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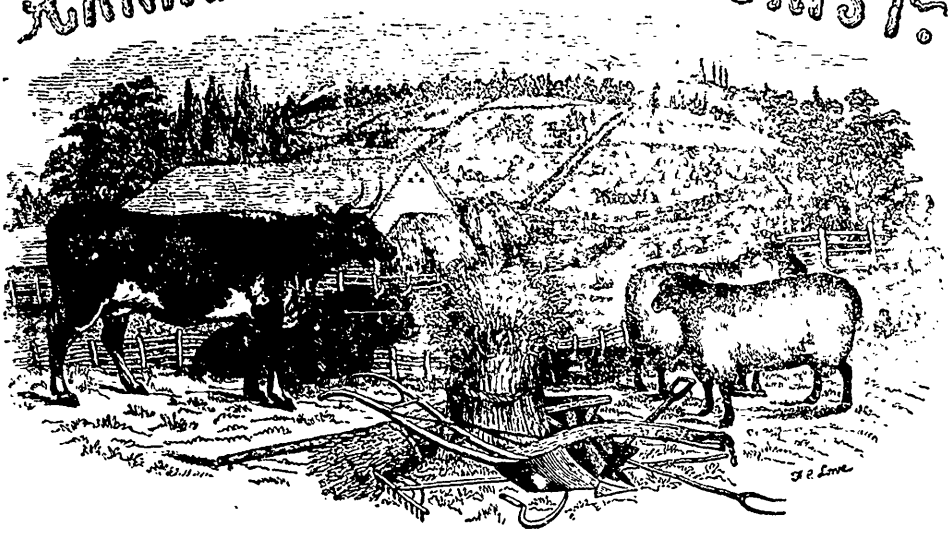


"The profit of the earth is for all; the King himself is served by the field."—Eccles. v. 9.

GEORGE BUCKLAND, WILLIAM McDOUGALL, } Editors and Proprietors.

VOL. I. TORONTO, JULY 2, 1849. No. 7.

The Canadian Agriculturist,

A MONTHLY JOURNAL of Agriculture, Horticulture, Mechanical and General Science. Domestic Economy & Miscellaneous Intelligence: Published by the Proprietors, W. McDougall and Geo. Buckland, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

☞ Subscription One Dollar, *in advance*. Advertisements 4d. per line each insertion.

☞ Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

☞ *Money*, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, *need not wait to be called upon.*

☞ *Payment in advance* being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who *order* and *pay for* it.

☞ *Subscribers* who desire to continue the work, will do well to send their orders without delay; for, as we do not mean to print a large edition, with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

Travelling Agents.—Mr. T. M. Munn is our Travelling Agent for the Eastern section of the Province; Mr. Palmer for the Northern; and Mr. James Wilson for the Western: who are authorised to receive subscriptions for the last year's volume as well as for the present.

Local Agents.—Any person may act as local agent We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending *four* subscriptions. Those sending *twelve* and upwards will be supplied at 3s. 9d. per copy.

Advertisements.

THE

CANADIAN AGRICULTURIST.

Vol. I. TORONTO, JULY 2, 1849. No. 7.

ON THE PROPER TIME FOR CUTTING GRAIN AND HAY.

As the season for hay-making will have arrived by the time this number reaches most of our subscribers, and that of the grain harvest will follow in quick succession, we think a few observations on *the proper time for cutting*, will be deemed neither unimportant nor unseasonable.

It may now be stated as a well ascertained fact, that farmers in general do not commence the operation of cutting either grass or grain sufficiently early to secure the maximum of quality with quantity. In a climate like ours, which admits of only a short season for the growth and maturity of crops, this is a matter of much economical importance. By commencing cutting a week or so earlier than is commonly practised, not only is that time saved, and the harvest season thereby lengthened—an object which the practical man can appreciate,—but as we shall proceed to shew, the quality of the grain is superior and the quantity larger.

Mr. John Hannam of North Deighton, Yorkshire, was the first, we believe, to submit this subject to the test of careful and varied experiment. We have not space to enter into details, as they are given in the Scottish Journal of Agriculture for 1841–2, but it will be sufficient for our present purpose simply to state the results. We may observe, however, that subsequent observations both in Europe and America have very powerfully strengthened Mr. Hannam's conclusions.

Of wheat reaped at various times, the following were the advantages and disadvantages derived:—

No. 1,—reaped *quite green* on 12th August, and stacked 26th August, gave a return of £11 17 0 per acre.

No. 2,—reaped *green* on 19th August, and stacked 31st August, gave a return of £13 6 0 per acre.

No. 3,—reaped *raw* on the 26th Aug., and stacked 5th Sept, gave a return of £14 18 0 per acre.

No. 4,—reaped *not quite so raw* on 30th August, and stacked 9th September, gave a return of £14 17 4 per acre.

No. 5,—reaped *ripe* on 9th Sept., and stacked 16th Sept., gave a return of £13 11 8 per acre.

Hence a loss of £1 14 8 per acre upon No. 1 as comp'd with No 5
" " " " 0 5 8 " " " No. 2 " " " No. 5
" " gain " 1 6 4 " " " No. 3 " " " No. 5
" " " " 1 5 8 " " " No. 4 " " " No. 5
" " " " 3 1 0 " " " No. 3 " " " No. 1

Hence, also, wheat reaped a fortnight* before it is ripe gives an advantage on every point, namely:—

In weight of gross produce of	. . . .	13¾ per cent.
" " " equal measures, nearly	. .	¼ " "
" " " equal number of grains, nearly		2½ " "
" " " quality and value, above	. .	3¾ " "
" " " weight of straw, above	. .	5 " "

On the other hand, wheat, reaped a *month* before it is ripe, gives an advantage of 22 per cent. in weight of straw compared with the ripe, but suffers disadvantages in every other point, particularly in the weight of the grain. From 3 equal patches of the same field of wheat upon a thin limestone soil, cut respectively 20 days before the crop was fully ripe, 10 days before ripeness, and when fully ripe, Mr. Hannam ascertained the produce to be in *grain* as follows:—

20 days before.	10 days before.	fully ripe.
166 lbs.	220 lbs.	209 lbs.

Professor Johnston found upon analysis that the per-centage of flour, sharps, and bran, yielded by each, and of water and gluten in the flour, was as follows:—

When cut.	In the grain per cent.			In the flour per ct.	
	Flour.	Sharps	Bran.	Water.	Gluten.
20 days before it was ripe,	74.7	7.2	17 5	15.7	9 3
10 days before, ...	79.1	5 5	13 2	15.5	9 9
Fully ripe.	72.2	11.0	16.0	15 9	9 6

"In so far as these experiments go, therefore, it appears that when cut a fortnight before it is ripe, the entire produce of grain is greater, the yield of flour is larger, and of bran considerably less, while the proportion of gluten contained in the flour appears also to be in favour of that which was reaped before the corn was fully ripe."

Independent of the increased weight and quality of grain by early cutting, and the extension of time which such a practice gives to the period of harvest, there are other circumstances deserving considera-

* This period it should be observed applies to England, where the harvest is much slower in ripening than in Canada. The time must be considerably abridged to suit the climate of this country.

tion. The harvest by being commenced earlier affords the better chance of securing a crop; particularly in countries, where the season is late and the climate moist and variable; while a considerable saving is effected in the smaller number of workmen required in gathering the harvest. A great loss is frequently sustained by over-ripe grain being beaten out by cradling and high winds, which early cutting would entirely obviate. Besides the straw is of better quality either for feeding or manure. The value of straw as an article of food depends upon the quantity of nutritive matter it contains By early cutting, the sugar, starch, gluten, &c., which constitute the most nutritious portions of all the grasses, are secured in their largest quantity. Hence grass should be cut for hay when in bloom. If the operation be deferred till the flowers have faded and the seed formed, a large portion of the saccharine matter of the plant has become converted into woody fibre, a comparatively innutritious substance. Farmers sustain annually very great losses from inattention to these well established principles. The following passages from Professor Johnston's admirable treatise on "*The Elements of Agricultural Chemistry and Geology*," (p. 232) throw an interesting light on the subject to which we have been endeavouring to awaken up the attention of our readers.

1. *Hay.*—The period at which hay is cut, or corn reaped, materially affects the quantity (by weight) and the quality of the produce. It is commonly known that when radishes are left too long in the ground they become hard and woody—that the soft turnippy stem of the young cabbage undergoes a similar change as the plant grows old,—and that the artichoke becomes tough and uneatable if left too long uncut. The same natural change goes on in the grasses which are cut for hay.

In the blades and stems of the young grasses there is much sugar and starch, which, as they grow up, are gradually changed into woody fibre. The more completely the latter change is effected—that is, the riper the stem of the plant becomes—the less sugar and starch, both readily soluble substances, its various parts contain. And though it has been ascertained that woody fibre is not wholly indigestible, but that the cow, for example, can appropriate a portion of it for food as it passes through her stomach; yet the reader will readily imagine, that those parts of the food which dissolve most easily, are also likely—other things being equal—to be most nourishing to the animal.

It is ascertained, also, that the weight of the hay or of the straw we reap, is actually less when they are allowed to become fully ripe; and therefore, by cutting soon after the plant has attained its greatest height, a larger quantity, as well as a better quality of hay, will be obtained, while the land also will be less exhausted.

2. *Straw.*—The same remarks apply to crops of corn,—both to the straw and to the grain they yield. The *rawer* the crop is cut, the heavier and more nourishing the straw. Within three weeks of being fully ripe, the straw begins to diminish in weight, and the longer it remains uncut after that time, the lighter it becomes and the less nourishing.

3. *Grain.*—On the other hand, the ear, which is sweet and milky a month before it is ripe, gradually consolidates, the sugar changing into starch, and the milk thickening into the gluten and albumen of the flour. As soon as this change is nearly completed, or about a fortnight before it is ripe, the grain of wheat contains the largest proportion of starch and gluten. If reaped at this time, the bushel will weigh most, and will yield the largest quantity of fine flour and the least bran.

At this period the grain has a thin skin, and hence the small quantity of bran. But if the crop be still left uncut, the next natural step in the ripening process is, to cover the grain with a better protection, a thicker skin. A portion of the starch of the grain is changed into woody fibre,—precisely as in the ripening of hay, of the soft shoots of the dog-rose, and of the roots of the common radish. By this change, therefore, the quantity of starch is lessened and the weight of husk increased; hence the diminished yield of flour, and the increased produce of bran.

Theory and experience, therefore, indicate about a fortnight before it is fully ripe as the most proper time for cutting *wheat*. The skin is then thinner, the grain fuller, the bushel heavier, the yield of flour greater, the quantity of bran less: while, at the same time, the straw is heavier, and contains more soluble matter than when it is left uncut until it is considered to be fully ripe.

In regard to *oats*, it is said that the superiority of Ayrshire oat-meal is partly owing to the grain being cut rather *glazy* (with a shade of green upon them), and the straw is confessedly less nourishing for cattle when the crop is allowed to stand till it is dead ripe. A week before full ripeness, however, is the utmost that is recommended in the case of oats, the distance of the top and bottom grains upon the stalk preventing the whole from becoming so uniformly ripe as in the ear of wheat.

Barley cut in the *striped* state is also thinner in the skin, sprouts quicker and more vigorously, and is therefore preferred by the maltsters.

EDITOR'S NOTES.

Having recently completed a tour through the Districts, comprising the eastern section of Upper Canada, for the purpose of advocating the claims of the Provincial Association, and procuring subscriptions, a few short remarks in reference thereto may not be unacceptable to our readers.

June 1st: met a number of office-bearers of Agricultural Societies in Prince Edward District, at Picton, who evinced the deep interest they felt in the success of the approaching exhibition at Kingston, by a vote at a subsequent meeting, of

50*l*. We would recommend our Prince Edward farmers to pay more attention to the improvement of stock and dairying; the approaching show at Kingston will afford them facilities for so doing. We observed at Bloomfield, a hop garden belonging to Messrs. McDonald and Mills, managed in a superior style and of great luxuriance. Altogether it reminded us of some of the best plantations of the old country. Mr. Barker, of Picton, has a hop plantation of seven or eight acres, which appeared promising, the soil of excellent quality. We recommend hop growers to be particularly careful to keep off superfluous water during winter and spring, by furrows and under-ground drains; early, firm, and straight poling; and to get the vines to the poles as soon as they are of sufficient length. Hop growing may be made profitable on a small scale. Canada ought at once to produce enough of this article for its own consumption, and we hope it is in a fair way of doing so.

Next day we visited Belleville, and met several members of the Victoria District Society, when, after passing a liberal grant of 50*l*. towards the Kingston Exhibition, an interesting conversation or discussion was entered upon in reference to several important points of farm practice. The average quantity of clover seed sown per acre, was stated to be five or six pounds, with double that quantity of timothy; wheat a bushel and a half, and oats two bushels per acre. No fixed quantity could be depended on it should vary according to the state of the soil, seasons, and mode of cultivation. The general opinion being, that a sufficient quantity of grass seeds was not usually sown.

June 4th: a numerous meeting of the Executive Committee, held in the court house, at Kingston, when, after disposing of the business of the Provincial Association, a long and interesting discussion took place on several important matters relating to agriculture, such as the improvement of live stock, the application of plaster, lime, burnt clay, &c. Messrs. Marks, J. McDonald, A. Cameron, Cumming, Stark, and several other gentlemen took part in the proceedings. But one opinion prevailed as to the necessity of paying more attention to the improved breeds of cattle and sheep. The Hon. J. McDonald and Mr. Stark strongly urging from their own experience the claims of the Durhams. Lime, plaster, &c., had been found generally beneficial, and when applied with judgment profitable. We took occasion to impress on the meeting the desirableness of publishing reports and transactions in connection with the Provincial Association, as practised at home and in the United States, and of giving prizes for reports on the agriculture, &c., of different districts. Such information when embodied in an annual report, going forth under the sanction of the Society, would carry with it a weight and importance that would attract more attention to the great and as yet but partially developed resources of the country.

In company with Mr. Angus Cameron, we proceeded to Brockville, Prescott, Cornwall, &c., from all of which the Association will receive more or less support. Had much interesting conversation with the farmers on the improvement of Agriculture, and the management of Societies. Dr. Jessop of Prescott has some good improved stock; also Mr. Freeland, of Brockville, whose neat and well managed farm we had the pleasure of going over, as well as admiring the picturesque scenery of the noble St. Lawrence.

The districts of Ottawa and Dalhousie possess as yet, but few prominent agricultural characteristics, lumbering being a principal employment and source of wealth. Yet, even here, spots are occasionally to be seen where persevering industry has made the sombre forest "to blossom as the rose." We were particularly pleased with the residence and farm of Wm. Thompson, Esq., near Bytown; the gardens and grounds being laid out in a tasteful manner, and kept in the neatest order. The same may be said of the farm, live stock, &c., and we hope to receive occasionally a few practical hints from the owner and his intelligent old Scotch gardener. We may also express the same hope with regard to Captain Baker, who is an active promoter of agriculture in that vicinity.

June 12th: met this evening a number of farmers at Easton's Corners, in the Township of Wolford: Alexander McCrea, Esq., presided. After the address, considerable discussion followed in reference to Agricultural Societies, the efficiency of which it was thought might be much increased. Uniform and systematic action throughout the Province, was considered essential to their harmonious working, and that the Provincial Society should form a common centre for receiving and imparting information. Throughout this section of country scarcely any fall wheat is to be seen. The "Black Sea" (a spring variety) is principally cultivated, and its culture fast increasing. Owing to the extreme wetness of the spring, a large portion of this kind of wheat was not sown in many situations before the beginning, and in some places, the middle of June! Although this variety, so well suited in many respects to this country, has been cultivated but a very few years (only three or four we believe), yet we are credibly informed that it is beginning to deteriorate in quality, losing in weight, so that a fresh

importation of seed will ere long become necessary. June 14th: attended a meeting in the court house, at Perth, Bathurst District; Andrew Dickson, Esq., sheriff, presided. Considerable interest was manifested towards the Provincial Association; this and other Societies having gone into considerable expense in importing stock, will not be able to afford much pecuniary assistance this year, but we hope such a spirit of enterprise has been awakened as will prove permanently advantageous. In going over the well cultivated farm of Judge Malloch, close to the town of Perth, we observed some excellent sheep and cattle, convenient buildings and promising crops. His Honour informed us that he had employed *guano* as a manure with great effect, but thought it too expensive, having imported it from Scotland. We should be glad to be favoured with the particulars of these experiments. There are many excellent Scotch farmers in this part. The roads, however, are very bad, but there are prospects of improvement.

Throughout the country an impression appears to be gaining ground among the farmers, that more attention should be paid to the breeding of live stock generally, and in some places active measures have been taken to promote that important object. The Kitley Society, Johnstown District, have recently purchased an Ayrshire bull; and we have seen many excellent specimens of grade cattle well adapted to the climate, and the purposes of the dairy. The Americans have been purchasing cows to a great extent in this part of Canada, and we see no good reason why the dairying business might not be as profitably carried on this side of the boundary as the other.

As an instance of the great advantage of improved breeds of cattle, we have much pleasure in laying before our readers the following statement of an experiment made by the Messrs. McDonald, at Gananoque, who obligingly favoured us with the particulars. The six animals were fed and treated exactly alike, from May to the following April, when they were killed. In summer they were kept on good grass, and during winter they had hay and shorts only.

	DEAD WEIGHT.			
	Beef.	Hide.	Tallow.	Total.
	lbs.	lbs.	lbs.	lbs.
Three four-year old heifers, good specimens of Canadian cattle.	474	51	35	560
	441	48	32	521
	438	46	33	517
Three two-year old about two-third Durham, a cross with natives; the first a steer, the two others heifers.	707	94	56	857
	574	67	45	686
	581	78	31	690

PROVINCIAL AGRICULTURAL ASSOCIATION.

It affords us much pleasure to state that all the preliminaries in reference to the forthcoming Exhibition are progressing in the most satisfactory manner. There is every prospect that the Kingston show will come off in a style that will be highly creditable to the country. The contracts for fencing the Show Yard, which will include a space of ten acres, and for erecting the necessary offices and buildings, all of which are upon an ample scale, have already been taken; and active preparations are being made in each of the other departments. Upwards of a thousand pounds (inclusive of the government grant) have already been raised or promised from the Eastern section of the Province only, and we have no doubt that other districts will liberally respond to the urgent call of the Society. The city of Kingston and the Midland District, have already subscribed the munificent sum of six hundred pounds; while Prince Edward and Victoria Districts have each granted 50*l*., a like sum being expected from the Johnstown District. The government, we are happy to say, have evinced a truly patriotic spirit towards this important national institution, by an annual grant of 250*l*., besides a special grant of 350*l*. to enable the Society to meet its out-standing liabilities. We hope that this marked and liberal recognition of the importance of the Society by the Legislature, will only tend to increase the desire of all patriotic individuals, as well as of our Agricultural Associations generally, to render all the aid in their power. With united and zealous co-operation, combined with judicious management, this Society cannot fail to confer most important benefits on the country.

