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AND

Transactions of the Board of Agriculture

OF

LOWER CANADA.

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CONTENTS.

(*General.*)

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N. B.—Communications received before the 15th of each month will appear in the ensuing Number.

"*O! fortunatos nimium, sua si bona norint,*
Agricolas! quibus ipsa, procul discordibus armis,
Fundit humo facilem victum justissima tellus."
VIRG. GEO.

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PUBLISHED UNDER THE DIRECTION OF JAMES ANDERSON, ESQ.,

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CONTENTS.

TO OUR READERS.

It is our intention, henceforth, to reserve the more lengthy articles, and to aim at more variety in the Journal. Our object shall be to condense our articles as much as possible,—so as to make the utmost of our space.

September was ushered in with cold and showery weather. We have given elsewhere an article containing a digest of the returns to questions proposed by the Board of Trade of Hamilton to practical men throughout the western peninsula, and our Readers will perceive the prospect is very cheering. We have in former numbers alluded to the harvest prospects, and the latest returns have fully realized our anticipations. The fruit crop will, however, in Lower-Canada, be but small.

The weather improved with the progress of the month.—We hear no complaints of potato rot and have seen but very few diseased tubers. If the yield in Upper-Canada is reported ample, except hay and wheat—we may safely affirm that the yield of Barley, Oats, Peas and Potatoes this year, in Lower-Canada, will be abundant and of excellent quality.

Towards the middle of the month the weather became unseasonably cold, and on the night of the 14th experienced an appreciable degree of frost, which told on the foliage of the mountain.

Great exertions are making to induce the Grand Trunk Road to run in a track to our port, procuring the erection of convenient flour sheds and stores, which would save the whole province, at this point, 4 cents a barrel on cartage, alone besides incipentals ; and there can be no doubt that this arrangement would at sametime tend materially to increase the business of the road.

It is not supposed that the harvest in England or France will equal that of last year, and we have contradiciory accounts from some quarters in the West.

Our monthly article has been crowded out of this number ; but, with the next, and, henceforth, our Readers, as promised, may rely on receiving 48 pages regularly, of carefully prepared matter ; and we shall be especially careful to admit nothing which is not recommended by its practical utility. We shall probably present our Readers with some relative correspondence, which will explain the cause of any delay which may have taken place. J. A.

LETTERS ON CANADIAN AGRICULTURE AND AGRICULTURAL IMPROVEMENT.

Practical Education in Agriculture.—Drainage Bill for Canada.—Agricultural Fairs and Gatherings.—Rearing of Improved Stock.—Improved Hay Making.

To the President and Members of the Board of Agriculture of Lower-Canada.

Mr. President and Gentlemen.

I have undertaken to embody in a series of familiar letters, some practical remarks on Canadian Agriculture and Agricultural Improvement. I shall endeavour to aim at variety and comprehensiveness, rather than minute detail, which can be carried out elsewhere in a succession of short papers or treatises, taking up in succession those subjects which would appear to merit discussion. As my Readers proceed they will perhaps find these letters the more interesting; as they are written, *currente calamo* without either study or pretension. And to begin:

In an early number of The Farmers' Journal for 1858–59, we read some remarks recommending to the farmers of this Country the practice prevalent in Britain, and it is, when it can be conveniently arranged, to send their sons to reside as pupils for a year or two with some Agriculturist of eminence, to complete their agricultural education, and in order that they may have an opportunity of acquiring a thorough knowledge of the mechanical and field operations necessary on a farm, with the best modes of reducing their acquired theoretical knowledge to usefulness, and adopting it into every day practice. A great amount of useful knowledge may be acquired from books by old and young; but all that is truly valuable is capable of being exemplified in every day practice, and will stand the test of repeated experiment,—uniformly determining in a satisfactory result. I would beg to refer my Readers to the few remarks in the Journal on this head, and I am sure they will forgive me for taking this liberty.

I am glad to find it announced, that it is in contemplation to introduce a Drainage Bill for Canada next session. The operation of such a measure would be attended with incalculable benefit. It is difficult to convince a farmer whose land is tolerably dry on the surface, that it is in reality poisoned by a superfluity of moisture, and that he is practically cheated out of the one half of the legitimate produce of his land. He will not believe that his grasses are inferior to what they might be, and that his crops are yellow, sickly and scanty from this cause alone. That though his soils may grow dry with midsummer, yet, in the early part of the year, they have continued unnecessarily and injuriously wet; that they have, in consequence, in many parts, baked hard and stiff—

showing little better than a *caput mortuum*. We are not of the number who believe that, in the present stage of our agriculture in this country, it would pay to drain indiscreminately, as advised by enthusiasts. But there are few farms which do not contain some portion which might be advantaged by draining; and there can be no doubt the operation would pay, if economically and efficiently executed. There can be no difficulty in distinguishing such spots as require it. The practised eye would rest on them at the first glance along a series of fields under any system of cropping. The vegetation on the surface tells the tale in a moment. Our draining in this country will be on a more limited and partial scale than in Britain; but it cannot be concealed, that we have many tens of thousands of unproductive acres, which could be made to return a maximum yield by efficient drainage, and would amply repay the outlay.

It is not my object in these letters to go into minute detail, nor to explain processes of improvement; but I am especially anxious to direct public attention to our short-comings, and the methods of improvement by which they may be supplemented and repaired.

I would venture then to call attention to another subject which is of interest to our agriculturists in this country. I allude to the holding of Fairs and Gatherings for the sale of cattle, advocating the necessity for their frequent periodical occurrence. The farmer, in this country should look forward to them as a matter of course, and a matter of certainty at stated periods, as the inhabitant of Britain does to his county andvillage Fairs. In this country, a farmer wishing to make sales or purchases is dependent on chance, after exhausting the resources of his immediate locality; and he is frequently either disappointed, or is forced to take the best he can find, and rest contented therewith. If he wants an animal, he must leave his work, and go driving about the country to the neglect of his every day duties. Now would it not be well to connect sales of stock and Implements, on every occasion, with county and other Fairs. It would make such Fairs much more important and popular; the people would congregate thither, and the general interest in them would encrease wonderfully. Byers and sellers would meet from a distance. The circle would yearly extend. The holding of such Fairs would become an established institution of the country, - There would be a periodical grouping of the whole country—in time, of the whole district, to take part in these periodical Fairs; and a mutual interchange of ideas would tend to improvement in many ways, while the interests of buyers and sellers would be served at sametime. A ready sale would be ensured—no time would be lost—and they could return to their daily occupations, after transacting much necessary business in the most satisfactory manner and with the least possible loss of time. It might soon come to be that we would enjoy the advantage of quaterly, or even monthly fairs and markets,—making sales of grain by sample, with delivery at convenience; and farmers would thus be studying economy, while they would be realizing the most remunerating price to be commanded in the market according to the quality of their samples. It would be well if some contributor in the Journal would furnish a programme, exemplify-

ing the best manner of conducting such Fairs, and they would, no doubt, speedily attain larger dimensions ; till, at last, they would include a great variety of stock and wares of agricultural and domestic necessity.

