for some better informed correspondent of *The Times* to point out the errors; if substantially correct, the sooner the full extent of the evil is made public the better. Forewarned is forearmed.

I enclose my card.

London, Jan. 25.

J. A. D.

Estimate of deficiency of Grain, and other crops reduced to grain, in the United Kingdom, for the year ending September 1, 1846.

	QUARTERS.
1. Ordinary annual deficiency,.....	2,000,000
2. Loss of potatoes in Ireland, value £12,000,000, to be supplied by grain, (a food of double the cost of potatoes,) value £24,000,000, representing, at 50s. per quarter,	9,800,000
3. Loss of oats in Ireland, stated by Mr. Labouchere to be one-third the crop, or	5,227,000
4. Loss of potatoes in England and Scotland, say one-tenth only the loss in Ireland, or	1,000,000
5. Loss of oats in Scotland and England,.....	1,000,000
6. Loss of barley in the United Kingdom,.....	1,000,000
7. Extra seed for increased cultivation of grain,	300,000
8. Extra consumption of railway labourers,.....	300,000
	20,627,000
Deduct economies made by starvation and non-feeding of pigs,.....	4,627,000
Total deficiency,.....	16,000,000
Money value of the deficiency at £3 per quarter, £48,000,000.	

CHEMISTRY APPLIED TO FARMING.

C. W. BINGLEY, Esq., then read the first of a series of gratuitous agricultural lectures "On Chemistry applied to Productive Farming." The lecturer, who was attentively listened to throughout, gave a general description of the various elementary bodies and the combinations that enter into the composition of plants and soils; and then proceeded to apply the principles of their constitution in the management of tillages, and the

due preparation of the soil previous to their application. In reference to the heat which is given out at the time decomposition takes place, which tends to nourish the plants, when alluding to that caused by a fall of snow, he said—"We have a similar process to this shown us by nature, in the effects of a fall of snow on the ground. You have all, doubtless, observed that grass always appears to us greener and more vigorous after the thawing of a fall of snow in winter. This I attribute to a similar cause, viz., a decomposition or disengagement of the ammonia contained in snow, which is aided by the heat radiated from the surface of the earth being confined to the intervening space between the ground and the covering the snow affords. The radiation of this heat is not considerably increased by the strong reflective powers of the snow; while, at the same time, snow, from being a very light and porous body, is a bad conductor of heat. It cannot, however, be supposed, that during the continuance of the frost, the snow can keep the ground warmer than the freezing point of the thermometer, or 32 Fahr., because, above that degree, the snow would melt; but that is a much more moderate degree of cold than the surrounding atmosphere is, while the frost continues; and when the atmosphere is raised to a degree above 32, or the freezing point, a thaw immediately ensues, and it may be observed that the inferior layers of snow melt the first, and consequently the disengagement of the ammonia would then ensue for the benefit of the plants, which are, until the whole of the snow above is thawed, protected by it. It is worthy of notice, too, that experiments have shown that the first rain or snow that falls during a shower or snow-storm, contains the greatest proportion of ammonia; consequently, the lower layers of snow, from having fallen first, would not only contain more of this than the upper layers, but would, from their position, be immediately applied to the plants, with all the protection from cold that the snow above containing the lesser proportion would afford them. I must, however, for the present, defer any further remarks until a future meeting, when I hope I shall be able to enter into that part of the subject under discussion which will afford you more interest than the present lecture has done; but though it may have been uninteresting, yet I hope I may have succeeded in drawing your attention to a subject in which you are deeply interested; and though you may not be able to remember or retain all the dry and tedious part of the elementary subject of my discourse, yet I hope that I may have so far succeeded as to leave some impression upon your minds that will cause you to examine further into the subject."

After the meeting was closed, an extraordinary and singular hard stony substance, something in the shape of a human skull, weighing 13lbs. 6oz., was exhibited to the members by Mr. John Tasker, gamekeeper, at Norton. It had the ap-

pearance of a large red boulder, and was said to have been taken from the inside of a horse, the property of Mr. James Rhodes, colliery owner, Coal Aston, which had died suddenly a few days since. The animal was twenty-seven years old, and up to the night previous to its death appeared to be in good health. Mr. Bingley and Mr. Nelson thought the substance had its origin from the horse having swallowed a nail, or a piece of wire, at some remote day, and that it had increased to its present extraordinary size by gradual incrustation.—*Sheffield Independent*.

ENGLISH LIVE STOCK THREE CENTURIES AGO.—Polydore Vergil, writing about the beginning of the 16th century, thus describes the cattle and other live stock in this country at that period:—“England is well stored with all kinds of beasts, besides asses, mules, camels, and elephants(?); but there is engendered neither any venomous beasts, nor ravening, except foxes, and in old times wolves; by the which means their cattle do freely stray without harm, almost without an attendant keeper; for a man may see herds of oxen and horses, yea, flocks of sheep, daily wandering and nightly, through hills and dales, through common fields set open for pasture, and through such several grounds as every neighbour may take the commodity thereof in feeding his cattle after the corn is gathered in; * * * a great company of their horses do not trot, but amble; and yet neither trotters nor amblers are strongest, as strength is not always incident to that which is more gentle or less courageous. Their oxen are of the like nature, wherefore many of them are yoked at once in one plough or cart (for both the earth is tilled, and cars drawn, as well with oxen as horses) which also stand man in no small stead as touching the bearing of burden. Their oxen and wethers are beasts, as it were, of nature, ordained for feasting, whose flesh almost in no place is of more pleasant taste; but *beef is peerless*, especially being a few days powdered with salt; neither is it any marvel, for that beast, once released from labouring, is kept up for their common feeding. In fine, the chief food of Englishmen consisteth in flesh; neither among them do those oxen lack their commendation, which, after long travail [or travel] are killed in their age, albeit their flesh is harder than the other.”

ETHER APPLIED TO VETERINARY SCIENCE.—The vapour of sulphuric ether has, we hear, been employed at the Royal Veterinary College, Camden-town, on a sheep and a horse, with the most decided success. The first-named animal was affected, and had been for many months, with an incurable disease of the hock-joint. The pain was so severe that the poor sheep was quite unable to put her foot to the ground without experiencing much suffering. On being brought into the theatre she was caused to inhale the vapour of

ether through a tube, and in about five minutes after it was evident that she was under its influence. The leg was then amputated by Mr. Sims, and at the thigh without the slightest indication of any pain whatever. The operation occupied about six minutes, and within 20 minutes from the commencement the animal was removed from the theatre restored to sensation and consciousness. The horse was labouring under a chronic affection of the near fore foot, commonly known by the name of the “narcular disease,” for which the operation of “unnerving” is generally resorted to as a remedy. This is necessarily a very painful operation, and oftentimes the operator has to contend against the violent struggles of the animal, particularly at the instant when the division of the nerve is affected. In this case the ether vapour was inhaled for about 13 minutes, when the horse fell forward, and the nerve on each side of the leg was divided by Mr. Spooner without the least manifestation of pain; a slight convulsive action of the limb, similar to that which takes place when a nerve of a recently killed animal is cut through, alone giving indication of any sensation. Within 23 minutes this animal had also perfectly recovered from the effects of the ether. No restraint whatever was resorted to to keep the animals in the required position for these operations, and the inhaler employed was not one invented for the purpose, but an apparatus temporarily adjusted by Mr. Morton until a more perfect one was obtained.—*Times*.

THE LONDON DRAY AND CART HORSE.—This animal has not, I imagine, varied much from what he was a hundred years ago. He is employed for the same purposes—in the same situations; consequently, size, weight, and strength were, and still are, the chief things wanted in him. His price has, however, varied considerably, as he is to be got at, I should say, about a third less than 50 or 60 years back, when, I have been told, 80 pounds was no unusual price for a dray or distiller's horse. If we were to judge by the docility shown in these monster animals, we might be led to imagine their natural dispositions to be better than the high-bred horse; but I do not believe this to be the fact; their quietude proceeds from their being less irritated than other horses; they are never really distressed, or, as is the case with the race-horse or hunter, punished to make exertions when they are. Their spirits are not so high, nor is their blood ever got up like that of the horse at fast work; so they are never thoroughly excited. A good deal depends on the men who drive and attend them. They, unlike the coachman or groom, have no pride in seeing a horse fast at his work; they are slow themselves; and provided the horse obeys the motion of the whip, and “come'ther who's” or “gee who's,” or backs the dray, they do not care if he is half an hour doing it. This accounts for the docility of the dray and cart horse.—*Sportsman's Mag.*

Agricultural Journal

AND

TRANSACTIONS

OF THE

LOWER CANADA AGRICULTURAL SOCIETY.

MONTREAL, JANUARY, 1848.

AGRICULTURAL SCHOOLS AND MODEL FARMS.