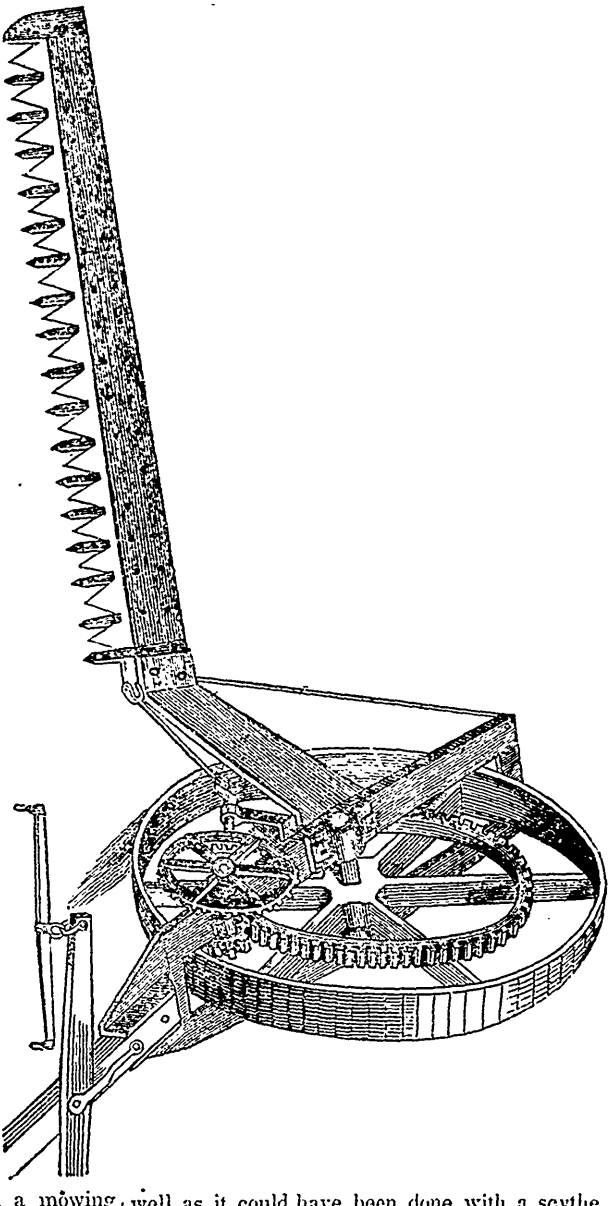
For particulars relative to the days and routine of the Exhibition, we refer the reader to our outside page.

Cure for Bone Spavin.—Take oil of amber, oil of spike, and spirits of turpentine, equal parts, say four ounces; warm them on some warm ashes with no blaze, and apply them as warm as you can to the spavin by pouring it on and rubbing it in well with the ball of your thumb; (first shave the hair off of the spavin;) this must be repeated twice a day for two days, when if well rubbed, it will become a running sore; wet a sponge with the substance, and apply it twice a day for three days, then stop for three days, and if the spavin has not disappeared, repeat the course three days longer. let the sore heal, wash it with plantain leaf scalded and suds from Castile soap; as soon as the sore is closed, commence rubbing with lard or rank butter, and the spavin will disappear, and the hair will grow in the same colour.

Agriculture, like the leader of Israel, strikes the rock,—the waters flow, and the famished people are satisfied.

MOWING MACHINE.

There are but few kinds of farm labor more severe than mowing. The heat of the weather, at the season when this operation is usually performed, is very great; its intensity being increased by reflection from the mown grass. The air is rendered sultry and exhausting by the heated vapour with which it is loaded while the hay is being cured. In many places it is the custom to use drinks in the hay field which are not adapted to cool the system, or to invigorate and sustain the physical energies under such trying efforts. If in addition to these circumstances—the nature of the operation itself be considered, stretching every muscle, and twisting every joint in a man's anatomy—it will not be denied that the invention of a machine to take the place of the mower and do the work faster and better, is a great desideratum. We fancy the great American orator and statesman Daniel Webster, was of the same opinion when he complained to his father of his scythe hanging so badly. His father's repeated efforts to hang it to please him, proving unsuccessful, he handed it to Daniel in despair, telling him to "hang it to suit himself." The youthful haymaker straightway took his scythe and hung it upon the nearest tree! Whether he thought that mowing hay was not the employment best suited to him, or that the scythe was not the implement best adapted to perform it with, we are not informed. Probably he took both views of the question. One of his countrymen has at last invented a mowing machine, which, with the improvements it has received and will hereafter receive, is destined, we think, to take the place of the crooked scythe, on all large and smooth meadows.



The annexed cut represents one which we saw in operation last fall, at the Buffalo Fair. The ground on which it was tried was quite rough and the grass (clover of a second growth) badly trodden down. Yet this machine, drawn by a span of horses, cut the grass very close, and nearly as well as it could have been done with a scythe. On a smooth bottom, with the grass standing, we were assured by those who had seen it work, that no mower could do it better. We have not heard whether any of these machines have been introduced into Canada, but we hope to see a specimen at the Kingston Fair, and if possible, such an exhibition of its capabilities as to attract the attention of our farmers. The following description is from a cotemporary:—

"It will be perceived that in reaping

machines are a simple saw, with teeth about three inches in length, ground sharp, so as to match and form a gang of shears with the steel bars about an inch wide, which project between each of the knives about an inch beyond their points. As the saw or gang of knives are moved alternately to the right and left, by a crank attached to the machinery, the grass in contact with the knives, is, as it were sheared off smooth at the surface of the ground. The machine though wholly of iron, weighs less than 500 lbs. is propelled with ease, and cuts the grass in a close and even manner, and will cut in a perfect manner ten or twelve acres of heavy grass per day, and costs £25."

We have been favoured with two or three communications, among which was the following article, addressed to the Committee of the *Johnstown Agricultural Society*, but never published. In this as in all cases of correspondence we beg our readers to understand that we do not hold ourselves responsible for the opinions of the writers. While we would not insert any thing which we thought might prove injurious to the Farmer's practice without some modification or warning; yet we are always ready to give publicity to such fairly conducted speculations as may tend to awaken curiosity and call forth observation and discussion:

THE WHEAT FLY.

In attempting some remarks on the natural history of the wheat fly, I am not insensible that it is a subject surrounded with a great deal of difficulty. There is no doubt that it is produced by a natural cause.. But there is considerable doubt, if the cause could be ascertained, that it would invariably enable us to be successful in the application of a suitable remedy. It may possibly originate in disease arising from the extensive cultivation of wheat. It may take its rise in some peculiarity of the seasons, as it seems to act in concert and contemporaneously with the rust. We might thus indulge in almost endless speculations on the origin of this insect, and still be as far from the real cause from whence it takes its rise, as when we commenced.

The real wheat fly is a very small insect, with an orange colour body, about the size of the full grown larva or worm, which we find inside the spikelets of wheat, at harvest; they have light coloured wings, and when they first make their appearance they are much smaller than when they commence their depredations. They generally make their appearance about the latter part of July, sometimes earlier, as there must be a certain amount of warmth and moisture to enable them to hatch; and I am inclined to think that one or two cold wet seasons would annihilate them completely.

From observation I am induced to believe that the fly commences the work of destruction—if they have then attained to maturity—as soon as the ear appears out of the socket. When the germ of the forthcoming insect is first deposited, it appears like a small blot scarcely discernible without the aid of a magnifying glass.

If the grain is formed and filled, the deposit can do no possible injury; the worm however is sure to attain its usual size; hence it may be reasonably inferred that the fly seeks the wheat plant as the most suitable place to deposit its young, and that the maggot does not prey upon the kernel for a subsistence, as many suppose. The worms are washed out with the rain and also rattled out on the ground in harvesting, and by instinct make their way into the earth, where they remain until warmed into existence the forthcoming season, when they emerge from the chrysalis stage to the ordinary dericlatar of our wheat fields.

This fly is first spoken of as appearing in England in 1795, and afterwards in 1828, and producing the most severe losses in the crops. It is described, but erroneously, as "a small black fly *hovering over* the wheat fields in immense swarms." On the contrary I am inclined to think it is never seen in the air, but remains on or near the ground until near sunset, when it ascends to the head of the wheat.

So much for the natural history of the insect: the remedy for its depredations is the grand desideratum, worthy of some effort to accomplish, and I believe the case is not altogether as hopeless as many suppose, as far as it respects winter wheat at least. The application of any remedy with a view to destroy the insect I consider quite fallacious; accordingly the old maxim, an ounce of preventive is worth more than a pound of cure, will here apply to perfection. The remedy and preventive, is to be found in an improved method of cultivation, and perhaps even with this we may not be as successful as we were a few years since. For a few years previously to the appearance of the insect and the rust, our farms brought forth wheat almost spontaneously. But the time has passed with us when a slovenly method of cultivating will insure to the farmer a return for the labour thus bestowed. In the first place a system of draining must be carried into operation. Stagnant water uniformly retards the progress of vegetation. Wheat kept back by wet in the spring will most assuredly be assailed with both the rust and the insect. No matter how dry the land is, we must still depend upon that Being, of whom the Poet says:

> "'Tis He prepares the fruitful rain,
> "Nor lets the drops descend in vain."

The importance of draining previous to the commencement of any other improvement in agriculture, being acknowledged by every cultivator of the soil, it is of the greatest importance that these undertakings should be conducted on principles which will insure complete and permanent success, and the full advantage of this primary improvement can only be obtained when it is well done. It is indeed the basis of all improvement of land.

While on this subject, I would wish to impress on the farmer the absolute necessity of due preparation of the soil for seed wheat. Superfluous moisture is undoubtedly one of the greatest obstructions to vegetation which a well ordered husbandry

has to overcome. Dampness of the soil not only creates a great deal of trouble in the management, but it prevents the coming up of the finer plants, as well as their ripening. Water-sick arable lands, seldom produce heavy grain in the most favourable seasons. Therefore it is unquestionably one of the agriculturist's first objects to remove all superfluous moisture from the soil, if he expects to reap a profitable crop. I am induced to dwell more at length on the subject of draining, being convinced that the farmer may more frequently attribute a failure in the wheat crops to coldness and dampness of the soil through the influence of superfluous moisture, by which the wheat is kept back in the spring, than to all other causes put together.

The next thing to be taken into consideration is the period of sowing. And I would suggest that it is of the last importance that wheat should be *sown early*. Theory as well as experience is certainly in favour of early sowing, because it gives time for the roots of the grain to establish themselves before winter, and experience proves that grain early sown throws up more lateral stems, than that which is sown late. Wheat sown in time to establish a strong root is not so liable to be thrown out of the ground by frost in the spring, and when sown on elevated land will be profitably forward in time of harvest. And when it is to be considered that early maturity is the grand object to be attained in order to elude the period of the operations of the wheat fly, the paramount importance of early sowing will be duly estimated.

Products of much value to man can only be obtained by corresponding degrees of labour, and with regard to the culture of wheat, much depends on the preparation of the soil, the choice and preparation of the seed, and the time and different modes of sowing it. Our farmers will see the necessity of increased labour and expense of procuring the best and earliest variety of seed. When practicable, seed wheat should be selected from some fine crop of the *preceding year*, which shall have ripened thoroughly and been well preserved. We can scarcely anticipate at present the advantages that will most assuredly result from a well directed effort to procure an early variety of seed. The farmer will find that winter wheat is a much surer dependence than spring wheat. The few unpropitious seasons which have passed, the expectations of the farmer have been blasted as much from the effect of rust, as from the depredations of the insect, and we may reasonably expect more favourable seasons in this respect. Indeed the farmers begin to anticipate this, and a much greater breadth of land will be sown this season than the last.

More uncertainty exists relative to spring wheat; the depredations of the fly can only be evaded by late sowing. In the neighbourhood of the writer, the bearded Black Sea wheat has been cultivated with some success, but not uniformly so; in some cases the injury from the fly has been serious ruin in fields sown contemporaneously with the more successful. Black Sea wheat is not proof against the rust, as has been supposed, as the experience of the writer will testify. There is a much wider range for the selection of seed wheat than is generally supposed. By a report of the Highland Agricultural Society of Scotland, it appears there are eighty varieties of wheat, "many of which possess superior qualities, so diversified, however, as to afford ample means of selection for sowing on strong or light soils,—in autumn or spring on low or elevated situations, while some of them are suited for greater heights than any at which this species of grain has hitherto been cultivated in Britain." The different kinds of wheat are, like all other plants, modified by circumstances of climate, soil, and cultivation; and winter wheat, by being sown in the spring, from a sort of instinctive tendency of plants to accommodate themselves to their situation, will after one or more sowings become summer wheat, and ripen the same season in which it is sown. The principal distinctions among wheats are into red and white kinds, and into thin or woolly chaffed or otherwise bald or bearded. The white and thin skinned are preferred for bread, and I believe the beardless wheats are much the most prolific, but more obnoxious to the attacks of the insect, and injury by mildew. It would be well worth the while for those interested in the success of agriculture, to be at some pains to procure an early variety of beardless winter wheat, as the same bulk in straw will yield at least from twenty five to thirty per cent more of wheat. The diseases of wheat may be hereditary; and as in animals, they may become aggravated in successive generations, when propagated continually from the same stock, in the same situation; therefore the best cultivators recommend an occasional change of seed. It however appears from the Report above referred to, that Captain Hunter of Tynefield, East Lothian, produced the same variety for sixty years on the same farm without change of seed, weighing from 65 to 65 1-2 per bushel.

IMPORTANCE OF CAREFULLY PREPARING A SUMMER-FALLOW FOR FALL WHEAT.

For the Canadian Agriculturist.

It is no more than natural that the farmer should manifest the liveliest interest in the production of that crop which is of the greatest value. Wheat, the staple of Canada, has thus far deservedly stood best in his estimation, and is likely for some time yet to maintain that ascendency, though the average yield for the last few years has not been without its discouraging feature Rust seems to be the obstacle most dreaded in the way of a profitable return, and though it is too true that no effectual remedy has yet been discovered by which it can be prevented; still there is no doubt that a careful preparation of the land before the seed is sown may go far to lessen its consequences. We have learned from experience that late ripened grain, or that growing on cold wet soil, is most liable to this disease.

The most common complaint among farmers is that their land after being summer fallowed is too fine. That the furrows run together when ploughed for sowing to such an extent, that it is difficult to get the seed covered a proper depth, and the tender places are therefore exposed to the severe action of the frost during the ensuing winter and spring, when if it is not destroyed altogether, it is kept back several weeks. The grass and weeds taking advantage of this backwardness, the wheat is unable to recover its original vigor, even though

the land be rich, and as a natural consequence ripens late, and is most likely struck with the rust.

Land is sometimes rendered so poor from constant cropping, that it becomes saturated to that extent from the melting snow and the rains that follow in the spring of the year, that a whole field may not unfrequently be seen, one bed of thin mortar, and while in this state the delicate plant is raised to the tip of its roots by the severe night frosts. Now such results may be prevented in a great measure by careful summer-fallowing. Instead of ploughing a summer-fallow only twice, as many do, it should be ploughed three or four times in order effectually to kill the weeds and expose the soil to the free action of the atmosphere. During a fallow, says Liebig, a quantity of ammonia is collected from the atmosphere, potash disengaged from its combinations, and a certain quantity of the alkalies rendered capable of being appropriated by plants. Now no matter how much some of us may be disposed to question the truth of many theories in agriculture, practically we do know that land properly fallowed is rendered much more productive.

If we have barn-yard manure to apply to our fields, there is no better way than to work it well into a summer fallow, plough it well under as soon as it is taken to the field, before it has had time to lose any of its richness by evaporation. A summer fallow, to be really of service to the land, should be ploughed for the first time either the fall previous to sowing, or as early as possible in the spring. If a fallow is not broken up until the heat of summer, it is not effectually acted upon either by the rain or the atmosphere; and the roots of grass, and seeds of various weeds, apparently destroyed, will preserve sufficient vitality to make their appearance when little looked for among the wheat.

If these observations are correct (and they are not without the force of some experience), a fallow for wheat should not only be ploughed often but at proper periods, and it will acquire consistency and firmness; apply a reasonable quantity of manure, drain sufficient to take off at least, all the surface water; sow rather early than otherwise, and you are almost sure of a good crop. When the wheat plant stands in a comparatively dry and rich soil, it will grow vigorously and suffer little from the ordinary severity of the seasons.

THE POTATO.—It is evident that the potato is too precarious a crop to be relied on as a staple article of food. It must descend to the rank of a garden luxury; but what shall we substitute for it? How are the millions in these islands who have hitherto subsisted chiefly on that root to be fed without it? The answer is thus far obvious, that they must be fed either with imported food or with increased produce raised from our own soil by means of improved cultivation. That our own soil is capable, under an improved system, of yielding such an increased quantity of grain and animal food as would more than compensate for the loss of the potato, may be treated as an admitted fact; and if that loss shall stimulate such improved cultivation, it may be hailed as one of the greatest blessings which could have been bestowed upon us. From the potato have flowed the larger portion of those evils which are now desolating Ireland. The same evils would have resulted in England from the adoption of the potato as the sole food of the labouring classes, a state of things to which we were rapidly tending. In England, the evil has been arrested before it had reached its height, by that mysterious visitation which baffles the skill and eludes the science of man, and by which a wise and good Providence is working out his designs. In Ireland the change, though good will ultimately arise from it, is attended with intense present suffering, aggravated and prolonged by the desperate fidelity with which the population of all classes cling to that treacherous root.

We have before us a letter from a correspondent on whom we can rely, who says, "In Donegal, every available acre is planted with potatoes. In Roscommon the old pasture is being broken up, and let on the con-acre system." A daily contemporary has stated, on the authority of Lord Clarendon's Agricultural Instructors, that in other districts the small farmers are pledging their last resources to plant as large a breadth as possible with potatoes; and that when asked what will be their position in the event of another failure of that crop, the answer is, "*In that case, we can do nothing but lie down and die!*" When it was suggested to them that a better and safer return from the land might be obtained by means of oats, beans, peas, and turnips, the reply was that they had no seed. If seed were given them, they would try those crops. As if the same resources which procured the high-priced potato sets would not have procured the seed of other crops, if there had been the inclination and the energy to resort to them. This is the old cry, the impossibility of cropping the land without the assistance of the Government or some other extraneous aid, of which the inspecting officers under the Temporary Relief Act heard so much during the famine of 1846-7, a cry which proved to be utterly unfounded when it was seen that such aid was not forthcoming.

If the cultivators of the Irish soil will persist in gambling in potatoes, and if the landowners will make no effort to restrain it, and to introduce a safer and more rational system of cultivation, both parties must abide by the consequences. The former must not be surprised if they are overwhelmed with poor's-rates, nor the latter if their estates pass into other hands. One thing is certain, that to pay the stakes for them in case of failure by grants from the Imperial Treasury, tends only to encourage this recklessness, and that the sooner all classes in Ireland are convinced that they will be left to their own resources, the sooner they will learn the necessity of self-exertion.