I cannot pronounce too high an encomium on the enterprise of individuals and the exertions of local agricultural societies, who have employed their attention and funds in procuring the best specimens of improved stock of all kinds ; and there can be no doubt that their exertions are producing a marked influence on our Shows. A growing taste for improved breeds, and a knowledge of their points of excellence are becoming generally disseminated, and year by year more manifest. It is needless to expect that animals of imperfect form, or diseased, or aged and worn out, can be employed in reproduction with satisfactory results. It will not do to breed from an unsound mare when unfit for use ; nor will it do to perpetuate imperfections in form by an inconsiderate or promicious combination of animals intended for reproduction. Form, like desease, is hereditary in the improved breeds ; and a practical man of intelligence will be careful to turn his knowledge in this direction to the best account that circumstances will admit of. But would not these local gatherings afford the best opportunities for exhibiting improved stock for sale, as well as establishing the measures of improvement which individuals had arrived at severally in breeding ; the excellence apparent in one would encourage the other, until pervading emulation would tend to the general improvement of the locality—and this would speedily tell over the length and breadth of the country. But I have a wide field before me and must not dwell, prosingly, too long on any *one* subject—however important.

I remarked in a late number of the Journal some observations on harvesting.—The chief points to be observed in hay-makiug are too frequently neglected in practice, and the consequence is a wasteful expenditure of nutriment, and the production of an unpalatable and sometimes injurious aliment for stock. In order to have hay in perfection, the grasses should be cut while a considerable portion is yet in flower ; no more should be cut at a time than can be well attended to ; the shaking out of the partially dry hay should commence as soon as the dew is sufficiently dried off the ground ; thus hay-makers should be active in turning during the middle of the day, doing their work most thoroughly, and leaving no portion unshaken,—laying it as evenly as possible ; the raking should commence in good time, and the cocks should be put up before the hay feels damp and flexible in the hand, and the carting and cocking finished before night. The portion of grain that is late cut must lie in the swathe till morning. It requires both experience and system to apportion the active force employed rightly. The mowers must not overwhelm the hay-makers, and yet they must be provided with abundance of work.

Though by allowing the grass to become dead ripe, it may be cut and carried to the barn the same day ; yet the saving of labour is much more than balanced by the loss in the quality of the hay. During the ripening, a large portion of the sugar and other kindred juices contained in the stalks become converted into woody fibre, while the fatty and nitrogenous substances are absorbed in

the formation of the seeds. A great portion of these seeds, with the leaves, are shaken off and lost in the process of making into hay ; so that, by delaying too long, it frequently happens that little is left after saving beyond a bundle of dried and indigestable stalks. But we doubt not the time is at hand when our farmers will become more vigilant and more alive to their true interests ; and when, by a little more management and foresight, and instructed by the improved practice of their industrious and observant neighbours, they will be enabled to produce in the market hay of a vastly improved quality. By degrees they will be induced to employ our modern appliances for the saving and facilitating of labour ; but it would be wise to improve on their present practice, making the most of their available resources : and the production of an article of better quality and in greater abundance, and the profits thencefrom arising, will speedily enable them to provide themselves one after the other, with labour-saving machines of the most improved modern construction.

I have the honor to be,
Mr. President and Gentlemen,
Your Obedient Servant,
OBITER DICTUM.

ATMOSPHERIC INFLUENCES UPON SOIL AND VEGETATION.

Showing the nature of the atmospheric influences upon soil and vegetation, as affecting the amount and value of the produce including the modification of these influences arising from heat and cold, dryness and moisture.

With regard to the Cerealia, they will ripen although the temperature should descend to 28 ° Fah. provided it range to 52 ° or 53 ° while they are on the ground. Wheat extends to about the 60 ° north latitude, and as the climate in the west of Europe, we have seen, is milder, it will ripen well, and be productive, if the temperature while it is on the ground, be 55 °, but, if only 46 °, or under, none of the Cerealia will be perfected. Barley and Oats are found at latitude 69 ° and higher in Lapland, and ripen with a mean temperature of 47 ° to 48 °. In latitude 46 ° the Cerealia will come to tolerable perfection at an elevation of 3500 feet, and twice that height on the Caucasus, and thrice that height on the Andes. The Maize will grow in any latitude from 62 ° to 47 ° in the Old World and 45 ° in the New, provided the summer is not under 66 ° to 68 °. The Vine prefers the range from latitude 36 ° to 48 °, bnt will thrive in the Old World, where the mean temperature is from 62 ° to 47 ° or 48 °, provided the winter is not below 30 °, nor summer under 66 ° or 68 °.

Rice from 0 ° to 40 ° in the Old World; and a crop has even been ripened on the banks of the Thames in latitude 51 ° 28 ° 40 °. The Sugar Cane is productive in the Old World at latitude 36 ° and upwards when the mean temperature is 67 °; but, in America, it does not extend beyond latitude 31 °. The Olive thrives in the New World only, to latitude 30 ° but in the Old to 35 ° and 44 ° in different localities. It requires a mean temperature from 66 ° to 68 °, and the summer not below 71 °, nor winter 42 ° r The Plantain ranges from latitude 0 ° to 27 ° and requires a temperature from 82 ° to 73 °. The Cotton Plant ranges from latitude 0 ° to 34 °, but does with a winter temperature af 58 °, provided the summer reach 75 °. These will serve as examples. The celebrated HUMBOLDT states that, where the mean temperature does not reach 62 ° 6, vegetation is not resumed till the mean temperature of the spring months reaches from 42 ° 8 to 46 ° 4.

We may mention also that the station of Plants, (or the localities in which they are usually found within their natural range or habitation),depends much on physical causes, and a great variety of local circumstances.For instance the Ericeæ and various species of Carex and Arundo, with their long creeping and vivacious roots, occupy our sterile moors and sea shores, to the exclusion of most other vegetables, because they do not seem equally suited, if at all capable of thriving in such circumstances. These, from being found in groups, and covering large continuous surfaces, are called social Plants. There are other plants which do not spread much by root, bear few seeds comparatively, and these too exceedingly light, and easily dispersed by the action of the wind, which we find scattered abroad in all soils indifferently, and in various situations corresponding with the latitude, and growing with different degrees of luxuriance in those different situations. Some light will presently be thrown on the difference in station, when we come to consider the effect on plants of the increase or decrease of altitude.

An increase of height, or elevation above the level of the sea, has an effect in some respects similar to an increase of latitude. If we ascend mountains in the Torrid Zone we find, as we proceed, the Flowers, Shrubs and Trees, of more temperate climates; and, by proceeding high enough, even those of the Arctic Regions. On the Volcano of Teneriffe, five distinct Zones have been found.— That of the Vines, the Laurels, the Pine &c., and lastly that of the Grasses.

But, in a mean state of the Atmosphere, the decrease of the temperature is not always uniform with the height. At the Equator the Thermometer was found by the illustrious HUMBOLDT to fall in the first 1000 yards of ascent 1 ° in 310 feet; in the next 1000 yards 1 ° in 524 feet, and in the third and fourth stages the decrease was extremely rapid, and in the fifth was reduced again to 1 ° in 320 feet. The mean variation throughout an ascent of 15965 feet, to the limit of perpetual snow, was 1 ° in 341 feet. In the Temperate Zone the decrease, in the first 1000 yards, is 1 ° in 253 feet. In the Temperate Zone the decrease in the first 1000 yards is 1 ° in 253 feet; but to the height of perpetual snow, viz., 9587 feet, the decrease is more than 1 ° in 100 yards.