WE are happy to have it in our power to announce to our subscribers that several gentlemen have offered farms to "The Lower Canada Agricultural Society," on liberal terms, for the establishment of Schools and Model Farms, for the Agricultural education of youth, and their instruction in the practical art of husbandry. The principal objection to the offers made as yet, is, the shortness of the term, in every case, that the lands would be placed at the disposal of the Society, and this certainly is a great objection. It would, if practicable, be better that the Society should own the farms upon which Schools and Model Farms would be established, so that any future time that it might be thought advisable to sell or remove to a more eligible situation, the benefit of the improvements made should be for the advantage of the Society. If lands could not be obtained in perpetuity, it might be possible to make such an arrangement, that in case of returning the lands to proprietors, or their requiring the lands, a valuation should be made of the actual improvements, and proprietors be liable to pay the Society the amount to which they might be estimated. We do not conceive that any objection would be made to such an arrangement as this, because it appears it would be reasonable for all parties. Indeed large proprietors would find it their interest to give land to the Society without any charge, on condition that the Society would bind themselves to establish a School and Model Farm permanently upon such lands. There is not a doubt that such establishments, provided with properly

qualified Teachers, every branch of husbandry conducted upon the most approved principle, and every department managed judiciously, would be the very best mode of instructing young persons for their own future advantage, and for the general prosperity. There is not a great landed proprietor in the country that would not derive more benefit, *indirectly*, from such an establishment upon his property, than would more than compensate for making a gift of the land necessary for the School and Model Farm to the Society. The establishment of one such School and Farm would prove our proposition satisfactorily. It would be no slight advantage to every proprietor or occupier of land to have improvements made and proved in their immediate neighbourhood, in every branch of Agriculture, without any cost to them. To answer the purpose proposed, Model Farms must be under the superintendence of persons of unquestionable competency; because, any experiments made in the cultivation of crops, or the management of stock or the dairy, should be in conformity to fixed rules, and the most approved system of Agriculture. It will, therefore, be of immense importance to be acquainted with the results obtained in the various experiments that may be tried under such circumstances. Good farmers possessed of capital, make their experiments constantly, but only for their own information generally. Not so on Model Farms; the results of certain modes of cultivation and management will be published to the world. This will doubtless prove an advantage to the farmers of Canada that is not yet duly appreciated, and such advantages are not likely to be obtained in any other way. A Model Farm would require to be of suitable size to admit of a perfect system of husbandry being carried on in all its branches, which would include the breeding and feeding of stock, and the management of the dairy, as well as the cultivation of crops; this could not be done except on a large farm. If farm labourers would be trained, as well as employers instructed, it would require business

to be carried on, on rather an extensive scale. This, we have no doubt, might be done without loss, provided the superintendence was competent, and all those receiving instruction, paying for it, either in money or in labour upon the farm. A capital would, of course, be necessary to purchase stock, seed, and implements, and pay for labour until there would be a return of crops. With skill and sufficient capital to carry on business in a proper manner, we confidently trust that a profit would be realized after paying all expenses. In other countries Model Farms have paid expenses, and we cannot see any cause to prevent it *here*. The results of experiments made upon a very small scale, and by garden cultivation, would have little effect in inducing farmers to adopt such modes of cultivation. To ensure the confidence of farmers, it will be necessary to show them that they can do the same things as have been done upon the Model Farm, by the usual means of labour and capital they possess, and they will then feel no reluctance to follow the example. If, on Model Farms, the Society take the risk of procuring results, and show the intrinsic value of these results to the farmers, the experiments, if successful, will be introduced very soon all over the country. To make a Model Farm useful to the country, every branch of husbandry should be conducted in such a manner as would admit of the generality of farmers adopting the same modes of cultivation and management upon their own farms. If we cannot follow the example of the practice upon Model Farms, they will be useless to us. We most earnestly advocate Model Farms, but we believe that, to insure their usefulness, and justify the expenditure, the farms should be large, to admit of experiments being made on even a moderate scale in every branch of husbandry; also to admit of a large number of pupils to be instructed, and to make it worth while to engage a competent superintendent. To do all this would be impracticable upon a small sized farm. A profitable system of husbandry,

to be a general example and model to farmers, must necessarily embrace arable culture in all its branches—the cultivation of all the useful plants our soil and climate are calculated to produce—the breeding and feeding of cattle and sheep,—and the management of the dairy. Not less than two arpents of green crop of any one plant, and five arpents of any one species or variety of grain crop should be experimented upon on a Model Farm. We may conclude, that everything done upon these establishments will be scrutinized, and if fault can be found, the character of Model Farms will not be very high. At all times and seasons, the whole establishments, as well as every separate branch, should be in such a state of perfection, that it could be pointed out to any visitor as an example to be followed, with a certainty of profit. Are we to be deterred from attempting Model Farms, because they would require capital to put them in operation? We would hope not, considering the vast amount of benefit they could not fail to produce to the country. On these farms, experiments might be tested for the general good, and the capabilities of the country for agriculture fairly proved. The whole Canadian community, from the highest to the lowest, should feel an interest in this matter, and be anxious that the productions of our lands should be augmented in quantity and value. Botanical gardens are highly prized in other countries, and very justly. As we have not one in Canada, let us have an experimental farm instead, and we certainly require one. The opinion has been very generally entertained that the climate and long winter of Canada make it very unsuitable for a profitable system of Agriculture. We might point out numerous proofs to the contrary, by reference to well cultivated and productive farms, but such proofs would not have equal force as those that would be established on a *Public* Model Farm, open to all visitors, and where there could be no motive for concealment or deception, as to the modes of cultivation and manage-

ment, and the results. In a national point of view, we respectfully maintain that the necessary funds required for the establishment could not be employed more for the public advantage in any other way, in Canada. Such an establishment, conducted properly, would very soon enable us to estimate, with perfect certainty, the value of the country, by shewing its capabilities for Agricultural production, in variety, quality, and value. Will any one refuse to admit the importance of this information to the future welfare of the country? The success of Model Farms will depend upon the superintendent being properly qualified, and we must admit the qualifications required are numerous, and, perhaps, may be difficult to find united in any one individual. With any more remarkable qualifications he may possess, he should, at all events, have the general reputation of being a good farmer, that is, a skilful cultivator of land, and understand perfectly every branch of farm management; including the art of draining; he should be an excellent judge of farm stock, and be acquainted with the most judicious modes of breeding, keeping, and fattening them, and the management of cows for the dairy. He should possess agreeable manners, and have the power of communicating his thoughts with ease and clearness to pupils and visitors. To have these qualifications, he must have received a suitable education, and then the services of such a man will have some value on a Model Farm. The foregoing observations may not fully describe all that a Model Farm ought to be, but they may give some idea of what an establishment should be to produce any general benefit to Agriculture.

We suppose it is necessary that farming should be considered fashionable in order to recommend it to the general attention. In the British Isles, it is universally respected. The King of Prussia has lately instituted an order of nobility which is conferred upon those only who have exerted themselves most to promote

Agricultural improvement. In Belgium, the Minister of Agriculture has, by command of the King, written to all the provinces, giving instructions that the names of those who had rendered themselves most conspicuous, in promoting Agricultural improvement, should be reported to him, in order that suitable rewards should be bestowed upon them by the King. In Sweden, a great Agricultural meeting took place lately, at Stockholm, of four hundred deputies, from all parts of the kingdom, at which the King of Sweden presided. The meeting had daily sittings for twenty days, and at the conclusion, there was a Grand Banquet, at which the King and all the Royal Family were present. These are indications that Agriculture is about to become of more general interest to the public, and certainly the time is come that it should be so. There are many things we have which we might forego the use of if necessity obliged us to do so; but the produce of Agriculture is necessary to support man's existence, and it is from its products *indirectly*, that we obtain the means of procuring every article we make use of, that is not directly raised upon the farm. It is no wonder that some men are found constantly to advocate the vast importance of Agriculture, but it is astonishing, truly, that they should comparatively be so few in number.

The French Minister of Agriculture and Commerce has recently announced to the Royal Agricultural Society of France, that it is his intention to propose the establishment of Elementary Farming Schools, in which, in addition to the ordinary education, young men will receive instruction in the practical working, and more laborious parts of their business, and also in the management of irrigated meadows. Hence, it appears that due attention is now given to promote Agricultural improvement in France.

In Ireland, the Lord Lieutenant has authorised competent persons to proceed throughout the country, to deliver lectures on Agricultural Improvements.

No country can be really independent that does not produce what will give food to her people, and provide them with all other necessaries they may require; and we feel persuaded that almost every country is capable of doing this if the inhabitants do their own duty properly, and improve the advantages the Creator has placed at their disposal. Canada possesses as large a share of natural advantages as any country on earth. To endeavour to improve them to the uttermost is the business of every true lover of his country. Land must be the source of all wealth, but skill is required to realize this wealth. Every man, therefore, that desires to see his country wealthy, and the inhabitants in possession of all the necessaries and comforts of life, will do all in his power to obtain these benefits. No matter what business a man may be engaged in, he has an interest in the general production and prosperity of the country, inasmuch as it is the produce annually created that has to furnish all the means of general and individual prosperity.