In that part of England which comes under our observation, we are happy to observe among the cottagers a greater disinclination for the potato culture this season, and a more extensive planting of beans and peas. These, however, and more particularly the former, are mere summer substitutes. A winter substitute for the potato is still a desideratum. The best we have seen on the table is the Haricot or white kidney bean. Well boiled, a little butter stirred among them while hot, and sprinkled with pepper, they form a delicious dish. They have been hitherto chiefly imported from France, and cost about 6s. the bushel. We are not recommending the cultivation of them in Ireland or the north of England. We fear they are too tender for field culture, even in our southern counties, but in the cottage garden wherever French beans can be cultivated for their green pods, there seems no reason against their cultivation for their ripe seeds. They have the advantage of being a crop which does not occupy the ground long, and they can be easily stored. It is even yet not too late to plant them, and we would urge all who have any influence with the cultivators of cottage gardens to induce the trial of experiments in cultivating them on a small scale, and to introduce a taste for them as an article of food, by

distributing some of the imported Haricots, with directions for cooking them.—*Agricultural Gazette.*

THE HISTORY OF AGRICULTURE.—The first of a course of three lectures on this subject was delivered at the Royal Institution, on Monday afternoon last, by Chandos Wren Hoskyns, Esq., B.A. F.S.A.: its subject was the ancient period of agricultural history.—Dr. Fleming, in introducing Mr. Hoskyns, remarked upon the desire which was felt by the council of the institution to supply lectures which should form a curriculum of education. In such a series they must, of course, include agriculture; but a difficulty here presented itself in the fact that so few distinguished men had devoted themselves to the study of this science. This was overcome by a gentleman of the highest possible authority naming to the council Mr. Hoskyns, and at the same time intimating his opinion that no other gentleman equally competent could be found in this country. Mr. Hoskyns was communicated with, and he at once proposed gratuitously to give a course of lectures upon the history of agriculture. He (Dr. Fleming) conceived, therefore, that Mr. Hoskyns was eminently entitled to their gratitude.—(Applause.)

The lecturer said that, surrounded as we were by the arts which accompanied the growth of civilization, there was none to which our attention might more naturally turn than that whose subject was the supply of our first physical want. The history of the productions of the soil was interwoven with man's progress in every other art, and was fundamentally connected with his well-being in every respect. While we were familiar with the manœuvring of the Greek phalanx, and of the Roman legion, we were in the dark as to their simplest art; while the sword and the shield had descended to us in minute descriptions, the form of the plough, the spade, and the loom, might be looked for almost in vain; and we should possess no idea of them but for some accidental phrase in a writer, some half-effaced sculpture, or the impression on a coin. Nothing marked more strongly an epoch in any art, than the awakening of an interest as to the particulars which might be gathered of its early history. There was no human pursuit which could be said to have reached a later state of development, without having been assisted by the helping hand of science, than agriculture. The great improvement in the art of late years suggested the inquiry why it was so long stationary; and some answer to this question might perhaps be found in the very importance of the subject itself; for all natural laws seemed to testify to the slow growth of whatever was most truly and permanently valuable. The history of agriculture was in some sort the history of civilization; and in the labours of husbandry we recognized the humble but persevering antagonist of those elements which had ever presented man to the student and the philosopher as the one great disturbing agent in otherwise tranquil nature. At the very outset, therefore, of a history like this, we must cast off all expectation of meeting with much of distinct or purposed narrative, and from a wide and varied field of research, we must be content to gather such indications as we could. The task we had to perform was to convert scattered links in a chain, as well as the scanty materials would allow, and to throw upon the series such connection as may be derived from the great privilege we possessed of viewing the subject from the vantage ground of after knowledge. We had an illustration of the kind of evidence to which he referred, in the history of our race given in the Bible, where we were told that Abel was a keeper of sheep and that Cain tilled the ground. Here were the two great branches of agricultural science as they existed at the present day—agriculture proper, or the cultivation of the soil, and the secondary branch of the feeding of cattle. Mr. Hoskyns then read the description of the Egyptian agriculture given by the younger Pliny; and said we could not too much admire the arrangement by which the simple overflow of the Nile became an inducement to a regular system of husbandry and planting, bringing with it the necessity for a fresh division of land after each inundation; and as the study of geometry arose from the desire of each to possess his own land, Egypt was thus rendered the parent of agricultural, geometrical, and, ultimately, of astronomical science. After referring to the frequent scarcities recorded as having taken place in the east, and also to the condition of the nomade and of the pastoral life, the lecturer said that wherever the cultivation of the soil was little practised, the mechanical arts were but little understood. Flocks of sheep afforded the means of supplying the wants of men, for this animal easily adapted itself to different climates, and thrived upon the shortest and most scanty pasture. The practice of agriculture in earlier times, by supplying nations with a greater amount of wealth than their own wants required, rendered them not only permanent but powerful also. Peculiar interest had always been attached to the most ancient modes of constructing the plough. Mr. Hoskyns then referred to the representations of the plough, which were found in the Egyptian hieroglyphica, and said that the instrument there pictured was no doubt a substitute for a more simple one which had preceded it. Inquiry seemed to prove that the spade, as an instrument of hand labour, must yield in antiquity to the hoe. Mr. Hoskyns explained the three gradations of hieroglyphic writing,—the pictorial, the symbolic, and the phonetic—and pointed out, that the first letter of the word used by the Egyptians to signify plough had become the first letter of modern alphabets. The next agricultural nation of antiquity was Greece. Overflowing as the history of this country was with records of arts which delighted the fancy of men, Greece was almost silent about agriculture; and we looked in vain for the scanty notices that would have afforded some clue to their progress in an art which to the Grecian mind must have appeared so necessary. Mr. Hoskyns referred to the testimony of Herodotus and Thucydides as to the soil and capabilities of Greece; and afterwards pointed out the change which had taken place in the climate of Sparta, owing to the neglect of the extensive system of draining at one time pursued there. Traces of ancient cities were to be found in the valleys now rendered uninhabitable by the neglect of drainage; and instead of nurturing the vigorous and healthy race of whom we read, one sickly race succeeded another. The agriculture of Rome occupied a much wider field in history. From the very foundation of the state, amidst much that was fabulous, we learned one fact, which left its traces for many centuries afterwards,—that the assignment of a certain portion of land to every citizen was the first work of the state. Agriculture was peculiarly suited to the Roman character, because its requirements and its philosophy were of all callings the most practical. Nothing more clearly proved the high estimation in which agriculture was held among Romans, than the fact, that from its terms many of the greatest men derived their names; and the practical work of cultivating the soil appeared to have been as naturally the resource of Roman senators, when relieved from their legislative duties, as were the moors of Scotland to the members of a more modern assembly. The Romans were characterised by the great exactness of their modes of cultivation, and all the ordinary details were carried out with great nicety. In their ploughing, the Romans made their furrows straight to perfection; in making their roads in conquered lands, they allowed them to be turned neither by mountain nor swamp; and this straight progress was the secret of their success in agriculture and in war. There was

sufficient evidence to prove that Rome had possessed an agricultural literature which had been equalled by no other country. In conclusion, Mr. Hoskyns referred to the works of several of the Roman writers on agriculture, and quoted the advice given by Cato to young farmers.—*Manchester Guardian.*

CABBAGE TURNIP, OR KHOL RABI.—In Europe, and in some seed catalogues in this country, this plant is called *turnip-rooted cabbage;* but this is erroneous, let the authority for the name be what it may, for it is a turnip, and not a cabbage; but it may with propriety be called a *cabbage turnip*, as it has a cabbage taste. In form, growth, &c., it is in reality a turnip.

There are two kinds of the *Khol Rabi*, one with the turnip below, or in the ground, like a ruta-baga; the other has the turnip above the ground, resting on a stem similar to a cabbage stump, only very short, the turnip being almost on the ground. In this kind the leaves come out on different parts of the turnip, but mostly on the upper side. The most common, and the better variety, is that below the ground.

The cabbage turnip is sowed at the same time, cultivated in the same way, and used for the same purposes as the ruta-baga. For the table, it is whiter, milder, and sweeter, or has less of the peculiar strong turnip flavour, and resembles the old French turnip in quality, but is very little whiter, and less liable to become corky.

The cabbage turnip keeps better than ruta baga, and is less liable to injury from frost. In Maine, where the winters are less liable to a change in temperature, we used to leave these turnips out in the fall, and in the spring they were in as fine condition as parsnips in the same ground. In this state, a few years ago, some friends, to whom we gave some seed, said that they kept perfectly well out doors. But we left some out for trial, winter before last,—a very variable season: sometimes heavy rains and the reverse,—and the turnips were destroyed by frequent freezing and thawing.

For cattle, the cabbage turnip is excellent, and we never perceived any unpleasant taste in milk, from feeding cows freely with them. It yields largely, but it has many roots or prongs, which is an objection. For stock or for the table, we prefer the cabbage turnip to the ruta-baga. We have sold them to many of our neighbors, for a few years, who prefer them for the table to any other turnip, from November to May or June. Yet we recommend them for trial only, as every one may not give them the preference. Sow them by the side of the ruta-baga, and judge of their comparative value.

We raised a fine lot of seed, last year, of the genuine below, ground variety; and those who would try it, may obtain some in the seed room of Messrs. Ruggles, Nourse, Mason, & Co., adjoining our office, where specimens of the root may be seen."—*New England Farmer.*

AGRICULTURE IN MAINE.—In the late message Gov. Dana to the legislature of Maine, we find the following sensible remarks on the importance of agricultural education, and the propriety of exempting a suitable amount of the debtor's property from the power of the creditor, instead of specific articles. We trust that so valuable suggestions will be duly appreciated by the intelligent body to whose action they are submitted.

The products of agricultural labor are undoubtedly of greater value than the combined products of all other labor in the state; and yet that pursuit attracts less of general attention than any other. From its unobtrusiveness it has allowed itself to be nearly overlooked, although the great interest of the state. The farmer sows his seed, watches its springing and maturity, reaps his harvest, and enjoys its fruits in quiet and contentment, asking no protection or legislation. But his interest should not be neglected because he makes no clamor in the halls of legislation. I presume it would not be doubted, that the general application of science to agriculture throughout the state, would double our agricultural products, with but a slight increase of labor. Such an addition to the productions, resources, and wealth of the state, is an object worthy the highest solicitude, and should command your earnest consideration. But with our present means of education, little advance can be made towards its accomplishment. There is not in the state, and probably not in New England, an institution where a practical, scientific agricultural education can be obtained. Three fourths of our population are farmers; three fourths of the rising generation will be farmers; and yet there is no opportunity for one, of all this number, to obtain an education adapted to, and in aid of, his vocation. True, we have our high schools, academies, and colleges,—many of them liberally endowed by the state,—but they all fail to give him an appropriate education; for, instead of fitting him for his destined pursuit, and rendering it pleasing to him, his course of studies and the associations and influences around him, all tend to give him a distaste for it, and to invite to other professions and callings, where he will be far less useful to himself and the community. If, then, the object of education is to fit man for the duties of life, a large majority of our population have no opportunity to obtain it.

In my annual message to the legislature of 1847, I suggested the establishment of an agricultural and teacher's seminary, under the direction of the board of education, and proposed that, when its finances would permit, the state should support, at that seminary, a small given number of scholars from each county, to be selected by their respective boards of school committees, as a reward of merit and proficiency. The chief design of this feature of my suggestion, was to give a stimulus to the interest of both parents and children, in our public schools; but it would probably be attended with too much expense for the present condition of the treasury. An agricultural school, divested of this more expensive feature, as a model, and as a commencement of a system of agricultural schools, is an immediate want, and within our immediate means. The interest of the permanent school fund, which is still unappropriated, is more than sufficient for that purpose; and if, as I have already suggested, the proceeds of the reserved lands should be added to this fund, the interest of both combined would, besides sustaining such a school, furnish the means for increased facilities for the education of teachers, either by the establishment of normal schools, or by prolonging the sessions of our interests.

The policy of exempting a portion of the property of the debtor from attachment, for the double purpose of enabling him to supply the necessities of himself and family, and of furnishing him with facilities wherewith he may ultimately relieve himself from his debts, has ever been recognized by our laws, and is both humane and wise. But I am convinced that the exemption of a fixed amount of property, of such description as the debtor might select, whether personal or real, instead of the list of specific articles now exempted, would be advantageous both to debtor and creditor; because each individual debtor could then retain the property best adapted to his circumstances, and calculated to afford the most aid in accomplishing the objects for which the exemption was made. Under the present law, it may often occur, that the property retained, although the amount may be large, is of little benefit to the debtor retaining it; whereas, if a much less value were secured to him, in precisely the property which his situation required, the ends of protection would be more nearly attained. But another important objection to our exemption of specific articles is, that no real estate

is included. If the present exemption of personal property does not conflict with the rights of the creditor, the exemption of the same value, in either personal or real estate, surely could not; while, at the same time, it would be far more useful to the debtor. He is now allowed the products of a farm, tools, horses, and oxen to cultivate it, but no farm; thus encouraged to obtain the implements of husbandry, but forced to use them upon the farm of another; induced to assume the relation of a tenant, while the true interests, alike of the debtor, creditor, and the state, would invite him to become a freeholder.

Buckwheat or Polygonum Fagopyrum.—Buckwheat is said to be a native of Persia, and is usually sown on poor land, although, like other cultivated plants, it does best on a good soil with good culture. Its blossoms yield considerable food for bees, although the honey thus obtained is inferior to that made from clover. Buckwheat meal or flour is much used in some sections of the United States for making griddle cakes. The seeds of this plant contain fifty per cent. of starch, and one and one half per cent. of earthy matter. It is often sown and the crop ploughed in, to fertilize poor land. From one to two bushels of seed are put on.

Buckwheat without Grit.—Did any person, who eats buckwheat cakes, ever have the good fortune to get any containing not a particle of grit? A method not generally known was lately stated to us by a practical farmer, who says that buckwheat raised in this way is entirely free from the difficulty.

The buckwheat is sown at the usual time; but before harrowing, a bushel of rye is sown with it to the acre: they both come up together, and the buckwheat, being much the most rapid in growth, soon obtains the ascendency, the rye only forming a smooth, green carpet beneath, which completely prevents the dashing of the grit of the soil by rain upon the buckwheat, when it is cut, and otherwise keeps it clean. After the crop of buckwheat is removed, the rye obtains sufficient growth before winter, and the next season affords a good crop of itself. Thus the buckwheat is protected, and two crops obtained from a single seeding.—*Penn. Cultivator.*

Bloody Milk.—Messrs. Editors: When I was quite small, my mother had a cow that gave bloody milk. I had an uncle who was in the habit of doctoring his own cows, and occasionally his neighbors', if requested, with pretty good success. He was sent for. He inquired on which side the cow gave bloody milk. I went to the stable with him to see the operation. He bled the cow under the belly, on the side from which she gave the bloody milk. He directed that bittersweet ointment should be freely used about the udder for a few days, and said the cow would give "no more bloody milk." I state this to show that he had confidence in the remedy. Last spring, I had a heifer that gave bloody milk. She had a fine calf by a Durham bull, and bore the marks of a good cow, so much so that I refused the highest price of good cows for her before she had her calf. I recalled to mind, as near as I could, the process by which I had seen a cow cured of the same disease, when a lad. I tied a cord around her body, raised the vein by the help of a twist, and drew probably three quarts of blood from the vein leading to the diseased side of the udder. I procured some roots of bittersweet, the bark of which was boiled in water until the strength was extracted, then strained, and the liquor simmered with lard until the water was nearly evaporated: this ointment was used freely by rubbing it well over and about the udder with the hand three times a day, after milking, for several days. I do not say that she gave "no more bloody milk." By letting the strippings remain in a vessel by itself for twelve or twenty-four hours, and carefully pouring off the milk, it was found that a slight sediment had been precipitated containing bloody matter, which continued for four or five days after the bleeding operation was performed; since which time not the slightest trace of blood has been discovered in the milk, and she has fully answered my expectations. Every body knows, or ought to know, bittersweet. It is found in the thickets, and consists of a woody vine, which runs spirally up the bushes or small trees, and branches with the top of the tree: it has a long narrow leaf, and bears clusters of berries: it blossoms in the spring: in summer, the berries are green: in autumn, a beautiful yellow; and in the winter, red. The root is of a golden yellow color, and its taste, as it name indicates, bittersweet.

Lee Co., Iowa, 1849. Torpedo.

P. S. Would not this disease have been likely to have terminated in what is called the garget in the udder had it not been attended to in season? T.
—*Prairie Farmer.*

Remarks by the Editor New England Farmer.—Every body does not know the "bittersweet," though he ought to know it, as the writer of the foregoing article observes. We knew a case of a physician choosing in the fields a poisonous plant for the bittersweet; and he and his friend, who chewed it by way of trial, found it *bitter*, but not sweet. Bittersweet, or woody nightshade, (*Solanum nigra.*) a poisonous plant.

Bittersweet has lower leaves heart-shaped; flowers purple; berries oval, bright red at maturity; common in low grounds, and beside brooks; flowers in July.

Black nightshade has an erect stem; leaves ovate; flowers white; berries round, black. It grows among rubbish; is supposed to be imported from Europe. If this be correct it is probably found only in some sections of the country that have been long settled.

Cost of Growing Wheat in the United States.—Nothing can better serve to convey to the reader's mind an adequate idea of the exuberance of the Mississippi valley, than the ease with which, the little expense at which, and the abundance in which, wheat can be produced in its upper and grain-growing section. Throughout its entire length and breadth, Indian corn seems to be almost a spontaneous production; the difficulty seemingly being, not to produce it, but to prevent it from growing in too great abundance. The Farmer in the valley is remunerated if he gets 10c. or about 6d. sterling a-bushel for it on his farm. For want of a greater domestic and foreign demand, a great portion of the enormous quantity annually raised of it rots upon the ground. Wheat, of course, requires more attention to be bestowed upon it, and more outlay to produce it. But it is astonishing how little labour and cost it requires to draw exuberant crops from the rich prairie lands. The following estimate of the cost of raising wheat, for the first time, from prairie land, I procured from a gentleman in Washington, himself a practical Farmer in the west, and, at the time, a member of Congress for a western constituency:—

For ploughing an acre of sod - - - - -	$2 0
Seed, - - - - - - - - - - -	1 0
Sowing seed, - - - - - - - - - -	1 0
Harvesting, - - - - - - - - - -	1 25
Threshing, - - - - - - - - - -	1 75
Total expense, - - - - - - -	$7 0

Here then we have seven dollars, or about 29s. 2d. sterling covering the whole expense of producing an acre of wheat in portions of the valley. And this is

the cost at which the prairie can be cultivated for the first time. In subsequent years it is diminished; as, after the soil is once turned up, the land can be ploughed for one dollar an acre. This reduces the aggregate cost to 25s. per acre. But it may be supposed that, as the husbandry is rude, the yield will not be very abundant. The average yield of good prairie land, when properly tilled, is about thirty-five bushels per acre; but as it is generally farmed it yields an average of thirty bushels. This gives the cost of production at very nearly 1s. the first year, and at 10d. the subsequent years. The American is somewhat smaller than the English bushel; but making ample allowance for this difference, 10s. sterling may be assumed as the cost of producing a quarter of wheat in most portions of the Mississippi valley where the land is prairie land. Of course when it is forest land the cost of clearing will enhance that of production. It therefore follows, that all that the prairie Farmer can get over 10s. sterling per qr. for his wheat on his farm is clear profit to him. Compare this with 84s. 64s., and 56s. as the successively assumed remunerating prices in this country.—*Mackay's Travels in the United States in* 1846-7.