Wheat is grown in England to the height of 1000 feet, in Scotland to up-

wards of 400 feet. Next to wheat come Barley and Rye, followed by Oats, which are cultivated in Scotland, even in the northern parts, to the height of 950 feet and upwards. At this elevation Potatoes ripen, except in the narrow Highland Glens, and Turnips, at this height, are a valuable crop. The Clovers and Rye-grass likewise succeed. The Leguminous crops, so as perfectly to ripen their seeds and be well saved, range fully as low as wheat. Some varieties are however more hardy than others,—but none are to be depended on. At the height of 950 feet then, and upwards in very favorable situations and with superior management, even in the north of Scotland a desirable rotation of crops can be safely adopted. However where the Valleys are deep and narrow, they are correspondingly cold, as they do not admit the sans rays so freely. In such situations then the snow line would be lower comparatively, and with it the height at which plants could severally live and be productive. We may state, generally, that in the Temperate Zone an ascent of 1000 yards will be found to produce a decrease in temperature amounting in most instances to nearly 12°.

J. A.

MANURES NATURAL AND ARTIFICIAL.

Their compositon.—Modes of operation and comparative value, with incidental remarks as to the necessity for sanitory provisions, &c., &c., &c.

The recuperation of depleted and impoverished soils has been an object of desire and industriously pursued in every country. Although we are placed in a comparatively new cnuntry, where the supply and reserve of virgin soil is ample; yet the demand for a powerful quickening agent, of easy transportation is increasing; and could such a boon be supplied at a moderate price, it would command an extensive and ready sale all over this extensive continent.

The suggestion at once presenting itself to every reflecting mind would be, that the best means of restoring the soil would necessarily be by returning to it in the most convenient attainable form, those substances abstracted from it by succeesive cropping.

For a long period, so far as we have been able to discover, no other manures were used beyond those produced from the straw of the cerealia, and from the root and other crops of agriculture, and the excrements of the animals of the farm, supplemented, where procurable, by the street manure of towns; by the first means restoring to the soil of the farm from its own produce a portion of

what was abstracted from it in the process of cropping,—and by the second, supplying from extraneous sources, the exhaustion caused by the cultivation of the most profitable crops, tempted to their culture by the ready market presented in the neighbourhood of villages, towns and cities, where such extraneous supplies are generally easily procurable. But after, the demand for green crops extended, farmers at a distance from such extraneous supplies, being desirous of extending their root culture, in order to improve their races of stock, and their system of tillage at the same time, naturally turned their attention to the employment of other fertilizing substances such as bone dust and guano, and this led on to the trial of many other substances, simple and compound, determining in the creation of a plenteous family of special or specific manures.

Farm yard manures, bone dust, guano, and night soil cannot be classed amongst special manures ; being universally applicable ; neither can any artificial compounds be so classed, avowedly prepared as substitutes for these.

It has been determined, it is thought satisfactorily, that ammoniacal salts and phosphates,the compounds of ammonia and phosphates, are more beneficial generally in promoting luxuriance of vegetation, than the other ingredients,—and it is no doubt the abundance of these ingredients present in farm yard manure, bone dust, and guano, which renders them such favourites with farmers.

But experience has proved, that special manures have acted best as auxiliaries to farm yard manure, including even guano and bone dust in the number, and we do not hesitate to add that the results of our own experience have uniformly gone to corroborate this statement. The natural manures are most to be relied on—affording, as they do, both stimulating and fertilizing materials. The saline manures are impure, of course, acquiring many foreign substances in the course of manufacture ; refuse manures are numerous and cheap—but not much to be depended on generally ; specific manures have too often proved failures, even with the most reliable indorsations. The fact is, that chemists preparing large quantities at a time for sale, their ingredients can rarely be found admixed with the proper degree of precision, nor can any absolute reliance be placed on the effects to be produced by different parcels obtained at different times. So great is the distrust of concocted manures, that many farmers who are in the habit of purchasing large portions, very frequently take the precaution to protect themselves against imposition by procuring an analysis of a furnished sample by a chemist of character—but we find instances of cases where the supply has been reported in no respect to have corresponded with the sample—necessitating a suit at law to accomodate the despute.

When using special manures, we must be careful not to bring the seed into immediate contact with the manure. Earthy, or saline special manures should be applied after the land has been drilled up,—and saline manures being easily soluble, are most efficiently applied after the leaves are developed, and in small portions at a time—especially the sulphates, muriates and nitrates.

We shall proceed to consider the comparative values of the various manures

in common use,—beginning with the natural manures, and concluding seriatim with the special or specific.

We shall begin with Farm Yard Manure ; and the following is Mr. RICHARDSON'S analysis of Farm Yard Dung, as it is applied to the field, wherein all the constituents are conveniently arranged in proportions to one ton of prepared dung.

	In one Ton.
Water	1455,104lbs.
Organic matter, containing 16,584 lbs ammonia	553,504
Potash	7,481
Soda	6,317
Lime	21,427
Magnesia	4,337
Alumina	Trace.
Manganese	Trace.
Peroxide of Iron	4,623
Silica	62,585
Carbonic acid with Earths	11,393
Sulphuric acid	7,571
Phosphoric acid	17,468
Chlorine	7,280
Sand	71,702
Carbon	1,926
Alkali and loss	7,282
	2240,000lbs.

On exposing dead organic matter to the air, it absorbs oxygen, which gives rise to a variety of new compounds which in turn absorb a farther supply of oxygen, until the whole mass becomes so saturated as to assume such stability as to resist the farther action of that gas. The solids become converted first into fluids, thereafter into volatile gasses ; and in every stage of decomposition the mass is capable of affording products available as the food of plants, whether liquid or gaseous provided they be miscible in water. It must be observed that the absorption of oxygen, and its chemical union with carbon gives rise to an encrease of temperature, enabling the surrounding portions more readily to absorb oxygen ; and thus the influence becomes gradually extended throughout the whole mass. The most profitable means of preparing manure is to permit the fermentation to go on slowly but steadily ; though some advocate the burying of the organic substances in the soil without loss of time, and at the earliest moment—permitting the entire results of the process of decomposition as nearly as possible to be retained therein. The azote unites with hydrogen, forming ammonia ; and unless the heap be kept moist, a large portion volatilizes, and escapes with the watery vapour, and other gaseous products of decomposition.

We shall next present the analyses of Human Fœces by Berzelius—the constituent elements being in a natural state.

Water	73,000
Insoluble Animal and vegetable remains	7,000
Mucus, fatty and other animal products	14,000
Bile	0,900
Albumen	0,900
Peculiar extractive matter	2,700
Chloride of Sodium	0,309
Carbonate of Soda	0,271
Phosphate of Magnesia	0,155
Phosphate of Lime	0,310
	100,000
Per centage of Ash	1,200

This matter however contains a large quantity of human urine, one of the most powerful of all fertilizers, as the following analyses, also by Berzelius, will serve to show :—

Water	93,30
Urea	3,01
Uric acid	0,10
Lactic acid, lactate of Potash and Ammonia	1,71
Mucus	0,03
Sulphate of Potash	0,37
Sulphate of Soda	0,32
Phosphate of Soda	0,29
Phosphate Ammonia	0,16
Chloride of Sodium	0,45
Chloride of Ammonia	0,15
Phosphate of Lime and Magnesia	0,11
	100,00

J. A.

ATMOSPHERIC INFLUENCES UPON SOIL AND VEGETATION.

[CONTINUED.]