By recent accounts from Ireland, Indian Meal was sold at £7 per ton, and at the same time guano was selling at £8 per ton, making the price of manure higher than the price of food. In Montreal, a ton of guano is about a fourth higher in price than a ton of wheat. The disproportion in the price of manure purchased from the merchant, and the price of Agricultural produce, sold to the merchant, is unreasonable. For the article of gypsum, for instance, it is generally sold in Montreal from eight to ten shillings per barrel—nearly double the price it sells for in England—and fully half the price of wheat, by weight, in this market. We have no hesitation in saying that gypsum sells here for much above its value, and that this unreasonably high price prevents farmers from making use of it, or applying it to land in such quantity as would make it produce improvement in either the soil or crop. A barrel of wood-ashes is sold for manufacturing uses,

for one-fourth the price of a barrel of gypsum, and frequently for less than this; and we believe that a barrel of good ashes, properly applied in Agriculture, will be more beneficial than a barrel of gypsum. Salt is also an article which might be most advantageously used in Agriculture, if it could be purchased at a fair price. In England, it can be had for thirty shillings the ton, including the duty, and in Scotland for twenty, for Agricultural purposes, and is found to be very beneficial to the crops, although that country is surrounded by the sea, and the atmosphere, consequently, much more saline than in Canada. If salt could be had here, for a price proportioned to that of the produce that would be raised on the soil where applied, it would be a great advantage to the farmer. It is said to prevent heavy crops of grain from lodging. In England, nitrate of soda is sold at 70s. per cwt.; nitrate of potash, (saltpetre,) 27s. per cwt.; soda ash, 14s. per cwt.; sulphate of soda, 6s. per cwt.; superphosphate of lime, 7s. per cwt.; sulphate and muriate of ammonia, 16s. per cwt.; carbonate of soda, 8s. per cwt.; the sulphate and carbonate of magnesia, 5s. per cwt.; horn-lust, 2s. per cwt.; kelp, 5s. per cwt.; silicate of soda, 12s. per cwt.; animal charcoal, 4s. per cwt.; and sulphuric acid, 1½d. per lb. All these articles are extensively made use of in England, and many artificial manures and fertilizers, which are all to be had at moderate prices. Farmers in Canada can never make use of such manures unless the price they are sold for is moderate, and in proportion to the price of farm produce. Lime is a manure not much employed in Canadian Agriculture, from its high price; this high price is the consequence of farmers not making lime when they have the means of doing so. With the means of water communication we possess into the heart of the country where lime-stone and fuel are to be found in abundance, there is no reasonable cause that we should not have lime, at a moderate price, so as to admit its extensive use in

Agriculture. We have heard of objections to the use of lime on the ground, of its not producing improvement in crops, adequate to the expense. We are inclined to suppose there must be some mistake, because the existence of a certain portion is necessary in every soil to make it suitable to produce a crop, particularly of grain. It is the very best substance that can be applied to drained moss land. Lime may not have been applied in a proper manner to crops; the best mode is to harrow it in with the seed; mixed in compost for top dressing grass land, it never fails to produce a beneficial effect, and on most lands, sufficiently drained, it is the best substance that can be applied. Farmers say it does not act here as in the British Isles, but where this is the case, we most probably would find a sufficient cause for the difference in the different mode and quantity applied. We shall always entertain a favourable opinion of the use of lime in Agriculture, until it is satisfactorily proved that it is not so, by fair experiment.

At a sale of improved pure-breed, short-horned cattle, belonging to a Mr. Carruthers, of Artkington Hall Farm, Yorkshire, England, in September last, the prices paid for cattle were very high:—Violet, a roan cow, 4 years old, was sold for 350 guineas; one, 7 years old, for 100 guineas; a heifer, 4 years old, 110 guineas; a heifer, 2 years old, 155 guineas; three others, 2 year old heifers, sold at 60, 70, and 100 guineas; one, of 20 months old, 50 guineas; heifer-calves, from 30 to 65 guineas each; a bull-calf, roan colour, 40 guineas.

At the sale of Mr. Parkinson's stock, at Layfields, Nottinghamshire, in the same month, improved short-horned cattle, sold for large prices:—One cow, 7 years old, 110 guineas, roan colour; a heifer, not 18 months old, roan, 100 guineas; and several others of the same age, from 40 to 60 guineas each; some heifer-calves, from 4 to 6 months old, roan colour, sold from 30 to 52 guineas each; a bull, red,

of 5 years old, 140 guineas; three bull-calves, little over 12 months old, sold from 60 to 79 guineas, each, all roan colour; several other bull-calves of this year, sold for 20 to 30 guineas each, their colour red or roan, which at all these sales, appear to have been the favourite colours for cows and bulls, and indeed most of the cattle sold were of these colours, particularly roan.

At the sale of Mr. Hutten, Sober-hill, Yorkshire, a cow, 4 years old, sold for 130 guineas, and a heifer, 2 years old, for 70 guineas, both roan colour. Mr. Parkinson's cattle consisted of about 88 in number, sold, and of those the whole but 8 were roan, red, and a few red and white colour. Of Mr. Carruthers' stock of 38, 20 were roan, 2 red, 13 red and white, and 3 white. Roan, red, and red and white, are decidedly the favourite colours of choice cattle in England, and they are entitled to this preference in every country. Even their appearance on the pasture is much more pleasing to the eye. We give insertion to these prices, in order to show the great perfection that stock can be brought to by careful breeding, and good keep, and the estimation in which they are held by farmers in England. The highest prices paid at those sales were by private gentlemen, and we believe, farmers, although Earl Ducie purchased extensively, and paid some very high prices also, but was the only nobleman who did buy, except one calf, by Lord Howe. We should endeavour, by careful selection for breeding, to obtain a stock suitable to our climate and circumstances. They should not, however, be over large for our keep for them. It is much better to increase the size of our stock, by the keep, than to have an over large stock that would decrease in their size for want of sufficient food.

FARM LABOURERS.—The inexperience and general inefficiency of farm labourers to execute the several works upon a well managed farm is a matter of considerable importance. There is

much greater loss sustained by farmers who hire labour from this cause, than is generally supposed. An inexperienced man can neither do so much work, nor so well, as a man who has been regularly brought up to farm labour, under proper instruction. In England, farmers have a great advantage in the fact that their labourers have been brought up from boyhood to almost every work executed upon a farm. A man so trained, can render more efficient service to his employer in one day, than a man, not so trained, would in two or three, though the latter should be equally well disposed to work. A boy brought up from the age of nine or ten years, until one and twenty, must be very incapable indeed, if he will not be an expert and skillful workman, after serving an apprenticeship of eight or ten years, under good instruction and example. At a late Agricultural meeting in England, a gentleman observed:—"On the Duke of Bedford's farm, at Woburn, as many as forty boys may be seen doing all the light work of the farm, and so general is the notion of their extreme handiness, that when they arrive at a certain age, and require more than the standard price for their labour, they are looked after with avidity by all the neighbouring farmers. Many of them I know to hoe turnips as well as a man." We regret very much that few of these well instructed labourers find their way to Canada, and it would be greatly the interest of the country if a regular system of apprenticeship was introduced here, unless we may have Agricultural Schools and Model Farms, where young lads may be brought up to all the works of the farm. If, only for this purpose, Model Farms would produce much good, by training young men to be able to execute well every work necessary to be done on a farm. There are now many orphans and destitute boys in Canada who could not be better provided for than by apprenticing them to competent farmers.

FARMING TOOLS.—The proper construction, and good materials of farming tools, is a matter

of much importance to the farmer, and to those employed by him. Work will be executed in a better manner, and with much greater ease to the operator, with well constructed tools, made of the best materials, than with tools of defective make, and inferior quality, that are generally imported to this country. Small tools, such as spades, shovels, picks, hoes and dung forks, in particular, that are so much in use upon farms under good cultivation, are generally of the very worst description, both in construction and material, unfit to execute work unless at a great disadvantage. The prices paid here for these articles are high, compared with prices paid in England for the very best description of tools. Spades and shovels should be steeled, and be of the most approved form. The sort of tools that are imported might be suitable enough at public works, where they must be greatly abused; but on a farm, the best tools of every description that can be had, will be found the most profitable, even though they should cost a price double in amount to that paid at present for the inferior tools imported. The importing merchant is under a great mistake if he supposes the farmer would be unwilling to pay a fair price for a better description of tools than they generally have to get. They cannot be so indifferent to their own interests as to prefer buying tools that are not good, to paying a fair price for those that would be really good and useful for them and their labourers. There are abundant opportunities in England of seeing the very best patterns of Agricultural implements and tools, if it is desired to import them, and it is very much against the interests of Agriculture that the very best implements should not be imported. We offer these suggestions not to annoy or injure the importing merchant, but to persuade him to import a few samples of the best description of Agricultural implements, and try the experiment fairly, in order to ascertain if it will be safe and profitable to import the best instead of the worst articles. We wish the manufacturers would believe that articles should

be made for usefulness as well as for sale. We have seen well shaped tools, but the materials and workmanship are unsuitable, and such as no experienced English Farmer would purchase if he could get better.