Benefits of Salt as Manure.—We have recently been perusing several European articles, detailing experiments made with salt as manure, and from them we have made the following brief synopsis of its utility:—

It attracts the humid vapors and repels frost, and thus assists in keeping the land moist in dry weather, and warm in cold. It keeps every thing in the soil in a soft and soluble state, and assists to digest and prepare the food for vegetable nutrition. It destroys many kinds of vermin and weeds, and usually increases the amount of the crop one fourth to one third; strengthens the growth of every thing to which it is applied, and brings all crops earlier to the harvest. It generally adds from five to seven bushels per acre to the yield of wheat used in the most moderate quantity, and in all kinds of grain makes more ear and less straw. Mr. George Sinclair obtained at Woburn, on plots of thirty-six square feet, at the rate of seventy to ninety-five bushels of wheat per acre, by the use of salt mixed with other manures. It is found equally beneficial to pasture as well as root crops, sweetening all vegetation, and making it more wholesome for both man and beast. It is a great safeguard against blast, rust, mildew, and indeed all the diseases of grain and vegetables.

Salt is inoporative applied near the sea-shore, where salt water spray is already in excess on the land; but every where else it is beneficial. It may be used at the rate of five or forty bushels per acre, though ten or twenty bushels are better. It can be sown broad-cast on the land, or be incorporated in the manure or compost heap. Mr. Prideaux informs us, that mixed with lime and its compounds, it undergoes decomposition, producing soda or its combination with carbonic acid, or with humus; all more powerful digesters and feeders than salt itself; and the muriate of lime, which has the strongest attraction for moisture of almost any thing known. Salt and lime work vegetable matters to decay quicker than salt alone. With gypsum it will supply soda and sulphuric acid cheaper than any other material, besides the muriate of lime, so valuable for its moistening quality.—*American Agriculturist.*

Rooks.—I take the liberty of predicting that in the course of a few years the farmers of this country will be unable to grow corn crops at all! You must not be startled at a supposition so bold as this. I will premise my explanation by a short statement made in works upon Natural History upon the very best authority. Many years ago, the Coffee plants in the island of Madagascar were attacked by the grakle, a well known bird on the African coast. The grakle is an insect feeder, but having used up the supply, it betook itself in pure necessity to Coffee. An edict was speedily issued and carried into effect, for the annihilation of grakles, and every bird on the island was destroyed. All went on very well for a year or two; when lo and behold, the insects and their larvæ having the field to themselves began to make sad havoc upon the Coffee plants. What was to be done? There was no alternative but that of bringing back the grakle, which was in due season imported. The Coffee planters had however gained something by experience, and they resolved to profit by the same; they managed to keep the grakle within bounds, and they well knew that he would do the same by the insects. And they were right. By preserving a *juste milieu* doctrine between the two, they were enabled to grow Coffee. Now I apprehend the farmers in the present day are much in the same position as the Coffee planters of Madagascar. There has been for some time a system practiced in this neighbourhood of poisoning birds by wholesale; thousands upon thousands have thus been destroyed, and the system continues. Can anything, I ask, be more absurd and irrational; I had almost said stupid, than this abominable practice. I will say nothing about the beauty and harmony of living nature, I will not whisper a syllable of the goodness and beneficence and wisdom of its great author, for I know from experience, that against prejudice in agricultural districts such arguments have no weight; neither will I attempt to picture the horror with which I have witnessed this familiarity with poison spreading like an evil pestilence among the beautiful of God's works. But this I will say, that if the farmers of England run blindly and wilfully into the proved and fatal error of the Coffee planters of Madagascar, if they permit the grub and the wireworm to destroy the crops of this country—and this they will do most assuredly if they annihilate insect feeders — they will not only effect their own ruin, but they will inevitably cause a great national calamity.—*Agricultural Gazette.*

Great Farm.—The United States Patent Office Report says, "One of the greatest dairies in our country is that of Colonel Meacham, of Pulaski, N. Y. His farm consists of one thousand acres, three hundred of which are devoted to grass; and he keeps one hundred head of cattle and ninety-seven cows. In one year he made thirty thousand pounds of cheese, twenty thousand of which sold at one time, in New York, for from six and a half to seven cents per pound. He feeds his cows mostly on hay and carrots; of the latter, he raises two thousand bushels, and gives each cow half a bushel per day. And besides the benefit derived from his grass for his stock, he gathers not less than three hundred bushels of grass seed."

Choking of Subterranean Drains.—A short time since, Mr. Hawkins, of Assington, a gentleman occupied in farming and professionally engaged in land-surveying and draining, brought me a slimy substance which he described as collecting within and choking up drains in certain localities. He referred me to Mr. Parkes' "Essays on Land Draining," p. 66. for an account of this substance and its analysis by Mr. R. Phillips. Mr. Parkes considers it to be an aggregation of peroxide of iron precipitated from the chemical solu-

tion of the protoxide united with carbonic acid in the water. I immediately told Mr. Hawkins that I was satisfied this matter was of vegetable origin, and I showed him, under the microscope, that it was composed of extremely delicate confervoid filaments. It was evidently some minute fresh-water Alga. I forwarded a fragment to Mr. Thwaites, of Bristol, whose researches and discoveries among the lower groups of this family of plants have recently been shedding much light upon their physiology. He informs me that it is a nondescript species, with which he has been acquainted for the last two years, and had assigned to it the name of Cathetocladus Ralfsii, having first received it from Mr. Ralfs, the author of a recent most admirable volume on our British Desmidiceæ, one of the lowest and strangest of the groups of the same family of plants. After having carefully washed a mass of the Cathetocladus, to get rid of the sand with which it was mixed up, I dried and burnt it in an open crucible. It lost 25 per cent. of organic matter, and left a residual ash of 75 per cent. This ash was of a dull red, and apparently consists almost entirely of peroxide of iron and silica. So many of the lower Algæ secrete silica, that it does not seem to be at all improbable that considerable accumulations of this mineral and peroxide of iron might originate within drains entirely from the decay of these plants, however carefully all extraneous matters were prevented from entering them. Strata of considerable thickness have been formed in some places from the siliceous cases of certain microscopic plants. But still, in the absence of experiment, or accurate observations to the contrary, I should be inclined to think that the evils complained of might be avoided if sand and other matters were carefully excluded from finding their way into the drains. For the plant itself would periodically decay, and I should suppose it would then be readily carried off by the current, if there were no foreign matters entangled in it. If the "light flocculent floating little masses," as described by Mr. Parkes, p. 70, were really composed of peroxide of iron, they would have subsided by the laws of specific gravity, however finely the particles of which they were constituted may have been originally subdivided; and unless I have forgotten my hydrostatics, a diminution in the bore of the drain-pipes could not possibly cause "a more concentrated stream of water" to be directed through them, as described at p. 60. This is a different problem from that by which we compare the velocity of a given quantity of fluid as it passes through a narrow portion of a channel, with the velocity of the same quantity as it passes through a wider portion. A smaller discharge, but not a more rapid one, would be the only result obtained by so far diminishing the bore that the pipes should be completely filled. If Mr. Parkes has been successful in preventing the accumulation of the deposit, the reason must either be owing to the Alga not being able to grow under the altered conditions in which it now finds itself, or else to his having succeeded in keeping out such extraneous matters as would have assisted in retaining the decaying plant within the pipes.—*J. S. Henslow.*

Clover—Making Hay.—Clover when intended for hay, should be cut early. Nothing is gained by permitting it to stand. When cut in its green state and properly cured, it makes an excellent feed for horses, sheep and young stock generally; but it is greatly lessened in value by long standing. It should be cut when in bloom, or at least, before the seed has ripened.

In England, from which country we may derive many valuable lessons in practical agriculture, clover is seldom if ever spread as with us, the more judicious farmers of that country believing it far better and more economical, on the whole, to cure it in the cock, than to expose it by spreading, to the wasting influence of the sun and winds. Most persons are aware that herbs, intended for medical purposes, are comparatively of little value unless cured in *the shade*. That the sun abstracts much of the goodness from this species of hay when exposed for any considerable length of time, is beyond a doubt. By drying, much of the foliage, as well as the blossoms, becomes detached and lost, and as this constitutes, where the growth is rank, much the most valuable part of the crop, its loss is a matter of considerable importance, and should be guarded against by all means possible to be devised.

We prefer mowing our clover when the air is clear—say from eight to eleven o'clock, after the dew has disappeared, and the ground becomes warm. We then leave it in the swathe till the approach of night, when it is carefully turned, by which a fresh, undried surface is presented to the night dew, and the wilted and comparatively dried portions secured by being turned under. In this condition it remains till the afternoon of the next day, when, if the weather be fair, it is pitched into "grass cock," and left to make. Care, however, is essential in constructing the cocks, as when too bulky, the grass will heat and become musty, which greatly detracts from the value of the hay. A "grass cock" ought never to contain more than eighty or a hundred pounds of unmade or partially wilted grass, and must not be formed too compactly, or be too much consolidated by pressure as to cause a liability to ferment or *heat*. A careful and practiced workman will pitch the grass into cock much better and with far greater despatch, if the crop be an average one, than it can be raked and cocked in the usual way. As soon as the hay is thoroughly made, it should be got in without spreading, and in dry weather. In the barn it should be closely packed.—*Germantown Telegraph.*

ON PLOUGHING UNDER GREEN CROPS FOR MANURE.

By Professor Donaldson, of Haddington.

Mr. Bell's communication, in last number of the Journal, in which the ploughing-in of turnip tops is suggested to admit of green-cropping clay lands, will probably be tested by the following observations:—

The ploughing down and covering in the land of the crops of green juicy plants, to act as a manure, is a practice of the ancient Romans, and is yet followed in Italy and other parts of Europe. This mode of fertilizing suits warm countries, where vegetation is rapid and luxuriant; in our colder latitude, where cultiferous productions are more the object of cultivation, the advantage of the practice has not yet appeared. The plants used for that purpose are the leguminous kinds,—tares, vetches, clovers, peas, buck-wheat, and spurrey; and in Italy the harvest is early, and the crop is removed in time sufficient to allow the maturity of the green plants. Our climate does not allow such successions, and a crop of any kind must be unprofitable that yields in return only what it has extracted, and leaves the land as before in point of fertility. In order to apply the practice profitably, a very full crop must be supposed; and the land that will produce a full crop of these substances will yield crops of a more valuable kind. On poor lands, a scanty crop will be expected, which will be of little service for that purpose, and almost invariably fills the land with weeds. Rape is reckoned very good for the purpose, as it is oily and mucilaginous. Sorrel has been recommended to be cultivated, and ploughed down with lime, in order to produce a chemical combination; but few soils will yield sorrels in abundance, and the chemical result may be too uncertain to justify the process.

The decomposition of vegetable matter below or in the soil has been put forth in favour of this practice, as

producing a soluble matter, and also mould, by continued decomposition. The gradual decay of substances above or below ground is certain; the formation of those that may be useful in promoting the growth of vegetables is a very different question. Fermentation is a sensible internal motion of the constituent particles of a fluid, moist, or mixed compound body, by which they are removed from their present situation and combination, and are again joined together in a new or different order and arrangement, forming new compounds with very different qualities from the original body or substance. It results from the combined action of air, heat, and moisture; and the first agent is oxygen, afforded either by the atmosphere, or by the decomposition of the included water; oxygen gas being absorbed, and caloric separated during the process; carbonic acid is one of the results, and fermentation is the natural process for reducing vegetables to a simple state of combination. The first change is the vinous or saccharine fermentation, the conversion of the insipid matter of stems and seeds into a saccharine substance, in which process the presence of water and saccharum are indispensable, and some other things must be added. The gramineous and herbaceous plants are generally stored with saccharum, and the acetous fermentation follows, which is succeeded by the putrid, or the last stage of the process. This last stage is always certain, though the regular gradation of the others may be interrupted. During putrefaction, vegetables emit ammonia, phosphoretted hydrogen gas, and constantly carbonic acid gas, and hydrogen gas, impregnated with unknown vegetable matters. The colour changes to a dark brown; it swells, and becomes heated, and is reduced to an earthy mass. The constituents enter into new combinations; the hydrogen unites with the oxygen, and is either volatilized in water, or separated in a gaseous form, and carries with it a portion of carbon. A part of this principle unites with the azote in those plants that contain it; a part remains in the putrid mass, giving it odour and colour; a portion of carbon remains in the magma, and a part unites with the hydrogen, and a part with the oxygen, forming with the latter carbonic acid. The brown mass, or earthy residue, contains the primitive earths, metals, oils and salts, which are found in vegetables, forms vegetable mould, and constitutes the principal means by which the earth receives back the principles it loses by the support it affords to vegetable life. In this process, air, heat and moisture are indispensable, and a quantity of the substances laid together. Green and dry vegetables ploughed into the land will lie in too small a quantity to generate heat; air and moisture will be nearly excluded, and no active fermentation will happen to afford æriform matters in the soil, as may be daily seen in the case of stubble and other dry substances. The conversion to mould by a gradual decay is undeniable, but activity for present benefit is wanting, unless an incipient fermentation has been effected before the application to break the texture by a disintegration of the fibrous texture. It may very justly be reckoned a wasteful practice to apply for manuring, substances that can be used as food for animals, and thus effect a double purpose. The second crops of clover and tares have been ploughed under for manure, and in that case the first crops must be cut early to allow the second crop to attain a bulk of plants for the intended purpose.

If any of these succulent plants be used as a manure for wheat, the bastard fallowing will dissipate the enriching matter, and if it be covered with the last furrow, the land must be in an unwrought state, and it can only be reckoned a catch crop. The only plausible case of application is on places that have failed to receive the due portion of farm-yard manure; but the season being occupied in bringing forward a crop for the benefit of the land as dung, wholly excludes any effectual working of the soil, and in any case such unmanured lands may be partly wrought and sown with crops that will afford food to animals, and also to the land, by the subsequent application of the excrementitious matter. The use of green crops as manures will not fail to constitute very foul farming; and though a successful isolated case may occur, an extension of the practice will not be expected. The green crops may be harrowed and rolled before ploughing, which will render them more convenient for being covered, and a compost of lime and earth has been added, which will also aid the covering of them in the land, and tend to promote the putrefaction. It may be supposed, that, in the countries where the practice is said to be so very beneficial, the soils may be more loose and friable, the vegetation more rapid and luxuriant, and the plants more juicy and succulent, and consequently more tender and easier of decomposition than in our country, and that a variety of circumstances may combine in rendering the practice very useful in some countries, and inapplicable in others. The plants may be ploughed under when in full blossom, and, if possible, in moist warm weather; and the latter circumstance may constitute an advantage in favour of the custom in the warm countries where it prevails.—*Scottish Agricultural Journal.*

Wind-Galls.—Horses which are subjected to hard service are liable to have what are called *wind-galls*, on those parts of the limbs which are most exposed, especially about the hough and upper pastern joints. The affection is an undue enlargement of little bags or sacs which are situated in the parts named. By the straining of the tendons these sacs become injured, and sometimes take on inflammation, and become hard. Youatt says, "The farriers used to suppose that they contained wind; hence their name *wind-galls;* and hence the practice of opening them, by which dreadful inflammation has often been produced, and many a valuable horse destroyed." As to treatment, the author just referred to directs, "If the tumors are numerous and large, and seem to impede the motion of the limb, they may be attacked first by bandage. The roller should be of flannel, and soft pads on each side of the enlargements, and bound down tightly upon them. The bandage may be wetted with a lotion composed of three parts vinegar to one of spirits of wine. The wind-gall will often diminish or disappear by this treatment, but will too frequently return when the horse is again hardly worked. A blister is a more effectual remedy, and firing still more certain, if the tumors be sufficiently large and annoying to justify our having recourse to measures so severe. In bad cases, the cautery is the only cure, for it will not only effect the immediate absorption of the fluid, and the reduction of the swelling, but, by contracting the skin, will act as a permanent bandage, and therefore prevent the reappearance of the tumor.—*American Farmer.*

Potatoes in India.—The potatoes from Bombay, Darjeeling, the Cherra Poonjee seed, were wonderfully fine and healthy, and to enable the public to form some idea of the state of perfection this grand and staple vegetable has been brought to, in this district, it is here recorded that 40 potatoes out of one garden weighed 20lbs. The skin of all delicately white and fine, and every potatoe free from knots.

Sandy Plains.—Clay, ashes, decomposed or rotten manure, with clover, it is said, has proved to be the best means of improving sandy plain lands. Plaster is useful in situations where it will set. This can be ascertained by trial.

Horticulture.

TORONTO HORTICULTURAL SOCIETY.

An extra Exhibition of roses and other flowers that would likely fade before the next regular show in July, took place in the beautiful grounds of the oldGovernment-house in this city, on the afternoon of Thursday the 28th of June. Unfortunately the weather was showery, and the number of visitors and exhibitors was consequently not so large as it would have been under more auspicious circumstances. Mr. Fleming's large collection of roses was very fine, including several recent varieties. We also noticed some fine specimens of geraniums, peonies, verbenas, &c. Mr. Leslie's collection contained some beautiful roses, with two or three magnificent bouquets. Mr. Gordon exhibited some very fine specimens, and a plate of strawberries in fine condition, grown, we understood, in the garden of John Cameron, Esq., of this city.

Certificates were given by the Committee as follows:

For the best collection of Roses, . Mr. Fleming.
" second best do. do. . . Mr. Gordon.
For the best collect'n of other flowers, Mr. Fleming.
" second best do. do. . . Mr. Leslie.

The next Exhibition will be held in the same place, July 19th, when we expect a very large display of flowering exotics, green-house plants, vegetables, fruits, &c., which with the charming music of the band of Rifles, and the beauty and refreshing shade of the tastefully laid out grounds, cannot fail to attract a numerous body of visitors. We may just mention for the information of our more distant readers, that the Toronto Horticultural Society is by no means restricted to the neighbourhood of this city, but is open to the whole Province of Upper Canada. We hope to see at the next Exhibitions to be held in July and September,some of the florists and fruit growers of the Gore, Niagara, and other districts. The terms are easy—5s. per annum for ordinary members, and 10s. for competing members. Professor Croft, the honorary Secretary, would furnish full particulars of the organisation and objects of the Society.

The subjoined list comprises the names of the several varieties of roses exhibited and cultivated by Mr. Jas. Fleming of the Yonge-street nursery, which we readily insert for the information of our floricultural readers:—

1. Common Red Moss.
2. Perpetual White Moss.
3. Luxembourg Moss.
4. Crusted Moss.
5. Persian yellow.
6. Harrison yellow.
7. Velours Episcopal.
8. Madam Hardy.
9. Venus.
10. Fulgens.
11. La Tourteriele.
12. Lady Stuart.
13. London pride.
14. Marselina.
15. Miralba.
16. George the Fourth.
17. Royal Greatness.
18. Russelyanum.
19. Capitaine Sessolet.
20. Coutard.
21. Madam Plantier.
22. Oliet Parfait.
23. Village Maid.
24. Brennus.
25. French Ruin.
26. Globe Hip.
27. Victor Hugo.
28. Fanny parissot.
29. Voilet Blue.
30. Common Cabbage.

PRACTICAL HINTS FOR AMATEURS AND SMALL GARDENS.

A FEW REMARKS ON ROSES.—Several matters of importance in the culture of Roses require to be attended to, which are yet too simple to demand any lengthened observations. These we shall bring together in the present paper, and then dismiss this flower for the present; hoping for all gardeners that their labours, wisely conducted, may be rewarded by abundance of bloom, and that the season may be propitious.