But it remains for us to consider the distinguishing substance or principle of the Genus Triticum, known under the name of Gluten,—and the most convenient and certain means of promoting and encouraging its increase, and of insuring a supply from the soil. This substance is itself composed of two others, Gliadine and Zymome. As we are talking of this, there is one very important fact which is well deserving of all the publicity that can be given it by such an authoritative and influential Body as the Board of Agriculture of Lower-Canada ; and

it is with a view alone to general utility we state it here in this form.—What we have to say then is this, that the soundness of flour can be easily tested by any common purchaser by kneading a small portion of it with the powder of Guiaiacum and water. If the flour is sound and good, the mass will gradually acquire a beautiful blue tint, deepening and brigthening in exact proportion to the quantity of gluten, and, of course, the quality of the wheat. This is a process so simple that it should be known to every Dealer and Agriculturist.—The same object is otherways, and with a little more trouble, effected by obtaining the pure gluten of a sample, and boiling it repeatedly with alcohol; when the Gliadine will be gradually and, at length, completely dissolved by the process; and the Zymome will be left quite pure. If it be then kneaded with a little powder of Guiaiacum, it will assume a blue colour, beautiful and brilliant in proportion to the soundness and quantity of gluten; and the quality of a wheat or flour sample may be thus most satisfactorily and easily tested. Of course when the Guiaiacum powder is kneaded with the pure Zymome the colour comes more quickly, and with greater brilliance. But to our subject. gluten is known to contain a large proportion of Azote or Nitrogen, and this is the important ingredient in its composition. It follows then that whatever substances are capable by decomposition of affording a supply of nitrogen must mainly contribute to the nourishment of this crop, if placed within the range of the appropriating and assimilating energies of the plants. It may be, and is, no donbt, partly derived from the air; and it may be that the air, by having time by a fallow to form its various combinations with the constituents of the soil and moisture, may account for winter wheat having an advantage over that sown in spring. This advantage however also arises, in some measure, from the crop being treated as a biennial, and thus insuring a more perfect and robust developement of its system of roots; while, in spring crops, the energies of the plants are mainly expended on the increase of the parts exterior to the soil, and these indeed sometimes shoot up so rapidly as to leave the plant in a state of etiolation, and so deprived of those roots which should proceed from the first joint of the stem, thus encreasing its system of roots, and of course its powers of extracting nourishment. It is evident that a plant in this etiolated condition cannot possibly mature such valuable seeds, as one whose system of roots is more complete and perfect. The fallow however is quite unsuitable to light porous soils, as the manure escapes in the aerial state, or is washed away by the rains, long before the crop comes to be matured; and, though a promising braird enough may be exhibited, the fructifying powers of the soil are expended, as has been before stated, long before the critical period of maturing the seminal deposit has arrived. The weight and quality, of consequence, must be both inferior.

We must then supply to the roots those substances which, by decomposition, supply a complement of Azote. This may be supplied from animal substances, and partly by the exposure of the soil to the atmosphere and moisture in the operations of tillage. For instance we know that Ammonia is composed of Nitrogen,—a component of Air,—and Hydrogen,—one of Water,—and that all

soils contain Carbon, a residue of organic decomposition. May it not be possible then, that, by the exposure of the soil by tillage to the influences of air and moisture, Carbonate of ammonia may be actually formed in the soil ; and thus a supply of Azote treasured up for vegetable consumption. This last hint may possibly in some degree account for the admitted superiority of wheat after a Fallow ; and particularly when taken in connection with the consideration, that a crop of Turnips, which is otherways a frequent preparation for a crop of wheat, requires *itself* a very large supply of Azote ; and thus, when altogether, or partially, carried, depriving the soil of a large proportion of Azote. However, it must be evident, and need not create much surprise, from what has been said, that wheat may now be grown on many soils which had previously proved to be unsuited to it, and incapable of bringing it to perfection. For if light soils, of tolerable quality, are sufficiently manured and timed for turnip, they are sufficiently so for wheat, and the turnip crop containing itself a large quantity of Azote, if it be consumed on the ground by sheep, and thus not only returned to it entire, but still further enriched by the additional combination of animal substance,—another source of Azote,—it is very clear that even an inferior soil may be brought to such a state of fertility, as to enable it to carry a tolerable,—and, if the season be favorable, even a very excellent sample of Wheat.

But to return for a moment to the Fallow we may state, that it also gives time for the action of the atmospherical influences and moisture, the Lime and the Alkalies and their salts to exert a long and uninterrupted influence in converting and altering the several accumulated combinations rejected by the plants of the several successive crops of the previous rotation. They have also time for mutual interchange of particles, and for forming available combinations among themselves. The more perfectly comminuted the soil is previous to the application of manure, the more perfectly commingled do the atoms and juices of the manure become with the elementary particles of the soil; and this, too even should these particles thus impregnated, from any cause become cohesive and agglutinated into masses from the atoms of manure entangled in them ; for these atoms by evolving their gasses would effectually insure the pulverisation of the masses. The gasses, as they were formed, would partially swell the masses and divide their particles, and this division would be perfected by the time a portion of these found its way to the surface ; and their operation, if the comparison is allowable, would be somewhat analogous to that of the gasses in the panary fermentation. As we are talking of fallowing, we may here state a very familiar advantage resulting from it, which consists in the exposure of the soil to the frost,—thereby insuring the destruction of many insects and their larvæ, and root-weeds and their seeds ; and also by the expansive power of the water contained in the soil in freezing, producing a separation of the particles, and thus in an eminent degree, and to an extent by means of after labour very difficult at great cost and expenditure of time to be obtained, promoting the progress of pulverisation. In fact it must be admitted that many soils become quite sour, unproductive and unworkable without a regularly repeated fallow, even if a struggle should be made to get in a green crop, and to remove it from the ground.

Wheat soils then must be of the most perfect texture as to their solid parts, and must encrease in comparative dryness and diminish in cohesiveness with the latitude ; but this rule may vary somewhat in degree, according to several local influences, which affect the usual supplies of moisture from the atmosphere. They must be possessed of the elements that encourage progressive and sustained decomposition of their soluble and fructifying particles, and these must be in the greatest ratio consistent with healthful vegetable developement. Consistent with healthful vegetable developement we say ; and, to prevent cavil and misapprehension, we may simply state, that when vegetable substances are in great excess and constantly accumulating, from the circumstance of none of them being removed from the soil , if the mass be supplied in a cold climate with water from a cold source, instead of rank fertility, absolute or approaching sterility is ultimately superinduced. In other words the decay of the vegetable substances being arrested by the influeuce of the climate, and the saturating liquid at a particular stage of their decay, the fibre remains entire, and they progress no farther ; but, remaining stationary, form a springy mass, constituting the substance known under the familiar name of peat. Soils composed of this substance are proverbially sterile. Wheat soils must be deep to retain an ample supply of moisture during protracted drought, and to permit the long taproots of the plants to descend into it, that they may imbibe in security a sufficient supply of moisture, even during the most parching drought. Though desirably pervious, they should yet be so compact as to resist the injurious effects of sudden atmospherical changes : and must possess in an eminent degree affinity for moisture, and the power of attracting and adhering to, and combining with, organic substances. To insure this, the subsoil must also be good ;—neither too loose nor too compact ; but characterised by a just and happy medium. It may be taken as a rule, that when two-fifths of a soil is composed of finely divided powder, and one-tenth, or upwards, of these two-fifths consists of soluble organic matter, three-tenths of alumina, and the other two-tenths of carbonate of Lime and Silica, and better if principally carbonate of Lime, it has the decided agillacius character ; and, unless some unusual cause, or some particular condition of the remaining elements should prevent it, it may be classed among good wheat soils. From deference to so high an authority, coinciding, as it mainly does, with our own experimental knowledge, derived from patient particular analysis of soils, we shall give an example of analysis by the late distinguished Sir Humphrey Davy which will serve to illustrate tolerably what we have been advancing.