Mr. Skilling, the Superintendent of the National Model Farm, at Glasnevin, Ireland, has published an Agricultural work that is highly commended, though we have only seen extracts from it. He enumerates nearly a dozen of what he regards as fundamental errors in Irish farm management; and, from a long acquaintance with Canadian farming, we feel convinced that the same errors exist in Canada. They are the following:—Not sufficient draining and drying the land; not trenching and deepening the land; exhausting the land by a succession of grain crops; not following out a regular rotation of crops; not cultivating green crops; not keeping a sufficient number of cattle; keeping too many horses, particularly on small farms; not collecting and applying a sufficiency of manure; suffering the land to be overrun with weeds. There is another error enumerated by Mr. Skilling, with which we shall not charge Canadian farmers, and that is:—"Ignorance, indolence, and other bad habits." These errors, we do not think, can apply generally to Canadian farmers, and "bad habits," scarcely to any one of them. To any individual acquainted with this country, and our general system of Agriculture, it will be manifest that we have all these errors in that system, and that they require to be remedied if we desire to introduce improvements. We may not be able to introduce green crops in the same proportion as in the British Isles, but at present we have scarcely any green crops nor summer fallow. With such management, it will be impossible to keep land in a state of profitable production. There is another deficiency, namely,—that we have scarcely any good permanent pasture, and no regular feeding of cattle. Almost every farmer allows his stock to feed in common, in summer. Milch-cows, oxen,

steers, heifers, calves, bulls, horses, sheep, and pigs, in the same pastures; that is generally far from being good. Such a system is at variance with all good husbandry, and it is impossible that good stock of any description can be produced under such circumstances. Indeed, only that our soil and climate are favorable, we should never have an animal fit for the butcher. In the British Isles, cattle that are fattening are kept separate from other cattle on the pastures, and sheep are seldom fed with cattle. Milch-cows are also kept separate from the young stock, and bulls are generally confined in a small field or the stable. To adopt this plan in Canada throughout, we fear, would be difficult, but it certainly might be adopted on many large farms; and in other cases, farmers might do all in their power to keep their stock separated, so far as was most necessary. Cattle intended for fattening should not be disturbed, but allowed to repose quietly on their pastures. Every farm is not adapted for fattening stock, but those that are might be so fenced and managed, that the stock of all kinds would not be allowed to pasture in common. The advantages of such an arrangement would soon be perceived, and be a sufficient recommendation whenever possible. To expect that we can have any profitable keeping or feeding of cattle without a better arrangement than we have at present, is out of the question; and it is equally certain that we cannot have any perfect system of Agriculture without keeping a due proportion of cattle. If we cannot grow a due proportion of green crops, to enable us to keep our land clean, we must clean them by summer fallow. No farmer acquainted with his art, will attempt to cultivate his land continually with grain crops, without adopting some means of cleaning the land by green crops or summer fallow. Since potatoes have failed, farmers have attempted, on clean fertile soil, to plough after meadow, and sow either oats, peas, or wheat, and the following year again, seed down the land with barley, having previously ploughed it in the fall and spring, and with one of these

ploughings, put in manure. This plan is the best of a faulty system, but can only be adopted where the land has been some time in meadow, in good condition, and free from weeds, and even then, weeds frequently appear in abundance in the several crops of grain, and the succeeding crop of grass. If we were to introduce the growing of flax, hemp, and rape, these crops would be very suitable for cleaning the land, and enriching the farmer. Our climate and soil are most suitable for all these plants. We have no experience in this country of the cultivation of rape, but as the plant is extensively cultivated in Holland and Flanders, we think it might here. There is a ready sale for the seed or for the oil and cake; the seed is about eight shillings, sterling, the bushel; the oil sells higher than linseed oil; and the cake about seven shillings sterling per cwt. The seed and fibre, both of flax and hemp, are in good demand, and we have no doubt they would be very profitable plants to cultivate. We have reason to hope that the great objection to their cultivation hitherto—the want of machinery for dressing flax and hemp—will not long exist. A gentleman, who has ample water-power, and in a convenient situation, has assured us of his intention to have suitable machinery very soon, and connected with an establishment that will purchase the flax and hemp, in a green state, from the farmers who produce it. This would be the only certain plan to encourage the extensive cultivation of these plants. Flax dressed by proper machinery is worth from ten to fifteen pounds per ton more than that dressed by hand as it was heretofore in Ireland.

The following preparations is recommended for colouring the inside walls of cottages:—

“Quick lime, six ounces, rubbed down with a muller to free it from all roughness; linseed oil, six ounces; burgundy pitch, two ounces; skimmed milk, two quarts. The pitch to be melted with the oil over a gentle fire, and gradually incorporated with the mixture. Any kind of colouring ingredient may be added to bring it

to the tint required. This quantity, when properly mixed, will cover twenty-six square yards.”
—*Ricanti's Rustic Architecture.*

“THE JOURNAL OF AGRICULTURE, AND THE TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.”—The quarterly number, for July last, of this valuable publication contains much interesting information. One, in particular, “Report of experiments with certain special manures,” for which the premium of the Society was paid—ten sovereigns. These experiments were most carefully made by the overseer, of a gentleman in Renfrewshire, Scotland, and we shall copy largely from the Report in future numbers. In every experiment common salt has been applied and charged at only one shilling the cwt.

One of the most extraordinary results of these experiments was that made on sown-grass for hay, top-dressed, the 28th April, with the following mixtures:—Animal charcoal, (burned bones,) 1 cwt., cost 4s.; dissolved in sulphuric acid, 56 lbs., cost 4s. 6d.; horn dust, 168 lbs., cost 4s.; carbonate of magnesia, 14 lbs., cost 7½d.; sulphate of soda, 28 lbs., cost 1s. 3d.; common salt, 56 lbs., cost 6d.; sulphate of ammonia, 28 lbs., cost 4s.; potash, 28 lbs., cost 6s.; carbonate of soda, 28 lbs., cost 2s.; expense altogether, £1 6s. 0½d. to the acre. There was a portion of the field that had no top-dressing, and this portion produced only 41 cwt. 54 lbs. of hay per acre. The portion top-dressed with the above mixture, was cut three times, and the produce of hay, 116 cwt. 46 lbs., nearly three times the quantity obtained from the un-dressed land, and the after-math superior. The report states that “the top-dressing of this mixture is one of the most powerful fertilisers I have ever tried, upon every description of crop and soil, and its effects continue for years.” The top-dressing was sown by hand during the time of heavy rain. Some of these substances were applied separately as top-dressing on grass, and doubled the produce

obtained on the part not top-dressed, but the expense was much greater. Of all that were applied separately, nitrate of potash was the most powerful; 2 cwt. was the quantity applied, and cost £2 16s. per acre. The same quantity per acre of nitrate of soda, muriate of ammonia, sulphate of ammonia, and sulphuric urine, was applied separately, the cost being equal to £1 12s., and the produce being nearly equal, but about 8 cwt. of hay less than the produce from nitrate of potash; 2 cwt. of Peruvian guano, per acre, cost £1, and produce about 3 cwt. less of hay than the nitrate of soda, &c.; but this was nearly equal to the value of hay, and therefore guano was as profitable a dressing for the farmer as any other of the substances applied separately. There is no reason to suppose that these top-dressings would not be equally beneficial applied in Canada. With the exception of guano, which is said not to succeed well in a dry warm season, all the other substances would answer well in our climate. These special manures were tried in these experiments on potatoes, turnips, and oats, with great success, and it appears the potatoes had scarcely any appearance of disease. What could we purchase these substances for in Canada?

At a Special meeting of the Council of the Lower Canada Agricultural Society, which took place on the 25th of November last, at Donegana's Hotel, the following members were present:—

Major Campbell, President; Honbles. W. Morris, A. N. Morin, A. Ferrie, Vice Presidents; Honble. L. T. Bruneau, Commissioner Casgrain, John Yule, F. A. La Roque, Esqrs., and Colonel Taché, Members of Council; and T. Boutillier, Esq., Member of the Society. The Secretary was absent from sickness. It was unanimously resolved that it is expedient to publish a Monthly Agricultural Journal in the English and French languages, to commence the 1st of January next, and that the

President and Secretary be entrusted with taking the necessary measures to secure the publication, and to circulate the Journal throughout the Province.

It was also resolved, that the President, Major Campbell, Honble. A. N. Morin, Col. Taché, D. Finlayson, and John Yule, Esqrs., be the Journal Committee appointed under the Constitution of the Society, for the term of one year.

(Signed,) J. CAMPBELL, Pres.

The primary objects of the Society and their Rules and Regulations have already been published with the Address lately circulated. They shall, however, again be published for those subscribers who may not have received the address. The Transactions of the Society shall also appear in the Journal, commencing with the next number.