Where there are many Roses in a garden, a late bloom should be secured by pruning some of them late; that is, after the first leaves are developed. The severe weather of last week has sadly nipped many of the early flower blossoms, and such trees will do admirably for this experiment. Cut them in, so that new buds may be brought into activity, and these will flower a month after those which are not so treated. Moving them at this time will have the same effect, although it is rather late for this operation. It may be done if necessary; and the trees thus transplanted should be cut close in, and well watered in dry weather. Contrivances to secure a late bloom are less necessary now that autumnal Roses are so numerous; but at the same time the amateur may wish to prolong the flowing of some kinds which have not this late habit. We have found that old favourite, the common Provence Rose, do well when moved late.

Attention should be given to every Rose tree before it is in full leaf, to ascertain the position its branches are likely to take when they are laden with the full foliage and flowers of summer. We have often been vexed at the tendency to bend down to the ground, of some of our best bushes, which we thought were strong enough to retain an erect position; and when stakes are applied at that late period of growth, the tree can seldom be made to assume a natural appearance. The best plan is, to go round the garden and stake up all trees which, judging from past observation, are not sufficiently supported. Imagine them as they will be in July, when "washed in a shower," and when "the plentiful moisture" will add so much to their weight, and act accordingly. Let the staking and tying up be performed with taste, so that the bush when in bloom shall have a unique and compact appearance.

Insects should be sought after in their egg state, or, at all events, when the caterpillar first appears. The grubs which bury themselves so adroitly in the folds of a Rose-leaf, do not come by chance, but proceed from the egg to a gradual maturity; if therefore their habits are studied they may be caught in time, before they have made many meals on Rose buds. Children might be of great use in searching out these pests, when taught to distinguish between those which are injurious and those of an ichneumon or parasite character. Papers in former numbers of the *Chronicle* may be advantageously consulted on this subject.

The shoots of Briars must be arranged for budding, only two or three being left in the position required for the head of the future trees. Tree Roses lately formed

must be guarded by stakes reaching up to the budded part, which must be tied to them. Without this precaution, some high wind may carry away the whole head, as much to the surprise and annoyance of the proprietor as were felt by John Gilpin when he lost his hat and wig. *H. B.—Gardeners' Chronicle.*

WILD FLOWERS.—Young gardeners and others should not neglect any opportunity that may offer in becoming acquainted with our native plants; they will find it both a pleasant and profitable study, if they engage in it heartily. Flowers in great variety are now appearing,

> "As if the rainbows of the fresh mild spring
> Had blossomed where they fell."

Mrs. Loudon, in her "Botany for Ladies," remarks: "Indeed, I do not think that I could form a kinder wish for them than to hope that they may find as much pleasure in the pursuit as I have derived from it myself.—Whenever I go into any country I have formerly visited, I feel as though I were endowed with a new sense. Even the very banks by the sides of the roads, which I before thought dull and uninteresting, now appear fraught with beauty. A new charm seems thrown over the face of nature, and a degree of interest is given to even the commonest weeds. I have often heard that 'knowledge is power,' and I am quite sure that it contributes greatly to enjoyment. A man knowing nothing of natural history, and of course not caring for anything relating to it, may travel from one extremity of a country to another, without finding anything to interest, or even amuse him. But the man of science, and particularly the botanist, cannot walk a dozen yards along a beaten turnpike road without finding something to excite his attention. A wild plant in a hedge, a tuft of moss on a wall, and even the lichens which discolour the stones, all present objects of interest and of admiration for that Almighty power, whose care has provided the flower to shelter the infant germ, and has laid up a stock of nourishment in the seed to supply the first wants of the tender plant. It has been often said, that the study of nature has a tendency to elevate and ameliorate the mind, and there is perhaps no branch of natural history which more fully illustrates the truth of this remark than botany.

CULTIVATION OF HARDY PLANTS.—We have often thought that more attention should be bestowed in the cultivation of hardy plants that would flower at this season (Spring) than is commonly done in most parts of the country. The Peony, for instance, deserves better treatment than it generally receives; the species of the family are, in most cases, easily cultivated, hardy, showy, and flower early. They are commonly put into three divisions—viz., the shrubby, herbaceous, and the pubescent; and some beautiful varieties may be had in each division. One species is a native of Britain, and grows in an island in the Severn; it is noticed by one of our poets in the following lines:—

> The cliff, abrupt and high,
> And desolate, and cold, and bleak, uplifts
> Its barren brow. But on its steep
> One native flower is seen—the Peony;
> One flower which smiles in sunshine and in storm.
> There still companionless but yet not sad;
> She has no sister of the summer field—
> None to rejoice with her when spring returns—
> None that in sympathy may bend its head
> When evening winds blow hollow o'er the rock
> In autumn's gloom.

The instructions commonly given to those who may raise them from seed are the following:—Sow the seed immediately after it ripens, in light fresh earth, covering them half an inch. They will come up the following spring, and may remain in the seed-bed two years before they are transplanted, sifting a little rich earth over them when the leaves decay at the end of the growing season. Having made two years growth in the seed-bed, they are to be planted in September into other well-prepared beds of light fresh earth, and placed six inches asunder every way, and three inches deep. Here they are to remain till they flower, which is generally the fourth or fifth summer after sowing. Full-grown roots are readily propagated by parting, taking care to preserve a bud on the crown of each offset. The plants are very hardy; they will grow in almost any soil and situation; and even under the shade of trees, where Miller says they continue longest in beauty, they make excellent border plants, and form a splendid ornament both to the parterre and shrubbery. They are natives of many parts of the world: the common species, we are told, grows wild in China and Siberia, as well as in various parts of Europe, and is said to be very beautiful on Mount Ida. The handsome flower called the Chinese Tree Peony, *Pæonia moutan*, the flowers of which expand about the end of the month, and are in the different varieties of various tints, is sufficiently hardy to bear the open air of our winters; even the severe frost of last month only injured a few of the leaves of the plants—the flower buds appear to have received little or no injury. We are also informed that the tree Peony is a cherished flower in China, and is said to have been cultivated in the Chinese gardens for fourteen hundred years, and is believed to have been brought originally from some of the mountains of that empire. Some years ago it brought a high price in that country, but can now be had at most of our nurseries at a very reasonable rate.—*Gardener's Journal.*

PROTECT YOUR VINES.—We are informed by a gentleman of this town, says the *Lynn News*, of an experiment made by him last year upon his squash vines, which proved successful in clearing off the bugs. He strewed on the vines the bran of pepper, which may be obtained at any of the spice mills where pepper is ground. Every one who has a garden will appreciate the value of a remedy so cheap and simple, and give it a trial. We should like to have those who try the experiment give us the result, if they find it successful.

SOWING SEED.—The finer the seed to be sown, the finer should the soil be made which is to receive it.

LAYERING.—Very many lovers of flowers have been discouraged from endeavouring to keep some of the most beautiful and easily managed plants, by want of a knowledge of the art of propagation. They find their plants to flourish and blossom well for a season or two; they are delighted with their fragrance or their beauty, but the time for disappointment and regret comes on apace. Perhaps the seeds do not ripen—most double flowers will not produce seeds at all—probably, even when ripe seeds are obtained and sown, after bestowing much attention and care upon the younglings, and watching anxiously, for months, until they come to maturity and expand into bloom, it is found that very inferior varieties have been produced, having little resemblance to the prized parent plant, and ill-rewarding the labor expended. The poor, inexperienced, and mortified florist next undertakes to raise fresh plants by pipings, cuttings, or slips. Raise new plants he must, if he wishes to keep up his stock; for "all that live must die," and the most robust constitution is no security against an early death. The new attempt will in some instances succeed, and if it does, the original variety is perpetuated, with all its characteristics. But one who does not possess the whole paraphernalia of floriculture,—the stove, the green-house, the close frame, the bottom heat, the bell glasses, the matting and shades,—or one who, possessing some of them,

knows not how to use them properly, will fail much oftener than he will succeed.

There is, however, one method of propagation, in which, as respects a great number of species, the most ignorant may with a little care be entirely successful.

It is equally effective for Sweet Williams, Chinese pinks, and indeed for the whole genus *dianthus* and innumerable others.

The branch of which the layer is to be made, should be prepared by cutting off the leaves from that part which is to be covered with earth. If the plant is of woody texture, a ring of the bark about one eighth of an inch broad, should be cut off also. If the branch belongs to a jointed plant, like the carnation, &c., a sharp pen knife should be passed through its centre, so as to split it at the joint, and for about a half inch above and below it. This ringing or incision is useful, as it partially interrups the flow of the sap, arresting a portion of it at the point from which the young roots are to spring. A small portion of the earth should then be removed, and the prepared branch should be secured in the cavity by a hooked peg. It should then be covered with light, rich mould, not that removed, from one to two inches deep. The depth should vary according to the character of the plant, the more succulent requiring the shallower covering, and the more woody and dry the deeper. When the layers have struck root, they should be severed from the parent plant, and potted, or planted in the garden by themselves. Most of our frequent flowering garden roses, grape vines, gooseberry bushes, snow balls, honeysuckles, and shrubbery in general, may, by this means, be readily and easily propagated to almost any extent; and if the layering be done soon after the full blooming of the plant is nearly over, the effect upon the stock is beneficial rather than injurious.—*Sartain's Magazine.*

Ornamental Trees.—One of the most popular lady writers, who, judging from what she has written, has lived among plain farmers in the western country has said that most settlers in a new country consider a tree as their natural enemy. This is true, we confess, to some extent. The earlier settlers, in clearing their fields, generally slay every thing before them; for if a tree should occasionally be left for shade or ornament, it would be saved with difficulty during the scathing fires that follow afterwards. But when the farmer removes his old log-house, to give place for his new mansion, neatly painted and adorned with bright green shutters, then the dock thistle, the briers, and brush-heaps should be routed from his door-yard, and some kind of ornamental shrubbery planted instead. Every portion of our country has some such suitable trees indigenous to the soil. The maple and locust are very hardy trees, and every where obtained in our latitude. The lilac is pretty, and dozens of other kinds procured with little trouble. By way of variety, and to enliven the scene a little, a few evergreens should be interspersed. The balsam fir is one of the most beautiful of this class. Evergreens, if transplanted, are not apt to live unless extra care is taken. The surest way is to dig them with as much earth adhering to the roots as possible, and place them immediately in an old tub, half-barrel, or something of the kind, then filling it up with the same earth from which the shrub was taken, and thus removed home and placed tub and all in the holes prepared for them. Afterwards the tub or box containing them can be knocked to pieces, that the roots may spread. Don't forget to water the plants occasionally if the weather should be dry. The trees should be placed on the outer margin of shrubberies for their beauty and protection. E. G.

—*Philadelphia Dollar Newspaper.*

The Lemon.—The common lemon, Median lemon, or medicinal lemon, *Citrus medica*, is the best known and most important of the four species; and is often regarded as exclusively entiled to the name of lemon. It is a native of Assyria and Persia; and is cultivated in Italy, Spain, Portugal, and the south of France; and was introduced in the 5th decade of the 17th century, in the greenhouses of Britain. Its stem, from the ground to the topmost branch, usually attains a height of only about eight or nine feet; its branches are numerous, and have a greyish bark; its folial footstalks are alternate, naked, and linear; its leaves are ovate, acuminate, slightly indented, pale green, shining, and about four inches long and two broad; its flowers grow upon the twigs and small branches, and are pedunculed, large, and odoriferous, and bloom throughout the greater part of the summer; and its fruit are the well known lemons of commerce, and do not require any description. This plant is exceedingly useful. Any ordinary large tree of it in Spain or Sicily brings to perfection, in favourable seasons, no fewer than about 3,000 lemons; and a remarkable tree at Croscello, in the vicinity of Massa in Italy, supposed to have been a wild plant, and producing only small and ill-flavoured fruit, brought to maturity in one season, about thirty-five years ago, the enormous number of upwards of 14,000. Many varieties of the lemon are produced and cultivated in the South of Europe, somewhat in the same manner as the varieties of apples and pears in Britain; and a few of those which have been longest and best known in Britain are the sour lemon, the sweet lemon, the pear-shaped lemon, the imperial lemon, the furrowed lemon, the Adam's apple lemon, the childing lemon, the variegated-leaved lemon-tree, and the double-flowered lemon tree. The greenhouse cultivation of the plant in Britain is the same as that of the orange-tree. Most of the lemons used in Britain are imported from Spain and Portugal, packed in chests, and each lemon separately rolled in paper; and those from Spain are in highest esteem.

Cauliflowers.—I have been eating delicious cauliflowers all winter, thanks to your directions in the Horticulturist. I sowed seed for the winter crop about the middle of May, and when winter approached I lifted the plants in a damp day, with a little earth attached to the roots, and set them on the floor of a warm cellar, under one of my out-buildings. They were most of them not even showing the least signs of flowering when they were put in the cellar, and I confess I was a little incredulous as to their "coming to any thing" in their winter quarters. But they soon began to form blossom crowns, and I have cut the whitest and most delicious cauliflowers from these plants since last December that I have ever tasted. As this mode of treating cauliflowers is not generally known here, I have quite astonished my neighbours by the sight of such a fine winter vegetable in abundance.—*Horticulturist.*

Monster Apple Trees.—There is an apple tree on the estate of Joseph Briggs, on Federal Hill, in the town of Dedham, supposed to be a hundred years old, which measures thirteen feet and a half in circumference, one foot from the ground. Its branches cover an area of about sixty feet in diameter. This tree is second only to that in Duxbury, which is sixteen feet in circumference a foot or two above the surface of the ground, is over one hundred years old, and bore in one year, fruit which made ten barrels of cider, in addition to thirty barrels of apples put in the cellar.—*Boston Traveller.*

Mechanics and General Science.

THE EXHAUSTING EFFECTS OF GYPSUM.

In the article headed "Plaster or Gypsum," in the May number of the *Agriculturist*, the true cause of the failure of gypsum to improve the clover crop, after it has been used for a number of years, has not, I think, been assigned; although some approach to it has been made in the passage "Or plaster may have a valuable effect, &c. &c. as a manure."

It would be a matter of just surprise that this agent should operate favourably for a term of years and then cease to have any beneficial effect, if it were the only mineral substance which the plant needed for its use. But as this is not the case, we ought not to wonder, when we consider the matter deeply, that after a time its application should no longer be of any advantage. Even without plaster, clover cannot be grown for a number of years at short intervals. In England, it has been found that when the Norfolk four years' course has been followed for a long continuance, the red clover will scarcely grow; the land becomes, as it is termed, clover sick. With the failure of the clover, the corn-crop that follows it is much deteriorated. Why is this? It is, in the first place, because the land has been exhausted of those substances which are essential to the growth of the clover: they have been carried off by the preceding crops faster than the decomposition of the mineral fragments in the soil has supplied them; and they have not been restored in sufficient abundance, if at all, by manure. Secondly, although clover is a tap-rooted plant, it does not thrive very well in too light a soil. Now the effect of repeated tillage is to render the stiffest soil lighter; the decaying roots of all cultivated crops, especially those of the plant in question, aiding to produce this change. So that at last the soil, if not originally very stiff, becomes too light and porous for the clover and also for the following grain crop. Over soil in this state the frosts of winter have great power, and the young clover is consequently in much danger of being thrown out and winter-killed: if the succeeding crop be wheat, it also will suffer from the same cause. I shall merely make brief reference to a third reason which has been assigned, without laying much stress upon it, as it involves a still disputed question. The roots of plants possess the power of excreting some of the substances held in solution by the descending sap. The matter thus rejected is both organic and inorganic. These excretions, when they have accumulated in the soil, have been thought to be injurious to the plants which part with them, to such a degree as to render a change of crop necessary: but, although hurtful to the plants that produce them, they have been considered as affording nutritious matter to plants of other families. There is every reason to believe that plants do give out matter by their roots; but whether it is injurious to the excreting plants, and whether it is beneficial to other kinds of plants, are questions as yet not fully determined.

We will now proceed to ascertain what substances clover takes from the soil, as without this preliminary step it would be impossible to arrive at any satisfactory conclusion respecting the action of plaster upon it. The following analysis, by Sprengel, of the ash of the clover, will afford the required information:

Potash	26.70
Soda	7.07
Lime	37.09
Magnesia	4.45
Oxide of iron, alumina, &c.	0.20
Phosphoric acid	8.80
Sulphuric acid	5.98
Chlorine	4.86
Silica	4.85
	100.00
Per cent. of ash in dry state	7.48

It will be seen from this analysis that plaster is by no means the only mineral matter required by clover. Many other substances are essential to its growth some in large quantities, as potash; others in less; but all are indispensable. Unless the clover crop be artificially supplied with these mineral substances, or meet with them in the soil in sufficient quantity for the wants of the plants, it is in vain that plaster is applied. Thus we are directed to the correct explanation of why land becomes more speedily tired of clover when gypsum has been applied, than when it has not been used. Most soils, for the first few years that plaster is applied to them, contain a sufficient quantity of potash, &c., for the wants of the clover; and the result of the application of plaster is an abundant crop, perhaps double what the land would have produced without it. Consequently double the quantities of potash, and of the other mineral matters indicated in the above analysis, are abstracted from the soil, which will be exhausted and become clover-sick in a period probably about one-third shorter than it would have been, had plaster not been used. Were it not that the decomposition of the mineral rocky fragments in the soil is constantly going on, the land would be exhausted in half the time; but as this process is in continual operation, there are constantly fresh supplies furnished, although not in sufficient abundance for the demands of the plants. This is one reason why the land of the writer of the article in the *Dollar newspaper*, after plastering had been discontinued for five years, became capable of again bearing good crops. Had he applied unleached wood ashes with the plaster, he need not have given his land five years rest. Again, if I am right in thinking that the presence of the decaying roots tends to render the soil lighter and more porous, and therefore less suited for clover and for wheat, if that is to be the succeeding crop, it is perfectly evident that when the crop is very much increased, as by the application of plaster, this effect must also be very much greater than it otherwise would have been. Hence means calculated to consolidate and stiffen the soil must be adopted; and of these the use of a heavy roller is perhaps the most serviceable and of the most general application. If the theory

which attributes to the excretions of the roots of plants properties deleterious to their own species be correct, it must necessarily follow, that if the crop be more abundant, their excretions will be proportionately increased and the land will sooner become saturated with them. Hence time would be required for their decomposition before the same crop could be grown again with advantage. But in the mean while the land ought to produce good corn crops, if these excretions really act as manure to plants of other families.

With respect to the chemical view I have taken in explanation of land becoming clover-sick, it may be objected that it would not apply to the case related in the *Dollar newspaper*, because the clover was not removed from the soil, but was ploughed in for manure, and therefore abstracted nothing from the soil, This objection would not be valid. For although the clover itself does not deprive the land of any thing, yet the maize, wheat and tobacco, remove large quantities of inorganic matters which are not restored to the soil. And as the growth of these crops is in proportion to the luxuriance of the preceding clover, it follows that the land is ultimately exhausted, just as if the clover had been removed. Only the exhaustion is slower, the process occupying two years instead of one. But it is certain, for nothing of a mineral nature is restored to the land but sulphate of lime. Numerous mineral substances are carried off, and one only returned. Exhaustion must follow.