Ex. I.—Analysis of a good Wheat Soil.

Silicious Sand	150 parts.
Finely Divided Matter.	
Carb : of Lime	28
Silica	32
Alumina	29
Animal and Vegetable Matter and Substances	11
	100
250 parts.	J. A.

THE HARVEST OF 1859—ITS NATURE AND VALUE.

(*From the Hamilton Spectator.*)

The returns containing replies to the questions proposed by the Hamilton Board of Trade to farmers and merchants, in all parts of the western peninsula of Canada, are so interesting and valuable that one may read them over and over again, and find something new and strange each time of perusal. A more complete idea of the nature and value of the harvest can be formed from them than from any other source, and a variety of useful jottings gleaned as to the state of agriculture throughout the country.

We find a most remarkable difference in the proportion of spring and fall wheat sown in different districts. In some, such as Perth, North Wellington, and the counties along the Sarnia line of Railway, very little but spring wheat is grown, perhaps nine-tenths as much as fall wheat; in others, such as Dumfries, parts of Oxford, and all the southern counties, the proportion is just the other way. Every where, however, it seems—and we are glad to hear it—the farmers are paying attention less and less exclusively to fall wheat. From Bronte we learn "there will be still less fall wheat sown this fall." Around Bothwell we are told "the farmers are evidently turning their attention more to Spring crops, and stock raising," and similar reports come from fifty other places. Where fall wheat is sown, the necessity of using the earliest kinds is generally felt. The Milton people say "the weevil (midge) made an attempt to destroy the wheat here, but the skin became so hard before the insect got sufficient strength, that it failed." The London opinion is "I think we should urge upon the farmers to persevere in sowing the Mediterranean fall wheat, for although it suffered most from the frost, it should be remembered that such frosts are unusual and that wheat would have completely escaped the midge this season, it being too early for the fly." From Bronte we hear—"All the fall wheat that will be sown is of an early variety, to escape the midge." While on this subject, we may mention that the Detroit newspapers say the variety known as "amber wheat" ripens from six to twelve days earlier than the Mediterranean, and yields more too, while a correspondent of the *Country Gentleman* says "Early May wheat is so much earlier than the commoner varieties, that some farmers in Kentucky were feeding their men on flour made from it while others were only beginning to reap their crops."

From the whole of the returns taking into account the unusual breadth of land under crop and the nature of the yield, we gather that we have, this year, of—

Fall Wheat—two thirds	an average	crop.
Spring Wheat	twice	do.
Oats,	twice	do.
Barley,	twice	do.
Rye,	half	do.
Corn,	an average.	
Peas,	twice	do.
Potatoes, probably half as much again as		do.
Hay, not quite half		do.

It now becomes interesting to ascertain the value of this bountiful crop to the country. We cannot, of course, speak with perfect exactness, for the returns are

only for a portion af Canada West, whilst the statistics we have of former years are for the whole of the Province. And the price of the various grains cannot yet be determined with accuracy. But as this peninsula is the granary of the whole country and as perhaps the price of produce will not much vary from the average, we may venture on the following calculations.

First then, we find the Exports of the last five years (two good, two poor, and one neither; so that the average may be considered fair) to have been as follows, taking the Trade and Navigation Tables as our guide:

WHEAT.

	Bushels	*Value.*
1854	1,442,677	£ 524,534
1855	3,193,748	1,482,216
1856	4,997,656	1,744,460
1857	2,762,454	697,473
1858	2,437,679	588,774
	14,834,212	&5,037,457
Average annual export.	2,966,243	1,007,491

Average price per bushel, 6s 8d, or $1.33

OATS.

1854	33,656	£ 4,127
1855	270,275	42,385
1856	1,296,677	114,355
1257	866,860	90,203
1858	1,941,710	188,371
	4,509,178	£439,441
Average annual export	901,835	87,888

Average price per bushel, 1s 11½d, or $0.39.

BARLEY.

1854	112,383	£23,580
1855	506,534	145,807
1856	989,446	226,820
1857	331,415	171,016
1858	1,309,638	253,904
	3,809,414	£821,127
Average annual report.	761,882	164,225

Average price per bushel, 4s 2d, or $0.83.

INDIAN CORN.

1854	57,636	£ 11,091
1855	73,066	19,861
1856	164,495	22,886
1857	65,342	13,672
1858	21,547	3,306
	302,086	£70,816
Average annnual export.	76,412	14,183

Average price per bushel, 3s 8½d, or $00.74.

PEAS.

1854	133,087	£33,579
1855	264,034	64,863
1856	374,479	76,935
1857	220,226	47,671
1858	579,244	123,245
	1,571,570	£346,193
Average annual export.	314,314	69,238

Average price per bushel, 4s 4½d, or $0. 87¼.

We also find the following as the export of Flour :—

	Barrels	*Value*
1854	651,400	1,199,174
1855	643,936	1,450,480
1856	878,775	1,502,452
1857	743,949	1,134,410
1858	634,576	766,452
	3,552,636	6,052,968
Average annual export	710,527	1,210,593

Average value per bbl., £1 14s 1d, or $6.82.

Here then we have data for approximating to the quantity of our present crop we have for export, and its value—thus :

Wheat (say 1½ times the average) bushel.....		4,450,260
Oats (twice do).....	do.....	1,803,670
Barley and Rye (1½ times do)..	do.....	1,142,623
Indian Corn (average).....	do.....	76,417
Peas (twice do).....	do.....	628,628
Flour (this does not usually vary so much—say 1¼ the average(bbls.....		888,158

We consider that at least this amount is for exportation; perhaps more. Yet althongh the surplus of this year bears a far greater proportion to the surplus of an average year than the crop does to an average crop, the home demand always increases in a year of plenty and thus reduces the amount which would otherwise be available for exportation.

The value of the amount is, at average and at present prices, as follows :—

WHEAT.

Pres. Price,		Avg. Price.	
$1.....	$4,450,264	$1.32½....	$5,933,685

OATS.

35 Cents..	631,285	39 Cents.....	703,331

BARLEY.

40 Cents..	458.049	83 Cents.....	1,052,377

INDIAN CORN.

85 Cents..	64,954	74 Cents.....	56,548

PEAS.

75 Cents..	471,471	87½ Cents....	556,049

FLOUR.

$5.....	4,440,790	$6.82.....	5,607,632
Total at Present Prices.	$10,515,813	Total at Avg. Prices.	$13,403,622

Here we have a nice little lot of agricultural produce to sell! Who will buy? Only Ten Millions of Dollars worth, at present low prices! But in addition to this, we shall have an immense quantity of lumber to swell the returns of the years' trade; probably fifteen millions of dollars worth, instead of nine and a-half millions, as last year. And we shall probably have a million a quarter as the produce of our fisheries, instead of three quarters of a million, as we had last season. These items alone would give us at least $10,000,000 more for export than we had last year. In view of this, who will despond.