At the Quarterly meeting of the Council, in September last, Edward Bullen, Esq., Secretary of the Royal Irish Agricultural Improvement Society; J. Hall Maxwell, Esq., Secretary of the Highland Agricultural Society of Scotland; Wm. Shaw, Esq., 24, Norfolk-street, London, Editor of the Mark Lane Express, and Farmers' Magazine, and a member of the Royal English Agricultural Society; and L. T. Simmonds, Esq., London Editor of the Colonial Magazine, were unanimously elected honorary members of the Lower Canada Agricultural Society, and the Secretary was instructed to apprise these gentlemen of their election.

In the month of October last, a great ploughing match for the County of Rutland, took place at Oakham, at which one hundred and fifteen ploughs were present and worked in several fields. These ploughing matches have been under the superintendence of Mr. Baker, of Cottesmore, for twenty years, and on this last occasion a testimonial was presented to

Mr. Baker, with the following address, by the Chairman of the meeting:—

“The most pleasant part of my duty is to present you, sir, with this testimonial, which I hope you will accept at my hands as a small acknowledgment of the benefits conferred upon agriculture by your exertions to improve the art of ploughing; and may you live long to reap the reward of your labours, and be a blessing to your family and friends, and may your descendants in ages yet unborn point to it with pride and pleasure as a trophy of their ancestor’s deserts! (loud applause). He would not now ask them to fill bumpers to the health of Mr. Baker, but to fill as they felt, and do that justice to the toast which its merits demanded.” (Loud applause.)

The testimonial is a small silver plough, standing upon a silver plinth, representing a mound of earth covered with herbage, wild flowers, and plants, elegantly ornamented with oak foliage. The plinth rests upon a rosewood base covered with crimson velvet, and the whole placed under a glass shade. It is wrought exquisitely, and with great taste and judgment, dead and bright silver contrasting beautifully in its composition, and is the production of Mr. Benjamin Smith, of 12, Duke-street, Lincoln’s Inn-fields. The inscriptions are engrossed upon shields of bright silver, one on each side. The principal inscription is—“This tribute of respect was presented to Richard Westbrook Baker, Esq., on the twentieth and concluding anniversary of the Cottesmore Ploughing Meeting, held at Oakham, Oct. 5th, 1847, in grateful testimony of the many advantages conferred upon agriculture by his indefatigable zeal to promote and improve the art of ploughing.” And on the reverse—“The Rutland Plough (of which the above is an exact mode) was originally made by the Messrs. Ransome, of Ipswich, expressly for and according to the suggestions of R. W. Baker, Esq.”

Mr. Baker in returning thanks made the following observations respecting ploughs:—

“My anxious wish for *some years* has been to advance by all means in *my power* the proper application of this *valuable implement in agriculture* in this immediate neighbourhood, which, generally speaking, was very much in the rear of good ploughing. Upon first turning my attention to the subject, I thought it necessary to excite a *spirit of emulation*, both in master and men, and by degrees destroy the strong-rooted prejudice in favour of antiquated ploughs, slowness of movement, horse-power badly applied, &c. &c. Under these impressions, an annual meeting was established under the patronage of a few persons of consequence, both in *property and discernment*, convinced of what it was possible to do. A pair of horses abreast, without a driver, *was introduced*, depth of ploughing, the time stated as necessary to perform the work fixed, &c. This, to a cer-

tain extent, did much good; but a difficulty occurred that puzzled me much how to find two ploughs that would do their work alike upon the same land, and it *never was* in my power to discover a remedy with our country plough makers. The plough made by Ransome, No. XVIII, in the Magazine, called the Bedford wheel-plough, partly served my purpose, and succeeded in ploughing land in dry weather, when *all other* ploughs within our reach refused their work. I became well convinced that I had found out the right sort of *plough maker*, though not the sort of plough that I thought would be of *general* and essential service in the neighbourhood. I wanted a simple implement, *easy to regulate* and understand, yet strong, and, above all, *light of draught*. My attention has been from time to time, as a matter of necessary consequence, much directed to the construction of ploughs suited to our local purposes, and I think we have now arrived at the conclusion that in the ‘Rutland plough, made by Ransome,’ we have an implement best adapted for our use; this plough has become a general favourite. It is light in draught, simple in its construction, and consequently easy to keep in order, and is economical to the user.”

There are some Rutland wheel ploughs in this country, and we believe that in cleared land there is no better plough can be brought into a field, in the hands of a man accustomed to their use. It is a remarkable circumstance, that a young man, the son of a farmer, and under eighteen years of age, gained the first prize, a Gold Cup, and five sovereigns, with one of these ploughs, and on being handed the prize was told that “he could stand against all the world as a ploughman.” It must indeed have been a gratifying sight to see 115 ploughs, with horses, harness and implements, of such a superior quality, as could only be seen in an English field, where there is abundant capital and skill to have every thing suitable for the purpose required. The very idea of such an assemblage of first class ploughs, horses, and men to work them, is sufficient to encourage us to endeavour to follow their noble example.

We observe in our last files of English papers that 450 bushels of potatoes have been raised to the acre in England, with no other manure but salt and ashes, and they are said to be free from disease. We have raised potatoes this year on the same sort of manure, with the addition of a small quantity of soot, and the

potatoes were excellent and perfectly sound; though when planted with farm yard manure, more than half the crop were unsound.

The following selection is from an excellent work, *Stephens' Book of the Farm*, "OF THE KIND OF EDUCATION BEST SUITED TO YOUNG FARMERS:"—

With respect to the education of farmers, no course of elementary education is better than what is taught at the excellent parochial schools of this country. The sons of farmers and of peasants have in them a favorable opportunity of acquiring the elements of a sound education, and they happily avail themselves of the opportunity; but, besides elementary education, a classical one sufficiently extensive and profound for farmers may there also be obtained. But there are subjects of a different nature, sciences suited to the study of maturer years, which young farmers should make a point of learning—I mean the sciences of Natural Philosophy, Natural History, Mathematics, and Chemistry. These are taught at colleges and academies. No doubt these sciences are included in the curriculum of education provided for the sons of landowners and wealthy farmers; but every class of farmers should be taught them, not with a view of transforming them into philosophers, but of communicating to them the important knowledge of the nature of those phenomena which daily present themselves to their observation. Such information would make them more intelligent farmers, as well as men. The advantages which farmers would derive from studying those sciences will be best understood by pointing out their nature.

It is evident that most farming operations are much affected by external influences. The state of the weather, for instance, regulates every field operation, and local influences modify the climate very materially. Now it should be desired by the farmer to become acquainted with the causes which give rise to those influences, and these can only be known by comprehending the laws of Nature which govern every natural phenomenon. The science which investigates the laws of these phenomena is called *Natural Philosophy*, and it is divided into as many branches as there are classes of phenomena. The various classes of phenomena occur in the earth, air, water, and heavens. The laws which regulate them, being unerring in their operation, admit of absolute demonstration; and the science which affords the demonstration is called *Mathematics*. Again, every object, animate or inanimate, that is patent to the senses, possesses an individual identity, so that no two objects can be confounded together. The science which makes us acquainted with the marks for identifying individuals is termed *Natural History*. Farther, every object, animate or inani-

mate, cognizable by the senses, is a compound body made up of certain elements. *Chemistry* is the science which makes us acquainted with the nature and combinations of those elements. We thus see how generally applicable those sciences are to the phenomena around us, and their utility to the farmer will be the more apparent, the more minutely each of them is investigated. Let us take a cursory view of each subdivision as it affects Agriculture.

Mathematics are either abstract or demonstrative. Abstract mathematics "treat of propositions which are immutable, absolute truth," not liable to be affected by subsequent discoveries, "but remain the unchangeable property of the mind in all its acquirements." Demonstrative mathematics are also strict, but are "interwoven with physical considerations"—that is, subjects that exist independently of the mind's conceptions of them or of the human will; or, in other words still, considerations in accordance with nature. Mathematics thus constitute the essential means of demonstrating the strictness of those laws which govern natural phenomena. Mathematics must, therefore, be first studied before those laws can be understood.—Their study tends to expand the mind—to enlarge its capacity for general principles, and to improve its reasoning powers.

Of the branches into which Natural Philosophy is divided, that which is most useful to farmers is *Mechanics*, which is defined to be "the science of the laws of matter and motion, so far as is necessary to the construction of machines, which, acting under those laws, answer some purpose in the business of life." Without mechanics, as thus defined, farmers may learn to *work* any machine which answers their purpose; but it is only by that science they can possibly understand the *principles* upon which any machine is constructed, nor can any machine be properly constructed in defiance of those principles. Both machinists and farmers ought to be versed in mechanical science, or the one cannot make, and the other guide, any machine as it ought to be; but, as I have had occasion to express my sentiments on this subject already, I shall abstain from dilating farther upon it here. Mathematical demonstration is strictly applicable to mechanics, whether as to the principles on which every machine operates, or the form of which it is constructed. The *principles* of mechanics are treated of separately under the name of *Dynamics*, which is defined to be "the science of force and motion."