I cannot believe that plaster, as usually applied, can ever accumulate in the soil in such quantity as to produce any pernicious consequences: unless the land naturally contained a great deal of it, in which case its application would have been almost useless from the first. Sir Humphrey Davy analyzed a good wheat soil, a clay from Middlesex, and found in it nearly one per cent. of gypsum; a quantity, I apprehend, very much greater than could be accumulated in the soil by several years ordinary application of it, even supposing none to be carried off by the crops. Yet it did not prevent this land from bringing good wheat. It must also be borne in mind that the whole of the plaster will not be found, if a sufficient period be allowed to elapse after its application before the soil be examined for it. A considerable portion of it will be decomposed by the carbonate of ammonia of the atmosphere, with the formation of carbonate of lime (chalk) and sulphate of ammonia. Liebig, indeed, has attributed the beneficial action of gypsum on clover and grasses solely to this property of fixing the ammonia at all times present in the atmosphere and brought down by rains or dews. I am not inclined to admit that this is the only good effect of gypsum; although it appears almost certain that some of the benefit derived from it may be justly ascribed to this source. One argument in favour of this view is, that it has the most marked effect upon clover, when applied after the plant is in full leaf. That is after the heavy rains of spring have ceased, and when the plant exposes a large surface for retaining the plaster in the condition most favourable for fixing the ammonia of the atmosphere. I believe that Peschier observed, before Liebig's theory was broached, that gypsum laid upon the leaves of plants was gradually converted into carbonate of lime. The sulphate of ammonia formed is either absorbed by the leaves or carried into the soil by light rains and dews, and is then taken up by the roots. It is not my intention to go further into this matter, as to treat fully of it would occupy too much space and time. I only wished to show that all the plaster applied cannot in any case be accumulated in the soil. I will, however, add that the opponents of Liebig's doctrine,—on the ground that, if it be true, all lands not already abounding in plaster or in sulphate of ammonia ought to be benefitted by it, which is not the case,—have apparently forgotten that if the plants are not supplied naturally or artificially with the several mineral substances shown above to be essential to their healthy growth, it is in vain that sulphate of ammonia is furnished to them by the action of gypsum.

To conclude, the action of plaster in some respects resembles that of lime, especially in its exhausting effects: for under ordinary treatment it does exhaust the land. But exhaustion is by no means a necessary consequence of its use. When numerous mineral substances are continually removed from the soil, it is absurd to suppose that its fertility can be kept up by the application of one only. What is liberated by the continual decomposition of fragments of rock and stones may be sufficient for the growth of scanty crops. But for large crops, a much greater supply than what this source can afford is necessary. Although there may be in any soil a quantity of mineral substances, in a fit state for the immediate use of plants, sufficient for several ordinary crops, it will only be equal to the demands of a few extraordinary ones, such as frequently follow the application of plaster. Whence is the great fertility of virgin soil? It arises from this source—that for many years mineral and organic matters, fitted for the immediate consumption of vegetables, have been accumulating in it. This soil, however rich at first, is ultimately exhausted by continual cropping without an adequate supply of manure. If plaster alone be applied, the process will be much more rapid. These are points to which the farmer should ever direct his attention: if he would keep his land fertile, if he would not see it year by year producing less and less, until at last it will scarcely repay the labour and expense of cultivating it, he should not use plaster without a supply, and that a liberal one, of manures containing all the other substances required by his crops. Some land, indeed, is originally so rich that even with plaster it may be many years before its fertility is much impaired; but impaired it ultimately will be, and his successors will inherit an exhausted farm, even if it do not become worn out during his life.

Toronto, May, 1849. N.

For the Agriculturist.

The number of the *Agriculturist* for May contains some remarks, extracted from a Buffalo paper, upon the subject of Professor Becks' analysis of

different kinds of salt. The writer appears to doubt the correctness of Professor Beck's statements, upon the ground that the Turk's Island and Liverpool salts are preferred by beef and pork packers and farmers to the Onondaga, although the latter salt is represented to be purer than either of the former. The fact of this preference is well known and allowed, but it does not militate against the accuracy of the analysis in question, as the writer of the observations in the Buffalo paper seems to think. The preference given to the former varieties is based upon experience; they have been found to be the best preservatives of meat, &c., although by no means the purest kinds of salt. For the antiseptic properties of salt are not in direct proportion to its purity. Indeed it would appear that perfectly pure salt, without any admixture of other saline substances, does not answer well for preserving meat. In illustration of this fact, I cannot do better than extract, from Darwin's Voyage of a Naturalist, the following passage, in which the author is describing the salt procured from a large salt-lake or salina he visited near the town of Patagonis, on the Rio Negro. "This salt is crystallized in great cubes, and is remarkably pure; Mr. Trenham Reeks has kindly analyzed some for me, and he finds in it only 0.26 of gypsum and 0.22 of earthy matter. It is a singular fact that it does not serve so well for preserving meat as sea-salt from the Cape de Verd Islands; and a merchant at Buenos Ayres told me that he considered it as 50 per cent. less valuable. Hence the Cape de Verd salt is constantly imported, and is mixed with that from these salinas. The purity of the Patagonian salt, or absence from it of those other saline bodies found in all sea-water, is the only assignable cause for this inferiority; a conclusion which no one, I think, would have suspected, but which is supported by the fact lately ascertained, that these salts answer best for preserving cheese which contain most of the deliquescent chlorides."

The purity of this Patagonian salt, as the reader cannot have failed to remark, exceeds that of the Onondaga article. Hence we have, I think, conclusive evidence that the purest salt is not the best for the purpose of preserving meat. Consequently the results of Professor Beck's analysis are not at variance with the generally entertained opinion of the superiority of the Turk's Island and Liverpool salt over the Onondaga.

Toronto, June, 1849. N.

THE ISOLATION OF THE EARTH IN SPACE.

"He stretched out the north over the empty space, and hanged the earth upon nothing."—Job xxvi. 7.

It is not easy to conceive the entire isolation of the earth in space. That it does not spread out its dimensions into the abysses of the universe, until at length it attains some immoveable basis upon which it may repose—that it rests on no pedestal, *hangs* upon *nothing*—floats in space, not being buoyed up—and not being supported does not fall,—are ideas which lie at the foundation of all our knowledge of the wisdom and power of God in the universe; but to *realize* which it is necessary that we approach them if not by the steps of a rigid demonstration, at least by those of a gradual progression. They are indeed but elementary deductions of science; but not to be arrived at, until many false perceptions have been purged away from the eye of the mind, and the evidence of much experience presented to the understanding.

When we look forth upon the earth, it appears to be a surface broken into hill and dale, but everywhere *terminated* by the margin of that vast concavity of the heavens which is stretched out above us; and when we are at sea, we seem to be upon a circular plain of water, whose limit is no where far distant from us.* That error which assigns to the earth and to the heavens the boundary of the visible horizon, *corrects* itself indeed immediately that we travel from place to place; but how are we to free ourselves from the other error? Go where we will, we seem to be moving on a flat if not an even surface—we appear no where to be descending the sides of the earth, or climbing on its acclivity; and an impression of our senses irresistibly grows upon us that it is an extended plain. Astronomy tells us of a huge sphere self-supported in the space of the heavens, and of that space stretching forth interminably and immeasurably. How shall we realize this idea, and reconcile it with what we see?

Let us suppose a traveller, impressed with the belief that the earth is a plain, to set out and travel continually in the same direction in search of its boundaries. Travelling on until he meets the sea, let him embark upon it and traverse it until he again encounters the land; thus continuing his forward course unimpeded by any of the natural obstacles on the earth's surface. Never will he find any termination to it. Go where he will, still sea or land will lie open before him. There is no limit, no boundary, no interruption of its continuity; no chasm in it, no elevation extending itself into infinite and unknown regions of space—no greater obstacle than a mountain—no more impassable space than a valley, a lake, a river, or a sea.

His first conclusion would be, that he was travelling on a surface of infinite extent. After a time, however, this conclusion would correct itself, and he would perceive, to his amazement, that, although he had travelled on, continually away, as it seemed to him, *from* the region where his journey began, this onward journey had nevertheless brought him back to that region again. Has he then unconsciously turned round and retraced his steps? On this point he may assure himself, and he will find that, without ever turning backwards, or deviating from his course otherwise than perhaps to the right or the left of it, he has yet returned to the place whence he set out.

But a very slight exercise of his judgment will be sufficient to shew him, from this fact alone, that the earth's surface is not one extending *infinitely*, at least in the direction in which he has travelled, nor bounded by any edge or limit; but, like the surface which encloses a solid body, continuous, and returning into itself.† If this were not the case, the farther he travelled in the same direction, or towards the same direction, the farther he would of necessity have receded from the point at which he set out; and he could never, travelling as he did, have reached that point. Thus, if I see a fly making a journey across my table with his head always in the same direction, or deviating only to the right or left of that direction, it is manifest to me that he continually recedes from his starting-place, at least as long as he remains upon the upper surface of the table. To reach it again, thus continually advanc-

* If the eye be placed at a height of about ten feet from the surface of the water, the horizon is distant from it, in every direction, between four and five miles.

† Not, for instance, a surface like that of the page on which this is printed, lying flat, and terminated by an edge; but like that which it would have if it were rolled up so that its opposite edges met and were perfectly joined.

ing, he must crawl over the opposite edge of the table and along its under surface.*

Since, then, our traveller, journeying continually in the same direction over the earth's surface, or deviating from that direction only to the right or left, has returned to the same regions of the earth again, he must have gone round it; and it must be a surface returning into itself, at least in the direction in which he travelled. And if from his starting-place he has travelled in every possible direction, and always thus arrived at the same place again, then must it, not in one or two directions only, but in every direction, be a surface returning into itself—such a surface as would not only partly but *completely* contain a solid. Moreover, if in the course of these numerous journeys he met with no obstacle which he could not overpass, then would he be assured that there was no solid mass on which it rested, no pedestal by which it was supported, nothing from which it was suspended.

But it will be asserted that these journeys are all hypothetical; and that no traveller has thus, setting out from one place, made journeys in all directions round the earth. True; but if all the journeys and voyages which have been made were collated and compared, it would be found that these supposed journeys have been made, if not by one, at any rate by a number of different persons; and we have the results of their experience, which is to us as certain evidence, and indeed more certain than that of a single traveller would have been.*

There is indeed scarcely a week in which this great fact is not put to the test of experiment. Never perhaps does a week pass in which there does not arrive, in some port of Europe or America, some vessel which, having sailed from that port continually on the same course, or deviated only to the right and left of that course, has, nevertheless, returned to that port again; which it could never have done if the earth's surface were other than that of a continuous solid; if it were a flat, or infinitely extended, or a terminated surface, not returning into itself:† or a small portion of the surface of an infinitely extended plane; or an island, floated in the abysses of space; or the summit of a mountain, whose base reposes in some fathomless region unknown to us. This earth of ours is a huge mass, self-poised, supported upon nothing, hung upon nothing—enveloped by the air which we breathe, and surrounded by the space of the heavens.

How many thoughts does the mind embrace in this idea! The surface of the earth being that of a solid mass, there must be some point on the opposite side of it now immediately beneath my feet. Yet have I reason to believe, indeed I know, that every thing goes on there as it does here; all heavy bodies tend to fall to the surface of the earth there as they do here, and yet falling there and here they must fall in opposite directions. Men move about there as freely as they do here; although their position is inverted in respect to mine, they have no tendency to fall off; on the contrary, they are pressed by their weight to the earth's surface there as I am here; so that, in fact, we are pressed by our weight in the direction of our feet towards one another; and were we to fall, each would fall towards the other. Since, then, weight is something which on opposite sides of the earth presses bodies towards its surface, it is evidently a power in the earth itself, of which I see the analogy in the attraction of a magnet, which all round, and on its opposite sides, in opposite directions, fixes small particles of iron upon its surface.

* This illustration will be complete, if we compare the case of a fly crawling over the surface of an orange with that of the fly crawling on the table.

* It is not strictly to all the points of the earth that our experience extends, for there are some which no human being has perhaps ever crossed, and many which have never been visited by any one whose authority we have for the fact asserted in the text; yet so few are these cases, when compared to those of which we have experienced, that, although they leave the matter under the *form* of a probability, it is one which is *practically* a certainty.

† A year or two ago it was announced that vessels set out every six weeks from the port of Liverpool, to make the voyage round the world. Their course is south-west until they reach Cape Horn; then still westerly until they make New Holland; then perhaps north-west, to some port of India; again south-west, to the Cape of Good Hope; and then north-west, home. Thus sailing continually to the west, they have returned to their port. Had the world not been round, they must continually have receded from it.

Milk.—In large towns, where the consumption of milk is very considerable, there is very little exposed to sale without previously receiving some fraudulent addition. In most cases, the substances which are added are by no means injurious to the health of the individuals who drink the milk; but they do not the less diminish those good qualities which render milk so extremely valuable as an aliment. The best milk is of a mean consistence. Its specific gravity is about 1.0324, that of water being 1.0000. It should have a dull white colour, and a soft, agreeable, sweetish taste. The adulterant which is most frequently added to milk, and which is the most difficult of detection, is water. Milk which has been diluted with water always presents a bluish colour, instead of that dull white which is the characteristic of pure milk. It has also a watery taste, and is found to yield, after three or four hours' exposure to the air, a much smaller proportion of cream than is produced by a similar quantity of pure milk.

Several attempts have been made to contrive *lactometers*, or instruments for ascertaining the comparative goodness of samples of milk. One of these lactometers was similar in principle to the hydrometer. It consists of a graduated glass tube and a bulb. When plunged into milk it took a higher or lower position, according to the assumed goodness of the milk. But this instrument was far from possessing a desirable degree of certainty in its indications. The difference of temperature in various cows, the greater or less abundance of the animal's food, and its age and state of health, have all great influence on the specific gravity of the milk produced. A *lactometer* of a better description consists of a glass tube about a foot long and half an inch in diameter; tubes of which size, supported by a foot, can be bought at the glass-houses for eighteen pence. If milk is poured into a tube of this kind, and permitted to repose there, the cream which it contains rises to the surface and forms a cake, the bulk of which, compared with the bulk of the milk, denotes the comparative goodness of the milk. The lactometer tube should be graduated into ten parts, and the two upper parts divided each into ten others. It is then easy to ascertain at a glance the *per centage* of cream contained in any sample of milk submitted to trial. For the sake of obtaining a *standard*, it should be ascertained by direct experiments, how many parts of cream are contained in 100 parts of genuine new milk.

The bluish colour and the thin appearance produced in milk by dilution with water, are sometimes hidden by the addition of flour and yoke of eggs, which not only correct the colour, but give more consistence to the mixture. The presence of the flour can be detected by means of iodine.

Cream.—Cream, being an article in considerable demand, and bearing a high price, is frequently adulterated with compounds containing starch and skimmed milk. Arrow-root is the substance which is best adapted and most employed for this purpose. It is mixed

ar.! boiled with skimmed milk into a thin paste, and after cooling is mixed with genuine cream in various proportions. The fraud may be detected by adding to the cream a solution of iodine in alcohol, or by adding a little nitric acid to the milk, and then a few drops of a solution of iodide of potassium. Either of these tests communicates a blue colour to cream which contains arrow-root, rice-powder, flour, or any other substance of which starch is a constituent.

Mushrooms.—A great number of *fungi* of a poisonous nature, bear a near resemblance to the mild eatable mushroom, so that even the best judges of them are liable to occasional deception. The following description of the true mushroom may be useful to those who intend to gather or to purchase this vegetable. The *gills* or under part of the cap are loose, of a *pinky-red*, changing to a liver-colour; situated close to the stem, but not united to it; very thick set, irregularly disposed, some forked next the stem, some next the edge of the cap, and some at both ends, in which case the intermediate smaller gills are generally excluded. The *cap* or pileus is externally white, changing to brown when old, and becoming scurfy; it is regularly convex, fleshy, flatter when old, from two to four inches, but sometimes even nine inches in diameter; it liquifies as it decays; the flesh is white. The *stem* is solid, white, cylindrical, from two to three inches high, half an inch in diameter. The *curtain* or membrane which extends from the stem to the edge of the cap, is white and delicate. When the mushroom first makes its appearance, it is smooth and almost globular, and in this state it is called a button. This species is esteemed the best and most savoury, and is much in request for the table. It is eaten fresh, either stewed or broiled, or preserved as a pickle, or in powder: it also furnishes the sauce called ketchup. The field plants are better for eating than those raised in artificial beds, their flesh being more tender; but the cultivated mushrooms are better looking, may be more easily collected in the proper state for eating, and are firmer and better for pickling. The wild mushrooms are found in parks and other pastures where the turf has not been ploughed up for many years. The best time for gathering them is in August and September.

Those who are accustomed to mushrooms can distinguish the true from the false *by the smell*. The following test will be found useful to other persons: Sprinkle salt on the spongy part or gills of the mushrooms to be tried. If they turn yellow, they are poisonous; if they turn black, they are good. Allow the salt to act a little time before you decide as to the colour.

Characters of False Mushrooms or Poisonous Fungi.—They have a warty cap, or else fragments of membrane adhering to the upper surface; they are heavy, they emerge from a *vulva* or bag; they grow in woods and shady places, or in tufts or clusters on the trunks or stumps of trees; they have an astringent styptic taste and a pungent and often nauseous odour; they become blue after being cut; they are moist on the surface; they possess an orange or rose-red colour, they turn yellow when salted. Mushrooms which possess any of these properties, are to be shunned as dangerous.

May Dew.—Most people are familiar with the appearance of the pearly dewdrops, as they hang upon the blades of grass or the leaves of trees, or stud like gems the prickly points of the brier or thorn, in the cheering light of the summer sunrise; yet the means by which the moisture becomes thus deposited, while the surrounding atmosphere is clear and dry, (as far, at least, as the senses can judge,) is in general passed over without notice.

Although in dry summer weather the air may *appear* entirely devoid of moisture, it is never *actually* so, as may be proved by the simple experiment of placing a known weight of any substance having an affinity for water in the open air for some time, and noting its increase of weight. For this purpose, various substances may be used, and among others, carefully dried earth, 1,000 grains of which, of a clayey texture, was found by Schulber, during a night of twelve hours, to have gained twenty-five grains: and the experiments of Sir H. Davy give similar results. This capacity of the air for retaining moisture seems to depend upon two conditions—1st, its weight, or density, as indicated by the thermometer—the greater the density, or heat, of the air, the more moisture it will retain. A person breathing in an atmosphere of 98° to 100° Fah., will observe nothing but air issuing from the mouth and nostrils; but let a colder medium, or anything presenting a surface of lower temperature be introduced, and vapour is immediately visible, which is deposited in the form of dew; as, for instance, when one breathes against a pane of glass in a frosty day. Here, then, is the simple illustration of the falling of the dew; the air holding vapour in invisible suspension, coming in contact with substances colder than itself, the vapour is condensed, and adheres to the condensing body in the form of water.

It may here be asked, why substances of a solid description have a tendency to become colder than the air by which they are surrounded? and why some substances have this tendency more than others? For an explanation of this, we must refer to one of the laws which regulate the distribution of heat, viz.: radiation. All bodies, even the coldest, radiate, or throw out heat, in straight lines, and are radiated upon by all other bodies in their presence, and not in contact. When a substance is being cooled, it is so in consequence of the heat which it gives out being greater than that which surrounding substances are able to return to it, and *vice versa* when it is being heated. But, when a body is so situated as to permit of radiation going freely on without any compensating return of heat, it is evident that its temperature must be materially lowered. The surface of the earth heat radiates to the clouds, and the clouds radiate to the earth again—the intervening air allowing the radiant rays to pass freely to and fro without being sensibly heated in itself. But when the sky is clear and still, as in a star-light night, then the heat thrown out by the earth is dissipated through space, and substances at its surface become considerably colder than the air above them. In conformity with the above statement, dew is most abundant, 1st, when a clear night succeeds a still, warm, sun-shiney day, the atmosphere being then high in temperature, and loaded with moisture, in consequence of the previous day's evaporation, and radiation having free scope; 2nd, after rain, partly as above, from the humidity of the air, and partly from the reduction of temperature occasioned by the increased evaporation at the earth's surface; and 3rd, when the density of the air is reduced as shown by the falling of the barometer, a circumstance often attended by a clear sky and frosty dew in the morning, and rain in the latter part of the day. In close, cloudy, dry weather, dew is never to be met with.