High Prizes.—In a list of premiums, to be awarded at the Fair to be held in St. Louis, Mo., from Sept. 26 to Oct. 1, we notice the following: $ 1,000 for the best thorough bred bull of any kind; $ 1, 000 for the best roadster stallion in harness; $ 1, 000 for the best thorough bred stallion: $300 for the best steam plow; and four prizes of $125 each, and two of $100 each, for the largest and best crop of wheat of named varieties.

PHOSPHO-PERUVIAN GUANO—WHAT IS IT?

This is a question put by a correspondent of *The Weekly Agricultural Review* of May 6, published in Dublin, Ireland. In a private note appended to the editor's answer our attention is called to the subject, with a suggestion, that we advise those engaged in the trade of this "Monk's Island stuff" to ship their stock at once to Liverpool, when it is vitriolized and pulverized, and given a new name, and then sold to English and Irish farmers at £11 or £12 a tun—$55 to $60—while in this city the price is said to be only $20 or $25. This "stuff," we take it from the description, is the same that has been analyzed and advertised to American farmers as almost pure phosphate, from some island in the Caribbean Sea, and represented as the residuum of ancient deposits of pure bird-dung guano, after having the dissolvable portions washed out and the phosphatic portion hardened in the tropical sun. Cute as the Yankees are called by John Bull, it seems that there are some of the original stock a little cuter. Not finding a ready market for "phosphatic guano" here, the operators in this stock have shipped a few cargoes to England, and after dissolving in cheap sulphurous soil, have doubled or trebbled the price and found buyers, who will probably find it of just about as much value upon land as they have the apatite rocks of Estramadura, treated in the same way, for which English farmers have paid and lost large sums of money. The truth is of this mineral phosphate, whether called guano or any other name, is not worth as much per tun to the farmers as the bones he suffers to go to waste around his house are per hundred, if he would treat them in the same way the Liverpool manipulators do the stuff they "vitriolize" — that is, dissolve in dilute acid, which prepares it for the ready assimilation of plants. These will further prepare it for domestic animals; and so after it has progressed from mineral to plant, from plant to animal, from animal to man in the consumption of the flesh or milk, and from man again to plants, and so on the round a few times, it will at length get to be pretty good guano. In its crude state it is not worth enough as a fertilizer to pay the first cost and trouble of making it available to growing crops. The editor of *The Review*, above mentioned, says:

"From our own knowledge we can affirm that the guano from some of the West India islands is not worth the price of the freight to this country. Phospho-Peruvian guano appears to belong to the class termed *phosphatic*; but while containing a very large percentage of phosphate of lime, it is not destitute of ammonia, as its analysis shows that it contains from three to four per cent of this material. As to the price at which phospho-Peruvian guano is soil, we do not wish to offer an opinion. The agricultural value of any variety of guano depends chiefly upon its amount of two substances—phosphoric acid and ammonia. It is of little consequence what a guano is termed, provided its composition is such as to insure that its fertilizing effects will be satisfactory."

That last sentence contains the very essence of the whole argument; and in our opinion no analysis should ever be accepted as satisfactory—nothing but the actual fact demonstrated in the field.

THE FOOT ROT IN SHEEP.

BY CARL HEYNE, RED HOOK.

How I recognize it, and mode of treatment.

The foot rot is essentially an inflammation of the softer parts of the foot, about the horny covering on the hoof, which is contagious; so if it once appears and is not checked, the whole flock generally is injured. The disease may be known by the following symptoms: the animal limps, walking as if the foot was painful; the hoofs are hot, and the skin adjoining swells, with symptoms of fever ordinarily, being alternately hot and cold. The ears and legs both are hot and cold by spells. The inflamation is partly in the cleft of the foot, partly in the toes under the hoof, and partly under the edge and thin part of the hoof. The appetite fails as soon as the fever appears. If the fever abates and the appetite returns, it will go well with the sheep, unless the decay of the bone (caries) sets in, which symptom attends the most malignant form of the foot rot. On the second or third day following the appearance of the disease, the hoof and the adjoining parts lose their reddish color, and become at first whitish and then pearly color, the skin in the cleft of the foot in the meantime being redder, more like the natural color. Then follows a watery discharge of exceedingly offensive odor; the skin separates from the parts beneath, and the foot becoming more painful the lameness increases. The inflammation continues to increase, and extends farther and deeper into the flesh, and affects more extensively both parts of the foot, on both sides. The cleft becomes gradually deeper by the dividing of the flesh; the tender flesh that unites the hoof to the bones of the toes softens, and results in the hoof falling off entirely in the course of about three to four weeks.

REMEDY.—As soon as the true malignant rot is discovered in the flesh, the diseased sheep must be separated from the healthy ones, and the stables must be cleaned. The best remedy for this disease that I have found is butter of antimony (*Butyrum antimonii* or *chloride of antimony*) and spirits of hartshorn. The spirits of turpentine and blue vitrol mixed together are also very good. The animal must be turned up on its rump, that the feet can be thoroughly examined, and all the dead parts cut away with a sharp knife down to the living part; if it bleeds a little that does no harm. The foot must then be smeared with the mixture of turpentine and blue vitriol. It is sometimes well to bind up the foot in a linen bandage. The animal must not be

allowed to go in any soft or dirty place, but should be kept on dry straw litter. Every fourth day they must be carefully examined one by one, and the remedy again applied, as long as necessary. If this is strictly adhered to, in the course of a month, the flock will be entirely sound again; the appetite will return, and the animal in a short time be in good condition.—*Journal N. Y. S. Ag. Scy.*

CARL KEYNE.

Ditching Machine.—We have previously stated in our columns, that the Illinois Central R. R. Co. had offered a premium of one thousand dollars for the best steam plough, in addition to that of three thousand dollars by the Illinois State Ag. Society; and we now learn from a circular received from F. W. Biddle, Secretary, that at a meeting of the Executive Committee of the Illinois Central R. R. Co., held at Chicago, July 28, the following resolution was adopted:

Resolved, That the Illinois Central Railroad Company offer $500 for the best Ditching Machine for open ditching. The simplicity and economy of its construction, and its application to farm uses, must be such that it can successfully compete with manual labor,—the award to be made by the Executive Committee of the State Agricultural Society, in connection with the three scientific machinists to be selected by that body. Before any party shall claim payment of said award, he shall exhibit the practical working of the machine at the same places and times with the Steam Plough which shall receive the award from the same Committee—the Illinois Central Railroad Company agreeing to transport said machine to and from such points free of expense to the owner.

DECREASE OF POPULATION IN UNITED STATES.

How by these rosy colored theories do we explain the fact that in this very county of Onondaga, with a soil as fertile as any reasonable man could ask for, with a climate healthy and invigorating, with the very best markets at all times for every variety of agricultural produce—where, in fact, there exists every inducement for the prosecution of agriculture; that nevertheless the rural population has not increased at all for fifteen years?

	1840.	1856.
Cayuga	50,838	53,571
Chenango	40,785	39,915
Columbia	43,252	44,391
Cortland	24,607	24,575
Herkimer	37,477	38,566
Livingston	37,777	37,943
Montgomery	35,818	30,808
Ontario	43,501	42,672
Otsego	49,628	40,375
Seneca	24,874	25,358
Tompkins	32,296	31,516
Wyoming	34,245	32,148
	485,044	481,975

Or in other words, while the whole State increased in population more than forty per cent, thirteen of the counties, almost entirely agricultural, decreased.

Nor will it do to account for this by the large emigration to the west, which has been going on for the last few years.

How comes it, then, that we see so constantly our rural population, particularly our young men, doing violence to their natures by deserting their ancestral homes and employments, and fleeing in their youth from what all mankind court in their old age.