Pneumatics is the branch of natural philosophy which is next to mechanics in being the most useful to the farmer to know. It "treats of air, and the laws according to which it is condensed, rarified, gravitates." The states of the air, giving a variable aspect to the seasons, as they pursue their "appointed course," endue all atmospheric phenomena with extreme interest to the farmer. Observation alone can render variety of phenomena familiar; and their apparent capri-

sciousness, arising most probably from the reciprocal action of various combinations of numerous elements, renders their complicated results at all times difficult of solution; for all fluids are susceptible of considerable mutations, even from causes possessing little force; but the mutations of elastic fluids are probably affected by many inappreciable causes. Nevertheless, we may be assured that no change in the phenomena of the atmosphere, however trivial, takes place but as the unerring result of a definite law, be it chemical or physical.

Closely connected with pneumatics, in so far as the air is concerned, are the kindred natural sciences of *electricity* and *magnetism*. These agencies, though perfectly susceptible to one or more of the senses, and evidently constantly at work in most of the phenomena of the atmosphere, are mysteriously subtle in their operations. It is extremely probable that one or both are the immediate causes of all the changes which the atmosphere is continually undergoing. It is hardly possible that atmosphere, surrounding the globe like a thin envelope, and regularly carried round with it in its diurnal and annual revolutions, should exhibit so very dissimilar phenomena every year, but from some disturbing cause, such as the subtle influences of electricity, which evidently bear so large a share in all remarkable atmospheric phenomena. Its agency is the most probable cause of the *irregular* currents of the air called winds, the change of which are well known to all farmers to possess the greatest influence on the weather.

Natural History comprehends several branches of study. *Meteorology* consists of the observation of the apparent phenomena of the atmosphere. The seasons constitute a principal portion of these phenomena. The clouds constitute another, and are classified according to the forms they assume, which are definite, and indicative of certain changes. The winds constitute a third, and afford subjects for assiduous observation and much consideration. Attention to the directions of the wind and forms of the clouds will enable farmers to anticipate the kind of weather that will afterward ensue in a given time in their respective localities. The prevalence of the aqueous meteors of rain, snow, hail, and ice, is indicated by the state of the clouds and winds.

Hydrography is the science of the watery part of the terraqueous globe. It makes us acquainted with the origin and nature of springs and marshes, the effects of lakes, marshes, and rivers, on the air and on vegetation in their vicinity; and the effects of sea air on the vegetation of maritime districts.

Geology is the knowledge of the substances which compose the crust of the earth. It explains the nature and origin of soils and subsoils; that is, the manner in which they have most probably been formed, and the rocks from which they have originated; it discovers the relative position,

structure, and direction in which the different rocks usually lie. It has as yet done little for Agriculture; but a perfect knowledge of geology might supply useful hints for draining land, and planting trees on soils and over subsoils best suited to their natural habits, a branch of rural economy as yet little understood, and very injudiciously practiced.

Botany and *botanical physiology*, which treat of the appearance and structure of plants, are so obviously useful to the agricultural pupil, that it is unnecessary to dilate on the advantages to be derived from a knowledge of both.

Zoology, which treats of the classification and habits of all animals, from the lowest to the highest organized structure, cannot fail to be a source of constant interest to every farmer who rears stock. There are few wild quadrupeds in this country; but the insect creation itself would employ a lifetime to investigate.

Anatomy, especially *comparative anatomy*, is highly useful to the farmer, inasmuch as it explains the functions of the internal structure of animals upon which he bestows so much care in rearing. Acquainted with the functions of the several parts which constitute the corporeal body, he will be the better able to apportion the food to the peculiar constitution of the animal; and also to anticipate any tendency toward disease, by a previously acquired knowledge of premonitory symptoms. Comparative anatomy is most successfully taught in veterinary schools.

The only other science which bears directly on Agriculture, and with which the pupil farmer should make himself acquainted, is *Chemistry*; that science which is cognizant of all the changes in the constitution of matter, whether effected by heat, by moisture, or by other means. There is no substance existing in nature but is susceptible of chemical examination. A science so universally applicable cannot fail to arrest popular attention. Its popular character, however, has raised expectations of its power to assist Agriculture to a much greater degree than the results of its investigations yet warrant. It is very generally believed, not by practical farmers, but chiefly by amateur agriculturists, who profess great regard for the welfare of Agriculture, that the knowledge derived from the analysis of soils, manures, and vegetable products, would develop general principles which might lead to the establishment of a system of Agriculture as certain in its effects as the unerring results of science. Agriculture, in that case, would rank among the experimental sciences, the application of the principles of which would necessarily result in increased produce. The positive effects of the weather seem to be entirely overlooked by these amateurs. Such sentiments and anticipations are very prevalent in the present day, when every sort of what is termed *scientific* knowledge is sought after with an eagerness as if prompted by the fear of endangered existence. This feverish anxiety

for scientific knowledge is very unlike the dispassionate state of mind induced by the patient investigation of true science, and very unfavorable to the right application of the principles of science to any practical art. Most of the leading agricultural societies instituted for the promotion of practical Agriculture, have been of late assailed by the entreaties of enthusiastic amateur agriculturists, to construct their premiums to encourage only that system of Agriculture which takes chemistry for its basis.

These are the physical sciences whose principles seem most applicable to Agriculture; and being so, they should be studied by every farmer who wishes to be considered an enlightened member of his profession. That farmers are quite competent to attain to these sciences, may be gathered from these observations of Sir John Herschell: "There is scarcely any well-informed person who, if he has but the will, has not the power to add something essential to the general stock of knowledge, if he will only observe regularly and methodically some particular class of facts which may most excite his attention, or which his situation may best enable him to study with effect. To instance one subject which can only be effectually improved by the united observations of great numbers widely dispersed: Meteorology. one of the most complicated but important branches of science, is at the same time one in which any person who will attend to plain rules, and bestow the necessary degree of attention, may be effectual service." But in drawing our conclusions, great caution is requisite; for, "in forming inductions, it will most commonly happen that we are led to our conclusions by the especial force of some two or three strongly impressive facts, rather than by affording the whole mass of cases a regular consideration; and hence the need of cautious verification. Indeed, so strong is this propensity of the human mind, that there is hardly a more common thing than to find persons ready to assign a cause for every thing they see and in so doing, to join things the most incongruous, by analogies the most fanciful. This being the case, it is evidently of great importance that these first ready impulses of the mind should be made on the contemplation of the cases most likely to lead to good inductions. The misfortune, however, is, in natural philosophy, that the choice does not rest with us. We must take the instances as Nature presents them. Even if we are furnished with a list of them in tabular order, we must understand and compare them with each other before we can tell which are the instances thus deservedly entitled to the highest consideration. And, after all, after much labor in vain, and groping in the dark, accident or casual observation will present a cause which strikes us at once with a full insight upon the subject, before we can even have time to determine to what class its *prerogative* belongs."

Many farmers, I dare say, will assert it to be

far beyond the reach of their means, and others beyond their station, to bestow on *their* sons so learned an education as that implied in the acquirement of the sciences just now enumerated. Such apprehensions are ill-founded; because no farmer that can afford to support his sons at home, without working for their bare subsistence, but possesses the means of giving them a good education, as I shall immediately prove; and no farmer, who confessedly has wealth, should grudge his sons an education that will fit them to adorn the profession they intend to follow.

It cannot be denied that a knowledge of mathematics and natural philosophy greatly elevates the mind. Those farmers who have acquired these sciences, must be sensible of their tendency to do this; and they will therefore naturally wish *their* sons to enjoy what they themselves do. Those who of themselves do not know these sciences, on being informed of their beneficial tendency, will probably feel it to be their duty to educate their sons, and thereby put it in their power to raise themselves in society and at the same time shed a lustre on the profession of which they are members. The same species of reasoning applies to the acquirement of the peculiar accomplishments bestowed on the mind by a knowledge of natural history and chemistry. Neither the time nor expense of acquiring such an education is of that extent or magnitude as to deter any farmer's son from attempting it, who occupies a station above that of a farm steward. Besides these considerations, a good education, as the trite saying has it, is the best legacy a parent can leave his child; and, on this account, it is better for the young farmer himself to bestow on him a superior education, in the first instance, with a part even of the money destined by his father to stock him a farm, than to plensish for him a larger farm, and stint his education. The larger farm would, no doubt, enable the half-educated son to earn a livelihood more easily; but the well-educated one would be more than compensated in the smaller farm, by the possession of that cultivated intelligence which would induce him to apply the resources of his mind to drawing forth the capabilities of the soil, and making himself an infinitely superior member of the society. Were industrious farmers as eager to improve their sons' mind by superior education, as they too often are to amass fortunes for them—a boon unprofitably used by uncultivated minds—they would display more wisdom in their choice. No really sensible farmer should hesitate to decide which course to take, when the intellectual improvement of his family is concerned. He should never permit considerations of mere self to overcome a sense of right and of duty. Rather than prevent his son having the power to raise himself in his profession, he should scrupulously economize his own expenditure.