It must be obvious, however, to the most casual observer, that different substances are differently affected in regard to dew; a phenomenon for the explanation of which we would require to go into the laws of heat to a much greater extent than our space at present permits. Suffice it to say, that the researches and experiments of science have shewn that different substances possess the property of radiation in a very different degree. 'Good radiators,' says Turner, in his Elements of Chemistry, 'such as grass, wood, the leaves of plants, and filamentous substances in general, reduce their temperatures in favourable states of the weather, ten, twelve, or even

fifteen degrees below that of the circumambient air; and while these are drenched with dew, pieces of polished metal, smooth stones, and other imperfect radiators, are barely moistened, and are nearly as warm as the air above them.' 'Indeed,' says another popular writer, every shrub and herb, every leaf and blade of grass, possesses, according to its kind, a different power of radiation, so that each condenses as much dew as is necessary for its own individual and peculiar exigencies; thus, not even a single dewdrop seems to have been formed by the rude hand of chance; but it is adjusted by the balance of Infinite wisdom to accomplish a definite and benevolent end.'

So much for dew: a word upon the old and popular rule of gathering it. We are not prepared to say at what time the application of May-dew as a cosmetic for improving the complexion of the fair sex took its rise, it was, however, somewhere within the limit of 'hoary antiquity.' A writer in the 'Spectator,' 150 years ago, says, 'there is not a maiden gentlewoman of any good family in South Britain, who has not heard of the virtues of May dew;' and, if we recollect aright, Shakspeare, or some of the older poets, has a similar allusion. Many people go about to ridicule all such notions as the fruits of ignorance and superstitious delusion. We are of a different opinion; and believe that there are none of our popular 'fruits,' however senseless they may appear externally, but what carry something useful and instructive under them. Thus, in the instance before us, to render May-dew effectual to the beautifying of the female countenance, certain conditions were necessary to be attended to—it had to be gathered by the individual who wished to profit by it: it had to be gathered, too, in open rural situations, for there only was it to be found; and it had to be gathered by the sunrise, for therein consisted its principal virtue. If we put these conditions together, what do they make up? Why, the sum total of early rising, pure air, exercise, and recreation; things which we can assure our fair readers are better adapted to improve both the health and the complexion than all the kalydors and cold creams which quackery can produce. And this is the true moral and meaning which is hidden under the allegory of May-dew.—*Gardener's Journal.*

The Natural Warfare of Animals.—This universal war of species is an established law of Nature, and, however startling it may appear at first sight, is advantageous on the whole. Violent deaths are as necessary to the proper regulation of Nature as natural deaths. The latter preserve the perpetual bloom of youth over the face of the earth; the former assist in maintaining the correct balance among the numbers of different species, and in restraining their exuberance within the proper limits. In these wars of the animals, Nature has provided that each creature should meet its death in the easiest possible manner. There is a certain spot in the spinal marrow where the two ascending main nerves that form the great brain cross one another, and if this spot be injured, death is the immediate consequence. This fact is well known to huntsmen and butchers. The latter plunges his knife into the neck of the ox at the exact spot, the animal immediately drops, and ceases to live after a few convulsions. On the same principle, the huntsman cuts through the neck of his game. The carnivorous animals always seize their prey by the neck, and bite through this part. In the same manner the hound kills the hare, and the bird of prey its quarry. The polecat also destroys its prey at a single spring. Dr. Gall locked up a pole-cat for some time, during which he fed it on bones till its teeth were blunted. While in this state, it was unable to kill the rabbits placed in its kennel with the same despatch as formerly; but when they had again grown sharp, Gall observed that, on the very first leap it made on the rabbit, it cut the little animal's neck on that very spot with a sharp fang, and instantaneous death ensued. He observed the same thing at a hawking party. As soon as the hawk had reached the hare, it would immediately cut through that part of her neck with its bill. It is the organization of the carnivora—the procession of teeth, of claws, of short and narrow intestines; that imposes the office of Nature's executioners upon these animals by an imperative necessity. The sharp teeth of the leopard or panther might attempt in vain to grind plants; and even when we compel these animals to swallow bread and other purely vegetable substances, the gastric juice of their stomach is unable to dissolve them. On the contrary, the lamb and the light gazelle would refuse animal food with disgust. Their teeth are not formed for tearing, and their entire economy is adapted to a vegetable diet. It is thus that we find, in the organization of the animal, the reasons for all its actions.

Gutta Percha is the sap of the *percha* (pertsha) tree, which grows in abundance in Borneo, and other of the islands of the Eastern Archipelago; and is obtained in the same manner as caoutchouc, or India rubber, by incisions made in the bark, from which the sap runs freely, and afterwards hardens. It is rapidly and extensively coming into use for articles of domestic and manufacturing utility, as well as in fine arts and for scientific purposes. But the principal use of gutta percha to our readers, at present, will be its usefulness as soles for boots and shoes, for which purpose it forms a valuable material, being entirely impervious to damp. In durability and cheapness gutta percha surpasses leather soles, while it has this very important advantage which that material does not fully possess, namely, that of preserving the feet entirely free from damp, and in a great degree from cold also; no matter how wet the weather may be. If the boots be protected by a gutta percha sole, no moisture can penetrate, while through a leathern sole, however thick, some dampness will find its way. By the complete exclusion of damp, one cause of colds and coughs is prevented, and the concomitant expense of a doctor or medicine sometimes avoided. For wear and tear through all seasons, gutta percha is capital. We have known boots soled with it in constant every-day wear during winter and summer, with every probability of continuing in good condition for a much longer period; indeed, there appears to be no reason why boots and shoes should not henceforth be made to last for an unlimited time, for as the welts are preserved from the action of moisture by the gutta percha, they do not so readily decay, and as long as the upper leather remains good, they may be repeatedly repaired with gutta percha on the soles.

SCIENCE.

Artificial Cold.—A very intense degree of cold may be produced by mixing together equal parts of muriate of ammonia and saltpetre, both finely powdered, in about six parts of water, even in the hottest day; this is the method generally preferred to cool wine, and may be economically employed in many chemical experiments to produce artificial cold; the theory of this process is, that a solid, in assuming a liquid state, abstracts a large portion of the caloric from the fluid in which it is immersed.

Industry.—"There is more pleasure in eating an hour than in yawning a century."

Domestic and Miscellaneous.

THE OLD HOMESTEAD.

Down in a quiet, sun-lit valley,
Stands my low-roofed cottage home;
Rushing thoughts around it rally,
Thither waited while I roam.

There in summer, as of olden,
Waves the green-topped maple-tree;
There, in autumn, sere and golden,
Shadows flit across the lea.

Still the streamlet cleaves the meadow,
Bordered by the mantling vine,
Where, beneath the tall oak's shadow,
Then I threw the hempen line.

Thoughtless childhood! happy childhood!
I would journey back to thee;
Roam again the "tangled wildwood,"
Sport beneath the maple-tree.

There no busy sorrows fashion
Phantoms in the path of youth,
Nor pale care nor purple passion
Taint the bloom of love and truth.

HAPPINESS AND LABOUR.—Industry not only develops the outward and visible elements of civilization, but also those vast capacities and divine energies that lie folded in the human mind, and the elements of strength that exist in man's physical organization. Exercise is as necessary to the development of man's mental and physical powers, as air is to the preservation of his existence. Without the genial and vital aliment of the one, life would become extinct; and without the invigorating influence of the other, weakness would unnerve the muscle, and imbecility degrade the mind. The blacksmith's arm lifts the sledge, and as he day by day, with patient toil, plies it to the yielding metal, it grows strong by the vigor of its labour. The farmer, as he goes forth with the diversified and purer labours of his occupation, feels the healthy strength of invigorated muscles. The clerk weakens with inaction at the desk, and the mechanic grows strong with the active and vigorous exercise of the plane at the bench. But there is higher and diviner development dependent upon exercise of labor, than mere bodily strength. The soul—immortal mind—with all its exalted susceptibilities, holy aspirations, wondrous powers and glorious destiny, can only expand itself and unfold its god-like attributes under the creative influence of constant activity. That "image of God" can only develope and reflect the glory of its infinite and eternal prototype, by the use of the heaven-appointed agency—labour. Then, as the mind is the noblest creation of the Deity, so is labour the most honourable destiny of man. But not only are mental and physical capacities the results of exercise, but all the blessings of their endowment are dependent upon their use. Mental or bodily strength are productive of no enjoyment, or are of no value, only as they by exertion shall be rendered such. Thus, all that is noble or useful in human life, is dependent upon exercise for their existence, and impart to it their nobility and dignity. No labour can be too humble, as none can be too exalted for honour and reward. Though the credit is lost in the mercenary consideration of the reward, yet even when the labourer reflects upon the vastness of the blessings conferred by the public works upon mankind, how justly proud can he feel of his agency in their construction—the most degraded of honest labour. How is the toil of the pioneer ennobled by the fact that he is contributing his part in restoring the primitive beauties of Eden, and gracing the residence of man with its paradisaic culture and happiness? That man yonder, laboriously planting his posts, and stretching his wires, will be honoured more in the sure effects of increased intelligence, unity and peace in the world, than the lazy monarch upon the proudest throne in Christendom.

SUGAR FOR PRESERVING BUTTER.—A great deal has been written on preservatives for butter. Some writers say, if the butter-milk is wholly separated from the butter, that no preservative is necessary, as pure butter *will keep well without any addition. Yet very few* ever attempt to keep butter without the aid of some preservative; and most persons prefer butter slightly salted, and some would have it sugared also. We have known a few individuals who preferred butter without salt, and at each churning a little has been kept pure for their special use.

Some persons say that salt is the only proper preservative of butter, as other substances, such as sugar, saltpetre, &c., are injurious to the quality. Now this reminds us of those dictatorial individuals who would make their taste a standard, though it is at variance with that of the majority of consumers. One pomologist says that a vinous flavoured peach is the best, and that a pear of a champagne quality should be preferred, while the majority of mankind are in favour of sweet, luscious fruits. One person prefers tea, another coffee, and a third would like something a little more vinous or spirituous.

How absurd, then, when tastes are so different, for any one to assume the authority of judging for himself and for others too! Salt is used in butter, both for the purpose of preservation and to render it more palatable. But for long keeping, twice as much salt is used as is necessary to adapt it to the taste of consumers generally. This is evident from the small quantity of salt in lump butter, which usually sells high in market, while tub butter, equally as good, excepting the larger quantity of salt, generally sells twenty-five per cent. lower.

As the large quantity of salt, used for preservation, is injurious, as to taste, why should we not use a suitable quantity of salt for taste, and add sugar as a further preservative? For our use, we prefer butter and meat preserved, in part, by sugar, instead of using salt wholly, and using for preservation twice as much as would render it palatable. Butter and meat, preserved partially by sugar, are more healthful, as well as palatable.

We copy an article from the Pennsylvania Cultivator on this subject; but we do not endorse the recommendation of saltpetre for butter, nor are we prepared to say that it is injurious. But we choose to refrain from articles of doubtful utility, and which may be injurious or dangerous.

Sugar-Curing of Butter.—Persons who put up keg butter for their own use, or for a distant market, usually salt their butter very high. This high salting necessarily detracts from its quality, injures its ready sale, and reduces its price. If we can modify this excess of salt, by using more palatable substances, of equal efficacy, as preservatives, it will be an improvement. Chemists tell us that sugar is one of these substances; and experience gives us the same information. Who is not familiar with "sugar-cured hams"? If pork can be cured with sugar, why may not butter be so preserved also? is a common-sense inquiry. Experience has shown that it may. Dr. James Anderson, the celebrated agriculturist, whose treatise "On the Management of the Dairy, particularly with Respect to the Making and Curing of Butter," is still our highest and best authority on the subject, found, from some years' trial of it, that the following named composition—the properties of which we believe were discovered by his amiable lady—was far preferable to salt alone, as it not

only preserves the butter more effectually from all taint of rancidity, but makes it also look better, and taste sweeter, richer, and more marrowy, than portions of the same butter cured with common salt:—

Composition.—Take of sugar, one part; of nitre, one part; and of the best Spanish great salt, (or rock salt,) two parts. Beat the whole into a fine powder, mix them well together, and put them by for use. The doctor continues:—

"Of this composition, one ounce should be put to every sixteen ounces of butter; mix this salt thoroughly with the butter as soon as it has been freed from the milk, and put it, without loss of time, down into the vessel prepared to receive it, pressing it so close as to leave no air-holes, or any kind of cavities within it. Smooth the surface, and if you expect that it will be above a day or two before you can add more, cover it up close with a piece of clean linen, and above that a piece of wetted parchment, or, for want of that, fine linen that has been dipped in melted butter, that is exactly fitted to the edges of the vessel all round, so as to exclude the air as much as possible, without the assistance of any watery brine: when more butter is to be added, these coverings are to be taken off, and the butter applied close above the former, pressing it down and smoothing it as before; and so on till the vessel be full. When it is quite full, let the two covers be spread over it with the greatest care, and let a little melted butter be poured all round the edges, so as to fill up every cranny, and effectually exclude the air. A little salt may be then strewed over the whole, and the cover be firmly fixed down, to remain close shut till it be opened for use. If all this be carefully done, the butter may be kept perfectly sound in this climate for many years. How many years I cannot tell; but I have seen it two years old, and in every respect as sweet and sound as when it was only a month old.

"It deserves to be remarked, that butter cured in this manner does not taste well till it has stood at least a fortnight after being salted; but after that period is elapsed, it eats with a rich, marrowy taste that no other butter ever acquires; and it tastes so little of salt, that a person who has been accustomed to eat butter cured with common salt only, would not imagine it had got one fourth part of the salt that would be necessary to preserve it."

It is to be hoped some of our farmers, on reading the above, will follow its recommendations. The composition mentioned is, we have understood, much used in Goshen, Orange county, New York, a place famous for its superb butter. Great care should be taken to get the purest salt and sugar. That known through the country as the "ground alum" is the best salt. The sugar should be of the purest white—either the loaf or "fallen loaf." Those excellent butter-makers in the glades of the Alleghanies, would do well to make some experiments for themselves, in this matter.—*New England Farmer.*

English Children.—Mrs. Kirkland in some notes of travel in England, thus speaks of the physical management of children in that country.

"Pretty children one sees in abundance everywhere—and so nicely kept! It seems to us that nobody knows as well how to take care for the physique of children as the English. They feed them with the simplest possible food, and are astonished when they hear that our young folks share the rich, heavy, high-seasoned dishes of their parents. Oatmeal porridge is considered a suitable breakfast for infant royalty itself; and a simpler dinner at three o'clock, the proper thing for children whose parents dine sumptuously at seven. Exercise is considered one of the necessaries of life, and a daily walk or ride (not drive) in the fresh air, the proper form for it. It might be superfluous to notice anything so obvious if it were not that so many people in good circumstances with us, neglect this, and keep their children immured in nurseries, or cooped up in school-rooms, with no thought of exercise in the open air as amply requisite. We wish nothing so much for these benighted parents, as that they should once become acquainted with the habits and principles of a well ordered English nursery. A reform in that quarter is very much needed among us, and we know of no people so well able to be our instructors as the English, who have certainly brought the nursery system to great perfection, both as respects the comfort and advantage of the parents and children.

Female Education.—Female education is highly important as connected with domestic life. It is at home where man passes the largest portion of his time—where he seeks a refuge from the vexations and embarassments of business and enchanting repose from his exertions, a relaxation from care by the interchange of affections; where some of the finest sympathies taste moral and disinterested love—such as is seldom found in the walks of a selfish and calculating world. Nothing can be more desirable than to make the domestic abode the highest object and satisfaction.

"Well ordered home man's best delight to make,
And by submissive wisdom, modest skill,
With every gentle call eluding art,
To raise her virtues, animate her bless
And sweeten all the toils of human life—
This the female dignity and praise.

Neither rank, nor splendid mansions, nor expensively furnished apartments, nor luxurious repasts, can accomplish these actions. They are to be obtained from the riches of elevated principles, from the nobility of virtue, from the splendor of a religious beauty, from the banquet of refined taste, affectionate deportment and intellectual pleasures. Intelligence and piety throw the brightest sunshine over private life, and these are the results of female education.—*Ex.*

The Dog Distemper.—We are asked by a correspondent for a recipe to cure the dog distemper. He might, with about the same propriety, require of us a prescription for the bilious fever or the cholera; for no two dogs are affected exactly alike, and what would be beneficial in one stage of the disease, would be injurious, perhaps, in another. Cooling, and slightly-purging medicines, as sulphur and castor oil, are in some cases best, in others, emetics and astringent medicines. Eleven years ago, the past winter, we cured a favorite spaniel bitch, by giving her from three to five grains of powdered antimony, night and morning; and three months ago, a noble Newfoundland pup of ours, seven months old, we cured in a week, by giving him sixteen grains of sulphur, mixed with a gill of warm milk, and administered night and morning. His food, during this time, was principally milk gruel. We advise our correspondent to consult his physician, or some reliable work on the diseases of the dog.—*American Agriculturist.*

Business First, then Pleasure.—A man who is very rich now, was very poor when he was a boy. When asked how he got his riches, he replied:—"My father taught me never to play till all my work for the day was finished, and never to spend money till I had earned it. If I had but half an hour's work to do in a day, I must do that the first thing, *and in half an hour.* After this was done, I was allowed to play; and I could then play with much more pleasure than if I had the thought of an unfinished task before my mind. I early formed the habit of doing everything in its time, and it

soon became perfectly easy to do so. It is to this habit that I now owe my prosperity." Let every boy who reads this, go and do likewise.—*Wright's Casket.*

RECIPES FOR THE LADIES.—I hope my dear friends will not imagine for a moment that I neglect their interests while taking notes. Here is proof that I am still mindful to pick up all little items like the following for future use:—

Louisiana Muffin Bread.—Take two pints of flour and one and a half of sifted corn meal, two spoonfuls of butter, one spoonful of yeast, and two eggs, and mix and bleak for breakfast. It is good.

Hopping John ny (jambalaya).—Take a dressed chicken, or full-grown fowl, if not old, and cut all the flesh into small pieces, with a sharp knife. Put this into an iron pot, with a large spoonful of butter and one onion chopped fine; steep and stir it till it is brown; then add water enough to cover it, and put in some parsley, spices, and red pepper pods, chopped fine, and let it boil till you think it is barely done, taking care to stir it often, so as not to burn it; then stir in as much rice, when cooked, as will absorb all the water, which will be one pint of rice to two of water; stir and boil it a minute or so, and then let it stand and simmer until the rice is cooked, and you will have a most delicious dish of palatable, digestible food.