We apprehend, that more than any one else, the farmers themselves are to blame for it. There is no disguising the fact, that with an occasional exception, they are ashamed of their calling. Upon what other hypothesis are we to explain the very frequently seen example of a farmer expending all the paternal attention, and all educational opportunities, upon the son who is destined for some of the professions or for trade. What can be a more practical or conclusive confession of the inferiority of one's own occupation, and that it is one for which the merest dolt is competent. This idea is the grand central error, the potent and prolific source of all those evils which we have to deplore.

It is not to be wondered at, that science is not called in to assist in the practical operations of an occupation, which he who is engaged in, holds in such light esteem? Observe the difference between the manufacturers and farmers in this respect. The one seeks the aid of science in all his operations, makes it subservient to his interests, and avails himself of all discoveries in his department of action, while the other sneers at it as a humbug, and turns up his nose in sovereign contempt at the idea of deriving any assistance from that quarter, and plods on in the manner of his fathers. No manufacturer or merchant could make both ends meet, saying nothing of accumulating wealth, if he conducted his business in the loose slip-shod manner of the farmer.

The result of this is to be seen in the steadily decreasing yield of our land, and the stationary position if not retrograde movement of our rural population.

It is not saying too much to assert that the agricultural product of our state is not more than two-thirds as much as it was fifteen or twenty years ago.—*Onondaga.*

A FAMOUS FARM.

The abundance and the excellence of Mr. Pell's Newton Pippins have made them famous on both sides of the Atlantic. Over two hundred acres are planted with orchards. There are 20,000 trees of this single variety in full bearing. Such has been the care and cultivation of this fruit, that none have been sold at a price less than $8 per bbl.; and many of them in the English market have brought as high as $20 per bbl.

Great care is taken to cultivate and manure the orchards. The mode of manuring is to plough within a few feet within of the rows of trees in one direction, and when duly prepared, drill for potatoes and manure heavily in the drill. These are thoroughly cultivated with the horse hoe and small subsoil plough.

Mr. Pell informed us that he had over eighty acres in cultivation with potatoes on this farm, and twenty acres in England,—and all of one variety, a seedling of his own production, which has sold the past two seasons at prices varying from $12 to $8 per barrel. We have not tested the quality of this potatoe, but it has a high reputation.—The rot has not hitherto affected it.

More than one hundred miles of thorough drains have been laid on the farm. The material has been cheifly stone. There are nine miles of delightful walks,

winding along the banks of the Hudson, up the dales, and around the numerous fish ponds, which beautify the lawns and grounds in the vicinity of the residence.

Mr. Pell has given more attention to the artificial propagation of fish than any other person perhaps in this country. In some of the ponds, where different varieties have found a common home, it was amusing to witness the calling of them to the shore by signal, and while, thousands, literally, of young shad would throng the hand holding a piece of bread, a pickerel of one or two pounds in weight would flounder in the midst of them; filling their ample mouths with a portion of the young fish, and for the moment dispersing the entire fry. The Tench and Barbel, two new varieties of fish, have recently been imported, and are already rapidly multiplying in one of these ponds. The ponds were formed by excavating peat which was here found many feet in depth. The supplies which feed the ponds come from the drains immediately about them, which have changed what was once a shaking quagmire, into some of the most productive meadow land on the farm.

Strawberries, raspberries and grapes are here raised for market. The varieties of the first two are grown chiefly from seedlings produced on the farm. Of the strawberry we could not judge, as it was out of season. The raspberry is red, and has a resemblance to the Antwerp, but with distinct and valuable peculiarities of its own. It will continue to furnish its fruit ten days or two weeks later in the season than the old varieties. It is a much firmer berry than the Antwerp, and will bear transportation better than any other berry.

The vineyard was in excellent condition, consisting of the Isabella and Catawaba vines with fruit better advanced than we had seen in the vicinity of the city. The garden was in advance of anything we had seen elsewhere this season. The melons were forward and extraordinary. Order and neatness reign everywhere.

HOW TO USE GUANO.

The London Mark Lane *Express* says:—

First—Never mix guano with anything; all lime, compost, ashes, and similar expedients, too often contain caustic alkali to drive off the ammonical parts before the soil can surround and absorb them.

Second—Mix it as much as possible with the soil, not too deeply, but plough it in after sowing it broadcast.

Third—If it be applied as a top-dressing—which is rarely advisable—always apply it, if possible, before rain, or when snow is on the ground; and if on arable land, harrow, hoe or scuffle immediately after the operation.

Fourth—For speedy and powerful operation, apply on limited surface dissolved in water.

Fifth—If sowed with drilled grain, or, indeed, with any seed whatever, it should never come in contact.

Lastly—Be sure to get, if possible, *the genuine article*, and use per acre, from two to three hundred pounds!

SORGHUM, AND MAPLE SUGAR, OR MOLASSES.

We have no doubt about the economy of making molasses instead of sugar by all who grow sorghum, or have maple orchards convenient to large towns, which

will always afford a market for a real nice article of maple syrup at a high price. We have already given some opinion as to Chinese cane, which will make excellent syrup, and will only make poor sugar, and that with much difficulty. Maple syrup is more easily converted into sugar—a very palatable but not very sweet sugar. It is never at best, worth over two-thirds the price of pure cane sugar for family use, while the syrup is quite the reverse. We had rather have a gallon of maple syrup than a gallon and a half of "golden syrup," or two gallons "Orleans molasses." Then maple syrup is made with very little trouble, while it requires much experience and great care to make good maple sugar.

Sap Buckets.—The most economical form and substance for sap buckets is tin, made of two sheets for the square sides and half a sheet for the bottom, with just taper enough to meet together when in stove. The tin should be rolled around a wire at the top, with a quirl in it for a loop to hang by, or else with a hole under the wire large enough to hang over a wrought nail head. Stub horse nails will answer. We say wrought, because they must be pulled out of the trees when the season closes.

Spouts.—There is nothing, in our opinion, so good and cheap as iron spouts. Scrap sheet iron, or hoop iron, swedged to a trough shape, and ground sharp at one end, so as to drive into the bark—never through it—below the cut from which the sap is to flow. This cut may be made with an augur, gouge or even an ax, if care is used to make only such a smooth, shallow cut as will soon heal over. Chopping great rough holes into trees to get the sap is an act as foolish as killing the goose that laid the golden egg.

Sap Boiler.—The best common sap boiler that we have ever seen is the shallow sheet-iron pan; but we have a description and drawing in *The Scientific American* of one patented last year that appears to be a great improvement. Let us suppose a great sheet of iron crimped into troughs and ridges, four or five inches deep and as wide, and these troughs so connected together at alternate ends, that by a working motion given to the boiler, the sap while boiling is made to run a thin stream over the fire, such a length of coursing back and forth that it is reduced to nearly a condition of syrup where it discharges.

This plan looks so reasonable that, if we owned a sugar-tree orchard, or intended to boil sorghum juice, we should think it worthy of careful examination.

Ratio of Sugar to Sap.—A letter before us gives the ratio of sugar to maple sap as follows: Sap concentrated 30 times makes what we call good syrup, and this syrup concentrated thus makes grained sugar, hard enough when taken out of a jar to require a stiff knife, which, as I calculate, is that sap concentrated 50 times in sugar.