I shall now show that the time occupied in the acquisition of those sciences which are expedient

for the farmer to learn, is not lost when compared with the advantages which they may bestow. Part of three years will accomplish all, but three years are doubtless an immense time for a young man to lose! So it would be; but, to place the subject in its proper light, I would put this statement and question for consideration—Whether the young farmer's time, who is for years constantly following his father's footsteps over the farm, and only superintending a little in his absence, while the father himself is, all the time, quite capable of conducting the farm, is not as much lost, as the phrase has it, as it would be when he is occupied in acquiring a scientific education at a little distance from home? Inasmuch as the young man's time is of use to the farm, the two cases are nearly on a par; but, in as far as both cases affect himself, there is no question that science would benefit him the more—no question that a superior education would afterwards enable him to learn the practical part of his profession with his father, with much greater ease to himself. The question is thus narrowed to the consideration of the alternative of the cost of keeping the son at home, following his father as idly as his shadow, or of sending him to college. Even in this pecuniary point of view, the alternative consists merely of the difference of maintenance at home, and that in a town, with the addition of fees. That this difference is not great, I shall now show.

Part of three years, I have said, would accomplish all amply, and in this way: the first year to be devoted to mathematics, the second to natural philosophy, and the third to natural history and chemistry; and along with these principal objects, some time in both years should be devoted to geography, English grammar and composition, book-keeping, and a knowledge of cash transactions. The two months' vacation in each year could be spent at home. There are seminaries at which these subjects may be studied, at no great distance from every farmer's home. There are, fortunately for the youths of Scotland, universities, colleges, and academies, in many parts of the country. Edinburgh, Glasgow, Aberdeen, and St. Andrews, can boast of well-endowed universities and colleges; while the academies at Dundee, Perth, Ayr, Dollar, and Inverness, have been long famed for good tuition.

AGRICULTURAL SCHOOL AT KIMBOLTON.

This new institution was formally opened at Kimbolton on Monday se'ennight. The chair was taken by the noble promoter of the institution, his Grace the Duke of Manchester, who addressed the company upon the object of the meeting. After which Professor Johnston spoke at great length on the subject of Agricultural Education. He said:—

“ You have several branches of education and nounced, but those usually given at grammar-schools will not be neglected. Another reason why you should support this school liberally is, that in these midland counties there is no other of the same character. You have, too, an assurance that the various branches of education will be properly attended to. Mr. Thorntou and Mr. Eager have been appointed masters; and I am convinced the more you know of them, the more will you be convinced that the committee have made a judicious selection. There is a farm attached to the school, and it will be put under such management that the pupils will get that practical knowledge without which the best theories are as nothing. Then as to the charge for the education of the pupils, the committee have wisely fixed it at 25*l.* a-year; this is a sum so low that any one who can scrape the money together will find it a most admirable investment. To you farmers I now particularly address myself. You had better, by far, give your sons a good education than a large fortune—they may lose what you put in their pockets; but once lodge a good store of knowledge in their heads, and they will not lose that. The District too, which have been chosen, is most excellent; and if a further recommendation be required, I point to the names of the committee and visitors of the school, as a sufficient guarantee that the masters will meet with encouragement in the performance of their duties. By this school you will elevate the character of the neighbourhood, and of the agricultural class in particular, and enable your sons to remain in the same locality where you have lived so long, which is by no means a small recommendation to a farmer. There is always a great desire among farmers that their children should succeed them on the same lands; but a great change is coming over the country, and many names once flourishing in certain districts have now become extinct. The cause of this is that there is a great progress of improvement; and if the people do not progress with it, they will be swept away to make room for others more skilful and more enterprising. If you go to the manufacturing districts, you will find that the people there are under the impression that the farmers of England do not cultivate the land properly, and make the most of it for the production of food for the people—that they do not possess the requisite knowledge, and they are actually educating their own sons as farmers. How necessary is it then that you should place your children in a proper position to stand up against difficulties; and I know of no plan whereby this can be accomplished so effectually and so economically as by educating them well, and placing them in these schools.”

The noble chairman then introduced Mr. Blacker, of Armagh, to the meeting.

Mr. BLACKER addressed the meeting as follows:—

“ It is with great diffidence that I venture to

make any remarks after the able addresses which have been delivered; but being accidentally present at this meeting, I cannot help taking a part in the proceedings of the day, in which I take a deep interest, being fully convinced that there never has been a period in the history of England when increased exertions for the improvement of agriculture were more called for than at the present time. Every one, I dare say, who hears me, is fully aware that in a few years all protection to agricultural produce must cease. To every one that calmly considers the question I think it must be evident that a competition with those who have cheaper land, cheaper labour, a better climate, and lighter taxation, can only be supported by the British farmer by calling to his aid a superior system of cultivation and an increased produce to afford compensation for a diminished price. It is evident that sixty bushels at 40s. the quarter will be equal to forty bushels at 60s. Such an increase, therefore, is the object that must be kept in view; and the great question to be considered is, how this additional produce can be obtained. Every one knows how hard it is to change habits which have been handed down from father to son for generations, and how difficult it is to make men advanced in life change the systems they have seen acted on from childhood; but it is quite clear, a change of system must take place before the increased produce I have alluded to can be obtained; and it is, therefore, in this point of view that the establishment of agricultural schools at present becomes so important, as being the means of training up the young men in a superior mode of husbandry, before they have acquired prejudices to be overcome; and whilst thus training up the young, the increased produce of the model farm will afford a lesson that must have its effect upon the old, and thus by degrees bring about the desired change. Soil and climate, with other local circumstances, influence all farming operations so extensively, that I feel it would be very unbecoming in me, an entire stranger, to enter into any details as to the best course for the farmers here to pursue; that will be better left to be exemplified by the successful cultivation of the model farm, which I have no doubt will be placed under the management of a person fully competent to the important situation he is to fill.

All that the British farmer has to rely on is the superior capital and skill he can call to his aid; and in order not to lose the former, he must take care to cultivate the latter; and this he cannot do to its full extent without availing himself of those lights which modern science now casts upon agriculture. I therefore hail with pleasure the formation of this establishment as the means of bringing a scientific education within the reach of the farmers in this neighbourhood; and I do hope they will have the good sense to give their children the full benefit of it."—*Abridged from the Belford Times.*

DAIRY HUSBANDRY.

A fourth kind of farming is the *dairy* husbandry. It specially directs its attention to the manufacture of butter and cheese, and the sale of milk. Some farms are laid out for the express purpose; but the sale of milk is frequently conjoined with the raising of green crops, in the neighborhood of large towns, whose inhabitants are hence daily supplied with milk, though seldom from pasture, which is most appropriated as paddocks for stock sent to the weekly market. But a true dairy-farm requires *old pasture*. The chief business of *dairy-farm* is the management of cows and of their produce; and whatever arable culture is practiced thereon is made entirely subservient to the maintenance and comfort of the dairy stock. The milk, where practicable, is sold; where beyond the reach of sale, it is partly churned into butter, which is sold either fresh or salted, and partly made into cheese, either sweet or skimmed. No stock are reared on dairy-farms, as on pastoral, except a few quey (heifer) calves, occasionally to replenish the cow stock; nor aged stock fed in winter, as on farms in the vicinity of towns. The bull calves are frequently fed for veal, but the principle kind of stock reared are pigs, which are fattened on dairy refuse. Young horses, however, are sometimes successfully reared on dairy-farms. Horse labor being comparatively little required thereon, mares can carry their young, and work with safety at the same time; while old pasture, spare milk, and they afford great facilities for nourishing young horses in a superior manner. Locality has decided this kind of farming on the large scale.

The purchase of cows is the principal expense of stocking a *dairy-farm*; and as the purchase of live-stock in any state, especially breeding-stock, is always expensive, and live-stock themselves, especially cows, constantly liable to many casualties, a dairy-farm requires a considerable capital. It is, however, seldom of large extent—seldom exceeding 150 acres. The arable portion of the farm supplying the green crop for winter food and litter, does not incur much outlay, as hay—that obtained from old pasture grass—forms the principal food of all the stock in winter. The rent of dairy-farms is high.

A *dairy-farmer* should be well acquainted with the properties and management of milch cows, the manufacture of butter and cheese, the feeding of veal and pork, and the rearing of horses; and he should also possess as much knowledge of arable culture as to enable him to raise those kinds of green crops, and that species of hay, which are most congenial to cows for the production of milk.—*Highland Society's Farm Journal.*

WINTER is to the farmer the season of *domestic enjoyment*. The fatigues of the long summer-day leave little leisure, and much less inclination, to tax the mind with study; but the long winter evening, after a day of bracing exercise, affords

him a favorable opportunity, if he have the inclination at all, of partaking in social conversation, listening to instructive reading, or hearing the delights of music. In short, I know of no class of people more capable of enjoying a winter's evening in a rational manner, than the family of the country gentleman or the farmer.