Something for the Children.—Make a dish of molasses candy, and, while it is hot, pour it out upon a deep plate, and stir in the meats of pecans, hickory nuts, hazle nuts, or peanuts, just as thick as you can stir them in, and then let it cool. Be careful and not eat too much of it, for it is very rich. It is a very nice dish for evening parties of the dear little girls and boys; and I have known some "big children" to like it pretty well.

SOLON ROBINSON.

Alabama, March 25, 1849.

TO YOUNG MEN.—There is no moral object so beautiful to me as a conscientious young man. I watch him as a star in the heavens: clouds may be before him, but we know that his light is behind them, and will beam again; the blaze of others' popularity may outshine him, but we know that, though not seen, he illuminates his own true sphere. He resists temptation not without a struggle, for that is not virtue; but he does resist and conquer; he hears the sarcasm of the profligate, and it stings him, for that is the trial of virtue, but heals the wound with his own pure touch. He heeds not the watchword of fashion; it leads to sin: the atheist, who says not only in his heart, but with his lips, "There is no God!" controls him not; he sees the hand of a creating God, and rejoices in it.

Woman is sheltered by fond arms and loving counsel; old age is protected by its experience, and manhood by its strength; but the young man stands amid the temptations of the world like a self-balanced tower; happy he who seeks and gains the prop and shelter of morality.

Onward, then, conscientious youth! raise thy standard and nerve thyself for goodness If God has given thee intellectual power, awaken it in that cause: never let it be said of thee, "He helped to swell the tide of sin, by pouring his influence into its channels." If thou art feeble in mental strength, throw not that drop into a polluted current. Awake, rise, young man! assume the beautiful garb of virtue! It is fearfully easy to sin; it is difficult to be pure and holy. Put on the strength, then; let truth be the lady of thy love—defend her.—*Southern Rose.*

LOCKJAW WITH CHLOROFORM.—A correspondent of the *Spirit of the Times* describes successful treatment of lockjaw in the horse with chloroform. He says, "I have had several opportunities of testing this mode of treatment, and in no instance has it failed, with the exception of one, when the administration of chloroform was delayed till the patient was almost in the agonies of death.

"My plan of treatment in this hitherto incurable disease is as follows: On the first symptoms, I give a drench composed of thirty drops of Croton oil, intimately rubbed in a mortar with thick mucilage of gum arabic, and gradually diluted with a pint or a pint and a half of good ale. Immediately on the drench being swallowed, the patient must be bled profusely, put in a warm stable, and, if the weather be cool, carefully covered with rugs. Now is the time to use the chloroform: four ounces will be sufficient for an application: and a convenient mode of applying it is, to make a temporary nose bag of soft material, and as air-tight as possible: in the bottom of it place a sponge, and on this pour the liquid: by introducing the horse's nose, and tying the bag round and above the nostrils, he will be obliged to inhale, and in a few minutes will be well under its influence Upon rising, the muscles will have lost the rigidity peculiar to the disease, his nervous system will have become quieted, and his face have lost that anxiety of expression which accompanies lockjaw.

"The chloroform must be repeated three or four times, say an hour apart: on the horse's recovery, his strength should be supported by light and nutritive food; and, if the weather be warm, turning him out in a pasture two or three hours a day will extend the muscles of his neck, and bring him to the use of his limbs.

"I would suggest that hand-rubbing of the extremities during the applying of the chloroform will be highly beneficial.

MANGANESE IN GLASS.—Some curious phenomena connect themselves with the use of manganese in glass. If the quantity employed slightly exceeds that which is necessary to prevent the peroxidation of the iron, or if the glass has been exposed to too long continued or too great a heat, it assumes a fine pink or rose colour. Indeed, where glass contains an excess of manganese, although it may preserve its desired whiteness, it will under the influence of sunshine, slowly change, and become gradually more and more pinky. This change may be frequently observed in the glass of the windows of old mansions; and it is not an uncommon occurrence, that a ship proceeding to tropical climates with white glass in her cabin windows, returns home with glass of a fine rose tint. Much of the common cast flint glass which is in the market is distinguished by this peculiar colour, produced by the employment of an excess of oxide of manganese.—*Art. Journal.*

GETTING MORE PRACTICAL.—We are happy to find that there is an opinion prevailing more or less throughout the community, that it is time the course of education in our seminaries should have a more practical tendency. Yale College and Cambridge have now their professors of Agriculture. What would have been thought, forty or fifty years ago, of a professor of agriculture in one of those stately old colleges, where the sight of a farmer would have been considered as much out of place as a pig in a pulpit? We see it noticed in the journals of the day, that the trustees of Union College contemplate such an extension of the existing course of studies as to include the more useful application of science to the arts, such as civil and mechanical engineering, agriculture, and agricultural and mechanical chemistry, &c. &c. We hope that the colleges throughout the Union will change their course of studies in such a way as to embrace a practical course of the above named studies.—*Maine Farmer.*

GEOLOGICAL TERMS.—Stratified mountains or rocks are those which are composed of layers or plates of stone separated like the leaves of a book by parallel seams; these plates are denominated strata; they extend through the whole mountain or mass, their length and breadth being much greater than their thickness. If the thickness of any stratum exceed two or three feet, it is more usually denominated a bed; and if it lie between beds of stone of a different kind, it is said to be imbedded. Strata always decline or dip down to some point of the horizon, and of course rise towards the opposite point. A line drawn through these points, is called the line of their dip; another line drawn at right angles to this, marks the course along which the strata stretch out to the greatest extent; it is called the line of bearing. If a book be raised up in an incline position, with the back resting lengthways upon the table, the leaves may be supposed to represent different strata; then the direction of the leaves from the upper edges to the table will be the line of dip, and their direction lengthways the line of bearing; and the angle they make with the table will be the angle of inclination. Strata are, however, sometimes waved or bent in both their directions, and are frequently broken; which makes it more difficult to ascertain their true position.—*Bakewell's Geology.*

INJURY FROM BLEEDING.—The two frequent use of the lancet, which Dr. Reid called a "minute instrument of mighty mischief," is thus condensed by Dr. Brigham, in his report of the Utica Lunatic Asylum, to the New York legislature:—

"Many of the patients sent to this institution have been injured by too much bleeding and depletion before they were committed to our care. Some, we think, have been rendered incurable by this treatment; and we cannot forbear remarking, that in our opinion the work of Dr. Rush on the "Diseases of the Mind," in which directions are given to bleed copiously in maniacal excitement, has done much harm, and we fear is still exercising a bad influence; and we hope no future edition will be issued without notes appended to correct the errors into which the distinguished author has fallen for want of the numerous facts which have been furnished since his time, and which enable us to see the errors of our predecessors."

KEEPING LEMONS FRESH.—I have been a housekeeper for some years, and never, till lately, have I been able to keep lemons fresh and juicy for any length of time. But with all my care,—now in this closet, now in that—now wrapped in paper, now packed in bran—now in a cool place, and now in a dry one,—they would dry up and become hard as wood. Of late, however, I have preserved them perfectly fresh three months in summer, by placing them in a closely covered jar, or pot, kept in the ice-house.

Each lemon is wrapped up in paper, (perhaps they would do as well without,) but opened and wiped once in ten or twelve days, then covered again with dry paper, and put back again into the jar, or earthen vessel, on the ice. MOTHER HUBBARD.
—*Am. Agriculturist.*

TO TRAIN A HORSE TO THE HARNESS.—You must be very gentle with him. You may commence by throwing a rope over the back and letting it hang loose on both sides; then lead him about, caressing him, until he becomes satisfied that it will not hurt him; then put on the harness, and pull gently on the traces. In a short time, by this kind of treatment, he will be prepared for work.

HOOF-AIL IN CATTLE.—The disease, sometimes called "foul in the foot," is most common in open winters, or when cattle are obliged to travel or stand much in mud. It is known by lameness, soreness between the claws of the foot, with inflammation, and, in advanced stages, discharge of fetid matter, which issues from between the hoof and the foot. A separation of the hoof after a while takes place, and if the disease is not checked, the hoof sometimes comes off. Though the disease, like foot-rot in sheep, is believed sometimes to originate spontaneously, there is good reason to believe that it is contagious; and, on this account, an animal, as soon as it is affected, should be kept by itself. The best remedy, if used when the disease first manifests itself, is blue vitriol or sulphate of copper. First wash the foot in soft soapsuds, and then apply the solution of vitriol to the affected part twice a day. If the disase is of long standing, the hoof should be pared away from the upper edge, the offensive matter taken out as throughly as possible, and an ointment of corrosive sublimate and lard applied. The animal should be kept from wet, and, if the foot is much sore, it should be protected by a bandage of strong cloth.—*Albany Cultivator.*

RESPIRATION.

A man makes on an average twenty respirations per minute, and at each inspiration inhales 16 cubit inches of air; of these 320 cubic inches inhaled 32 cubic inches of oxygen are consumed, and 25 cubic inches of carbonic acid produced. These are data for our consideration; and I trust will lead many to think seriously about making their knowledge practically useful. The following extract from the pamphlet of Mr. Ritchie, published this year on the ventilation and warming of factories, puts in a very clear manner the importance of pure air. He says, 'If the various convolutions of the air-cells of the lungs were spread out, they would present a surface *thirty times* as extensive as the surface of the body; that over this extensives surface, through exceedingly minute vessels, the entire blood of the body passes every three minutes; that we respire every twenty-four hours a quantity of air that would fill upwards of seventy-eight hogsheads, and the blood passes upwards of 500 times in the course of the day through the lungs, exposed to the enormous quantity of air which we respire.'

THE LAWS OF HEALTH.—Let us learn from prize-fighters. In the regimen that prize-fighters submit themselves to, we may see the secret of acquiring the greatest strength and power of indurance. It is to be strictly temperate in all things; to avoid all debilitating stimulants, such as alcoholic drinks, tea, coffee, tobacco, &c.; to rise early; to take abundance of exercise in the open air; to bathe often, and observe the most rigid system of cleanliness and abstain from all licentious practices. Those noted for pedestrian feats subject themselves to the same regimen. If it may be done from such ignoble motives, how much easier should it be to practice the same system for the greatest of blessings—health!—*Philadelphia Ledger.*

Swarms of locusts, or grasshoppers, have appeared in Texas, literally covering the ground in some places, and devouring the wheat and corn. In other parts of the State, the corn and cotten have been injured by the cut-worm.

Editors' Notices, &c.

G. W. will find, on our outside page, full particulars of the approaching exhibition of the *Provincial Association* at Kingston. Any further information can be obtained by addressing the Secretary, Mr. Buckland, Toronto; or G. A. Cumming, Esq., Secretary of the Executive Committee, Kingston.

PRACTICE.—We agree in the main with the purport of your remarks, and feel obliged for your suggestions and promised aid. We are anxious that our journal should possess a *practical character*, and therefore hope that the number of contributions from farmers and gardeners will continue to increase. If only three or four intelligent and enterprising individuals in each district, would send us occasional information derived from their own experience and localities, our journal would soon become, what we are most anxious to make it, an efficient medium of communication, in all matters relative to agriculture, gardening, and the mechanical arts, for the whole of Upper Canada.

A LOVER OF SCIENCE is informed that our pages are always open to popular articles on any branch of physical science having reference to agriculture, the mechanical arts, or the phenomena of nature. The particular topics to which he alludes will probably be taken up in due course by our esteemed correspondent, who is obligingly furnishing us with a most interesting series of papers, under the head of "*Scientific Notices*;" a series which we are happy to learn from several quarters is giving much pleasure and satisfaction to a large number of our readers.

T. S.—The note containing your inquiry respecting the *turnip fly* was mislaid. Many preventives of this destructive enemy have been recommended, but none can be regarded as infallible in all cases. We have often found the application of *quick lime*, or even dry soot or wood ashes, when the plants are first appearing, to be effectual. Sow broadcast, early in the morning, when the dew is on; and repeat the process, if necessary, after a few days. Some recommend sowing white mustard with turnips; and we have known several instances of success. The mustard vegetates quicker than the turnip, is very succulent and much liked by the fly, giving therefore the turnip an opportunity of getting into rough leaf, when it may be considered comparatively safe.

NEW YORK AGRICULTURAL SOCIETY.—We are indebted to the kindness of B. P. Johnson, Esq., of Albany, for a copy of the premiums, &c., of this important society, with several papers, which appear to be of a very valuable character, belonging to the forthcoming volume of the society's transactions. Preparations for the next exhibition, to be holden at Syracuse, in the second week of September, are making on a very extensive scale; and we have no doubt the State of New York will not fail to do justice to its high agricultural character on this occasion. We hope as many Canadians as possible will attend, and also to have the compliment amply returned at Kingston; for nothing but mutual good can result from different countries cultivating friendly intercourse and the arts of peace.

INQUIRER.—We cannot just now reply to your questions in detail, respecting the action of salt as a manure for land and a condiment for animals. Of its value for the latter purpose, especially in countries but feebly affected by oceanic influences, there can be no doubt. We would recommend as a beneficial practice the sprinkling of salt among hay when it is housed, especially if it is damaged by bad weather. The same remark applies with still greater force to straw, when it is intended for fodder. Cattle will more readily eat it, and the saline matter taken into the stomach acts beneficially on the general health of animals. As a manure, salt has by some writers been much over-rated; but in countries far removed from the sea, and where salt springs do not exist, it is no doubt susceptible of a beneficial application. We will return to this subject shortly.

TORONTO MARKET.

July 2, 1849.

	s.	d.		s.	d.
Flour, per brl. 196lbs.	16	3	to	21	3
Wheat, per bushel, 60lbs.	3	6	to	4	4
Barley, per bushel, 48lbs.	1	6	to	1	9
Rye, per bushel, 56lbs.	3	0	to	3	4
Oats, per bushel, 34lbs.	0	10	to	1	0
Oatmeal, per bbl. 196lbs.	16	3	to	20	0
Pease, per bushel, 60lbs.	1	6	to	2	0
Potatoes, per bushel	2	0	to	2	6
Beef, per lb.	0	2	to	0	3½
Beef, per 100lbs.	20	0	to	25	0
Veal, per lb.	0	2½	to	0	4
Pork, per lb.	0	2½	to	0	3¾
Bacon per 100 lbs.	25	0	to	30	0
Mutton, per lb.	0	2½	to	0	3½
Mutton, by the carcase	0	0	to	0	0
Lamb per quarter	2	0	to	3	0
Fresh Butter, per lb.	0	6	to	0	7
Firkin Butter, per lb.	0	5	to	0	6
Cheese, per lb.	0	3	to	0	5
Lard, per lb.	0	3½	to	0	0
Apples, per barrel,	10	6	to	15	6
Eggs, per dozen,	0	5	to	0	6
Fowls, per pair	1	8	to	2	6
Straw, per ton,	25	0	to	30	0
Hay, per ton,	45	0	to	50	0
Fire Wood	10	0	to	12	6

TORONTO HORTICULTURAL SOCIETY.—The next exhibition will take place on the 17th, instead of the 19th instant, as mentioned in another place.

MARKETS, &c.—From the latest intelligence received from England (June 22), we learn that the grain markets continued heavy, and prices stationary. The reports of the growing crops were upon the whole highly favourable; although we learn from private sources that much of the wheat in some parts of the south of England had been injured by the snail and worm. Hops were suffering severely from aphides; so much so that a moderate crop seemed to be doubtful. Orchards and gardens presented a remarkable luxuriance, the weather being very warm and favorable; although pear trees and unprotected wall fruit appear to have suffered from the unusual severe frosts which occurred in April. Green crops, hay and potatoes, were very promising. In Upper Canada, wheat may be said to be generally good, and the spring crops are now making rapid progress. Hay in most places will be abundant, and the potatoes seem as yet sound and thriving. The lateness of the spring, connected with the extreme wet weather which then generally prevailed, will no doubt in some cases retard the progress of the late crops. We hear that in some parts of the country, particularly in Lower Canada, that want of rain is beginning to be severely felt. On the whole, however, we are inclined to think that, with the continuance of favorable weather, the fruits of the earth will prove abundant.

We insert, for the full information of our readers, the following Programme of the Provincial Agricultural Show, to be held in Kingston in September next, as published by the Committee of Management:

GRAND PROVINCIAL AGRICULTURAL FAIR AND CATTLE SHOW,

TO BE HOLDEN AT KINGSTON, C. W.,

On September 18th, 19th, 20th, and 21st, 1849.

THERE will be expended in Premiums, in the various branches of Agricultural and Horticultural Productions, Implements of Husbandry, Manufactures, Mechanical Inventions, Fine Arts, &c. &c. &c. the sum of from TWELVE TO FIFTEEN HUNDRED POUNDS, the particulars of which and Premium Lists (which will be liberal) will be prepared and made known as early as possible.

The ground selected for the Show is delightfully situated, and commanding a splendid view of the River St. Lawrence and Lake Scenery. Persons desirous of competing at the Show must become Members of the Association, which they can do by paying 5s. per annum, or $10, which constitutes Membership for Life.

Members will have the right of entering for Competition *Three Articles free of charge* (all Entries over that number 7½d. each), and will be furnished with a Badge, which will entitle them to a Free Entry to the Show Grounds.

FIRST DAY.

All Entries to be made with the Secretary, at not later than 8 P. M. of the 18th, at which hour the Lists will be closed. Separate Lists of Premiums provided for Articles and Animals not the production of Upper Canada.

SECOND DAY.

The Judges, Competitors, and Officers of the Society only will be permitted to enter the Show Grounds until 2 P. M., after which hour the public will be admitted. At 7 o'clock, P. M., an AGRICULTURAL LECTURE AND DISCUSSION will be held in the Court House, to which the Public are invited.

THIRD DAY.

The Show Grounds will again be opened to the public, and at 3 P. M. the President will deliver the ANNUAL ADDRESS, after which the Premiums will be declared. The city authorities have kindly given the use of the City Hall for a PUBLIC DINNER in the Evening.

FOURTH DAY.

The Trial of Ploughs. A Ploughing Match will take place in the morning, and at noon the Prize Stock and Articles will be Exhibited on the Show Grounds, after which the PREMIUMS will be paid.

No Premiums will be paid on Stock or Implements, &c., leaving the grounds previous to this, without permission from the President.

THE WHOLE WILL BE WOUND UP WITH A

GRAND PROVINCIAL REGATTA,

At the close of the Show, open to all Competitors.

Ample accommodation will be provided for Visitors, and pledges have been received that the ordinary rates only will be charged at the principal Hotels, Taverns, and Boarding Houses, of which there are over one hundred and fifty in the city and immediate vicinity. Spacious Buildings will be erected for the reception of all articles intended for the Show, and their protection and security suitably provided for; and particular attention will be given to the LADIES' DEPARTMENT.

The Executive Committee will meet on the Show Ground, on Wednesday, the Second Day, at 10 o'clock, when the Judges are requested to attend, as on that occasion all vacancies will be filled. Members of the Society are requested to call, on their arrival, at the Secretary's Office, and receive their Badges. Entries may be made at any time previous to the Show, with the Secretary, GEORGE A. CUMMING, Esquire, care being taken by the parties to make the entries in the owner's name, which will prevent confusion in calling over the premium lists for payment.

Arrangements are about being made with the respective Steamboat Owners, for the Transit of Stock, &c., intended for the Show, at moderate charges, and application made to the proper authorities to have Animals and Articles of American production, intended for competition at the Show, admitted Free of Duty.

Kingston, June 30, 1849. 7