1qt. Water weighs.....2lb. 2oz.	1 qt. Syrup weighs.....2lb. 8oz.
1qt. Sap weighs.....2lb. 1oz.	1 qt. Sugar weighs.....2lb. 9oz.

Can anybody tell us if this ratio is the same with cane juice? The writer also says that some maple trees are far richer in saccharine than others. Has this been sufficiently tried as regards the varieties of sorghum? It is very important that none but the sweetest should be cultivated. These are all matters to be thought of now, rather than in the boiling season.

SORGHUM—TIME OF PLANTING.

Recollect that this sugar-cane should be planted about the same time that Indian corn is planted in the different degrees of latitude. From 40° to 43°, it will range through all of May. The kind of soil that will produce a good crop of corn will produce a good crop of cane; and of that you can easily make good syrup, if not sugar. If planted on hills, observe the same distance you do with corn; if in drills—which we prefer—run them north and south, four to five feet apart, according to the strength of soil, with single stalks a foot apart in the rows.

SEASONABLE IMPROVEMENTS—CLEARING SWAMP HOLES

As recently stated, the leisure period between the early and later harvest, in a part of August and September, affords the farmer an opportunity to accomplish improvements which cannot be effected as easily and well at any other season; and the clearing and draining of bogs and marshes is among those of superior importance. We have already given several articles on this subject—but the vast amount of waste land yet to be reclaimed, and the great profit arising from bringing it into fitness for cultivation, warrant repeated presentations of the question to our readers.

The wettest bogs and marshes generally contain the least water at this season, and hence allow to a greater extent, the cutting of drains and the clearing off of bushes than at any other period. The water once removed, and the drains so constructed as to carry readily away all surplus moisture, we have land of superior quality and productiveness, especially for oats and grass, and for some root crops in favorable seasons. Instead of "plague-spots" disfiguring the surface of the farms, producing only worthless plants and disgusting reptiles, and filling the atmosphere with malaria, we have handsome fields, producing luxuriant crops, and smiling with plenty—repaying at once a considerable expense of reclamation. We have so recently spoken of methods of clearing etc., that we will now only touch upon another branch of the subject.

Muck or peat bogs, which have been drained, usually produce well for a time, and then seem to "run out"—wild grass taking the place of those first sown upon the soil. This is usually caused by their settling as the land becomes dry—becoming more compact, and finding a level so much lower as to make the drains partially useless. Or the drains may become filled up, with the same result. Or it may be that the surface soil, above the water line becomes exhausted and needs renewal. There is something in the nature of muck or peat, which renders exposure to the sun and air necessary before it will produce the tame grasses (or cultivated crops of most kinds) to perfection—before it loses this tendency to run them out. It needs ploughing up every five or six years, so that the muck may be further aerated and decomposed—its sourness passing off in the process—and if then re-seeded and re-manured, will become as productive as before.

The present is a favorable time for clearing and deepening and clearing the drains, and ploughing up such old meadows—which may then lie until another spring, and then be seeded lightly with oats, and heavily with grass seed; and if during the winter, an inch or so of loamy soil were added, the improvement would be more permanent and effectual.—*Country Gentleman.*

MONTREAL RETAIL MARKETS.

October 1859.

	BONSECOURS.					ST. ANN'S.				
FLOUR.	s.	d.		s.	d.	s.	d.		s.	d.
Country Flour, per quintal	18	9	a	19	0	0	0	a	0	0
Oatmeal, per quintal	17	9	a	18	0	0	0	a	0	0
Indian Meal, per quintal	0	0	a	0	0	0	0	a	0	0
GRAIN.										
Wheat, per minot	0	0	a	0	0	0	0	a	0	0
Oats, per minot	2	9	a	3	0	2	3	a	2	6
Barley, per minot	3	9	a	4	0	0	0	a	0	0
Pease, per minot	4	3	a	4	6	0	0	a	0	0
Buckwheat, per minot	3	6	a	3	9	0	0	a	0	0
Indian Corn, yellow	4	6	a	5	0	0	0	a	0	0
Rye, per minot	0	0	a	0	0	0	0	a	0	0
Flax Seed, per minot	7	0	a	7	3	0	0	a	0	0
Timothy, per minot	9	0	a	9	6	0	0	a	0	0
FOWLS AND GAME.										
Turkeys, (old) per couple	5	0	a	7	6	10	0	a	12	0
Turkeys, (young) per couple	0	0	a	0	0	6	0	a	8	0
Geese, (young) per couple	4	0	a	6	0	3	6	a	4	6
Ducks, per couple	2	6	a	4	0	2	6	a	3	0
Ducks, (wild) per couple	3	0	a	3	6	0	0	a	2	6
Fowls, per couple	2	6	a	3	0	2	0	a	3	0
Chickens, per couple	0	0	a	0	0	1	3	a	1	6
Pigeons, (tame) per couple	1	0	a	1	3	0	0	a	0	0
Pigeons, (wild) per dozen	2	6	a	3	0	3	6	a	4	0
Partridges, per couple	0	0	a	0	0	0	0	a	0	0
Woodcock, per brace	0	0	a	0	0	0	0	a	0	0
Hares, per couple	0	0	a	0	0	0	0	a	0	0
MEATS.										
Beef, per lb	0	4	a	0	9	0	4	a	0	8
Pork, per lb	0	5	a	0	7	0	6	a	0	6½
Mutton, per quarter	5	0	a	7	0	7	0	a	12	0
Lamb, per quarter	3	6	a	0	0	2	0	a	3	9
Veal, per quarter	5	0	a	12	3	5	0	a	15	0
Beef, per 100 lbs	35	0	a	40	0	30	0	a	40	0
Pork, (fresh) per 100 lbs	35	0	a	45	0	27	6	a	30	0
DAIRY PRODUCE.										
Butter, (fresh) per lb	1	3	a	1	6	0	11	a	1	0
Butter, (salt) per lb	0	11	a	1	0	0	8	a	0	9
Cheese, per lb, skim milk	0	0	a	0	0	0	0	a	0	0
Cheese, per lb, sweet do	0	0	a	0	0	0	0	a	0	0
VEGETABLES.										
Beans, (American,) per minot	0	0	a	0	0	0	0	a	0	0
Beans, (Canadian) per minot	7	6	a	10	0	0	0	a	0	0
Potatoes, (new) per bag	4	0	a	4	9	4	0	a	5	0
Turnips, per bag	0	0	a	0	0	0	0	a	0	0
Onions, per bushel	0	0	a	0	0	0	0	a	0	0
SUGAR AND HONEY.										
Sugar, Maple, per lb, (new)	0	4½	a	0	5	0	4	a	0	4½
Maple Syrup per gallon	0	0	a	0	0	0	7½	a	0	8
MISCELLANEOUS.										
Lard, per lb	0	8	a	0	9	0	8	a	0	9
Eggs, per dozen	0	8	a	0	9	0	8	a	0	9
Halibut, per lb	0	0	a	0	0	0	0	a	0	0
Haddock, per lb	0	3	a	0	0	0	0	a	0	0
Apples, per barrel	25	0	a	30	0	15	0	a	20	0
Oranges, per box	20	0	a	22	6	0	0	a	0	0
Hides, per 100 lbs	0	0	a	0	0	0	0	a	0	0
Tallow, per lb	0	4½	a	0	5	0	0	a	0	0
BREAD.										
Brown Loaf	0	11	a	0	0	0	9	a	1	0
White Loaf	0	0	a	0	0	0	9	a	0	