Viewing winter in a higher and more serious light—in the repose of nature, as emblematical of the mortality of man—in the exquisite pleasures which man in winter, as being of sensation, enjoys over the lower creation—and in the eminence in which man, in the temperate regions, stands, with respect to the development of his mental faculties, above his fellow-creatures in the tropics: in these respects, winter must be healed by the dweller in the country, as the purifier of the mental as well as of the physical atmosphere.

On this subject, I cannot refrain from copying these beautiful reflections by a modern writer, whose great and versatile talents, enabling him to write well on almost any subject, have long been known to me. "Winter," says he, "is the season of Nature's annual repose—the time when the working structures are reduced to the minimum of their extent, and the energies of growth and life to the minimum of their activity, and when the phenomena of nature are fewer, and address themselves less pleasingly to our senses than they do in any other of the three seasons. There is hope in the bud of Spring, pleasure in the bloom of Summer, and enjoyment in the fruit of Autumn; but, if we make our senses our chief resource, there is something both blank and gloomy in the aspect of Winter.

"And if we were of and for this world alone, there is no doubt that this would be the correct view of the winter, as compared with the other seasons; and the partial death of the year would point as a most mournful index to the death and final close of our existence. But we are beings otherwise destined and endowed—the world is to us only what the lodge is to the wayfaring man; and while we enjoy its rest, our thoughts can be directed back to the past part of our journey, and our hopes forward to its end, when we shall reach our proper home, and dwell there securely and forever. This is our sure consolation—the anchor of hope to our minds during all storms, whether they be of physical nature, or social adversity. * * *

"We are beings of sensation certainly; many and exquisite are the pleasures which we are fitted for enjoying in this way, and much ought we to be grateful for their capacity of giving pleasure, and our capacity of receiving it: for this refined pleasure of the senses is special and peculiar to us out of all the countless variety of living creatures which tenant the earth around us. They eat, they drink, they sleep, they secure the succession of their race, and they die; but not one of them has a secondary pleasure of sense beyond the accomplishment of these very humble ends.

We stand far higher in the mere gratifications of sense; and in the mental ones there is no comparison, as the other creatures have not an atom of the element to bring to the estimate.

"The winter is, therefore, the especial season of man—*our own season*, by way of eminence; and men who have no winter in the year of the region in which they are placed, never of themselves display those traits of mental development which are the true characteristics of rational men, as contracted with the irrational part of the living creation. It is true there must be the contrast of a summer, in order to give this winter its proper effect, but still the winter is the intellectual season of the year—the season during which the intellectual and immortal spirit in man enables him most triumphantly to display his superiority over 'the beasts that perish.'"—*Highland Society's Farm Journal*.

EARLY MATURITY OF SUSSEX STOCK.

TO THE EDITOR OF THE SUSSEX AGRICULTURAL EXPRESS.

SIR,—Having always noticed how ably and strenuously you advocate the excellence of the Sussex breed of beasts, and seeing in your paper of last week, that bringing the Sussex stock to early maturity is exciting some attention in the east, and as the short-horn breeders sincerely tell us, "Your cross breed may be all very well when you keep them for six or seven years, but you cannot bring them out so early as we are able;" I will place in your hands the weight of two two-year old steers bred and fattened by myself, of the breed of Mr. Selmes, Beckley:—

One weighed 140 stones 8lbs., and carried 18st. 4lbs. of loose fat; the other weighed 129st. 3lbs., and carried 18st. 3lbs. of loose fat—which plainly shows, if you give them any chance, they can be made ripe at that age.

And remain in haste, yours obediently,
Hurst, Dec. 28, 1846. W. MARSHALL.

In the "Rural Cyclopædia" the following is given as the Suffolk mode of curing, the hams and bacon of that county being of fine quality:—"The best pickle for the fitches consists of 3lbs. of white and 2lbs. of bay salt, 3lbs. of coarse brown sugar, 4 oz. of saltpetre, 2 oz. of saltprunella, a few grains of black pepper, a few grains of whole Jamaica ginger, and a quart of very stale strong ale; the whole purified by heat and skimming, boiled till nearly dry, and rubbed into the hams in as hot a state as the hand can bear. Both fitches and hams are prepared for the pickle by salting, and twenty-four hours' digorgement, and are wiped very dry before the pickle is applied: the fitches are rubbed, basted and turned every day during five weeks; and both are eventually smoked either in chimneys where wood fuel is consumed, or elsewhere, with leaves, brushwood, and branches of trees mixed with litter."

GOD SAVE THE PLOUGH!

BY MRS. SIGOURNEY.

See how the shining share
Marketh earth's bosom fair,
Crowning her brow!
Bread in its furrow springs,
Health and repose it brings,
Treasures to unknown kings—
God save the plough!

Look in the warrior's blade,
While o'er the tented glade
Hate breathes its vow,
Wrath, its unsheathing wakes,
Love at its lightning quakes,
Weeping and woe it makes—
God save the plough!

Ships o'er the deep may ride,
Storms wreck their bannered pride,
Waves whelm their prow;
But the well-loaded wain,
Garn'ring the golden grain,
Gladdens the household train—
God save the plough!

Who are the truly great?—
Minions of pomp and state,
Where the crowd bow?
Give us hard hands and free,
Culturers of field and tree,
Best friends of liberty—
God save the plough!

CARROTS.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—Carrots are now much used in Lancashire as substitutes for the potato, as the nutritious qualities of the carrot have been attested by chemical experiments to excel the potato, the price not here being one-half of the price of the potatoes; and on Saturday morning last, in the Preston market, there was an abundant supply—from 5s to 8s per load of 240lbs., at which price they met with a ready clearance for culinary purposes; and for puddings they are found most excellent, made in the following manner: the carrot is grated; the apertures in the carrot-grater are made larger than those used for spices, so that the carrot may pass readily through: say to 1lb. of grated carrot the same quantity of wheat-flour is added thereto, and $\frac{1}{4}$ lb. of suet, $\frac{1}{4}$ lb. of currants, and a little salt and spice: they are all then well mixed together, put into a basin, enclosed in cloth, and then well boiled; and when brought to the table a little melted butter may be added to it, which then makes it a most delicious grated pudding, and at a little expense. By the above proportions, they may be made any size; and for the working man they are found satisfying and pleasant, if they have but a little bacon put therein, and more nutritious qualities than the potato, and cheaper, and prepared with but little trouble; and as the

season is now at hand, it would be well for every cottager to prepare a little ground in his garden for the carrot, so that he may have a few, as a luxurious meal occasionally, and all farmers would also do well to do the same thing.

Sir, Yours truly,

WM. MARSHALL.

Nateby Cottage, Feb. 4, 1847.

COMPARATIVE VALUE OF BARLEY,
MALT, SUGAR, AND MOLASSES.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—I beg to hand you, subjoined, a Table of the comparative value of Barley, Malt, Sugar, and Molasses, which may be useful at the present moment.

I have neither time nor inclination to enter into a controversy upon the subject; but as brewers (*I believe*) generally say sugar will not be used in breweries, and as the sugar interests say, such is the enormous crop of sugar coming forward, that sugar must come down to 43s to 44s per cwt. (which is equivalent to malt at 69s to 71s per qr.), perhaps some of your numerous correspondents will be kind enough to enlighten me upon the subject, and say which of the two is right.

You will observe that this table is based upon the assumption that malt only yields 180lbs. of saccharine per qr., but this year, fine Suffolk and Herts malt yields considerably more, and therefore malt is so much the more valuable.

RELATIVE VALUE OF
BARLEY. MALT. SUGAR. MOLASSES.

BARLEY.		MALT.		SUGAR.		MOLASSES.	
(18 lbs. saccharine per qr.)		Per qr.		Cwt.		Cwt.	
s.	d.	s.	d.	s.	d.	s.	d.
33	0.....60	0.....37	4.....26	8	8		
35	0.....62	0.....38	7.....27	7	7		
37	0.....64	0.....39	10.....28	6	6		
39	0.....66	0.....41	0.....29	4	4		
41	0.....68	0.....42	4.....30	3	3		
43	0.....70	0.....43	7.....31	1	1		
45	0.....72	0.....44	9.....32	0	0		
47	0.....74	0.....46	0.....32	11	11		
49	0.....76	0.....47	3.....33	10	10		
51	0.....78	0.....48	6.....34	8	8		
53	0.....80	0.....49	9.....35	7	7		
55	0.....82	0.....51	0.....36	5	5		
57	0.....84	0.....52	3.....37	4	4		
59	0.....86	0.....53	6.....38	3	3		
61	0.....88	0.....54	9.....39	2	2		
63	0.....90	0.....56	0.....40	0	0		

Woodbridge, Feb. 5.

INQUIRER.

MONTREAL:

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