

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/  
Comprend un (des) index

Title on header taken from: /  
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/  
Page de titre de la livraison

Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

Additional comments: /  
Commentaires supplémentaires:

Wrinkled pages may film slightly out of focus.

This item is filmed at the reduction ratio checked below /  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

# THE CANADA FARMER

Vol. II. No. 8.

TORONTO, CANADA, AUGUST 15, 1870.

NEW SERIES.

## The Field.

### Winter Wheat.

On most farms situated in the older settled districts of country bordering on our great chain of lakes, winter wheat will continue to be the great staple crop of the agriculturist. All the other operations on the farm are, or should be, directed towards preparing the land, by a proper course of rotation, to bear good crops of wheat whenever practicable. It is always a staple crop that in proportion to its cost gives a better return for the labour bestowed upon it than any other, provided a good crop can be secured.

We do not propose to give a long article on a subject that by this time ought to be pretty well understood by all intelligent farmers; but there are always some points connected with every matter pertaining to the farm that will bear discussion, and on which many may differ in their modes of applying theory to practice.

It is almost beyond question that a well prepared summer fallow makes the best preparation of the soil for winter wheat, and especially so on strong or stiff soils—heavy clays or rich loams—that contain a sufficient percentage of lime and phosphates. Where lime is deficient, it must be supplied in some form, either spread on the land at the rate of ten bushels or more per acre, and harrowed in just before sowing the wheat, or given in the form of superphosphate sown on the crop when it is well up, at the rate of from 100 to 200 pounds per acre.

The direct application of barn-yard manure to winter wheat is seldom advisable, especially if the manure is long and full of straw. It is better applied to a previous crop, or if that has not been done, it should be composted before applying to the soil, and either thoroughly incorporated with the soil by successive ploughings and harrowings before the wheat is sown, or, as has been done with success in instances that have come under

our observation, if it is so well composted as to be readily divisible, it can be applied as a top-dressing late in the fall, when it will act as a sort of mulch or protection to the young wheat from winter frosts, and all its best enriching elements are carried into the soil by the rains and melting snows. This plan is of the greatest benefit on crops of winter wheat that have been sown so late that the plants have not formed enough top to protect their roots during the winter.

Wheat likes a tolerably compact seed-bed, that is, one not too loose and porous, and if a little rough and cloddy on the surface so much the better. These little clods will gradually crumble down under the action of rain and frosts, and help to keep the roots from being heaved out. We often see that land has been made too fine on the surface by continual harrowing and cultivating, while at the same time it is very shallow below. This is due mainly to a habit many have of working their soil at one uniform depth, leaving a hardpan where the sole of the plough runs. Yet it is not advisable to make the soil too deep and loose for wheat, as if so done, the heavy fall rains compress the soil together very solidly. The English farmer avoids the two extremes by ploughing deeply in the fall before the land is to go in wheat, or with the previous crop. If it is in peas, which is commonly the case here in many sections, the land should be ploughed deeply, say ten inches, as soon as the pea crop is off; then cross ploughed to a depth of but four or five inches, and the wheat drilled in without harrowing.

It is of the first importance that land on which winter wheat is grown should be perfectly free from any liability to retain surface moisture. Neglect of this point is the cause of much of the loss from winter-killing. All cannot have their farms underdrained, though of course those who can afford the expense will be certain to get by far the best crops, other things being equal. How often do we see great pains taken in preparing the soil, and yet the finishing stroke, that of leaving

the land well dead-furrowed, so as to carry off all surface water, totally overlooked. This part of the work should be done after the seeding and covering has been completed, and where necessary in order to get a proper fall and outlet, deep furrows should be run diagonally across the field, and the earth thrown out levelled down with a hand-rake, so that water may run freely into them from the surface of the land.

Regarding the proper time of sowing there seems to be many differences of opinion among practical farmers. Many years ago it was usual to sow early, say from the 20th August to 5th September. In those days it was no unusual thing to see winter wheat a foot high or more in October, and as a result the crop was always early in maturing and gave heavy yields. This was in the palmy days of wheat-growing, before the advent of the midge, when the Red Chaff White, Blue Stem, and Soules held sway, and forty to fifty bushels to the acre was no uncommon yield. The destructive doings of the midge caused nearly a cessation of the growing of winter wheat, and many became careless about the matter; and of late years there seems to be a tendency to sow this important crop altogether too late; the consequence of which is a small growth of top by the time hard frosts come to stop vegetation, and the roots small, and ill able to retain their hold, have scarcely any protection whatever against the keen winter frosts, unless a covering of snow should chance to come early enough to save them. But the days of the midge we hope are gone, never to return. Then again, there is some risk now from the attacks of the Hessian fly and the wire-worm when winter wheat is sown very early; of late years, however, we have heard few or no complaints of these pests, though they doubtless still continue to prey upon the crop.

The amount of seed to the acre is very variable, according to the earliness or lateness at which it is sown. If sown early, so that there is time for the plants to taller out before hard frosts come, a moderate seeding is

quite sufficient, say five pecks to the acre if sown broadcast, and three if drilled in. This, however, is rather less than would satisfy us, as we are not advocates of such thin seeding as now seems to be coming into fashion, especially in Britain. After the 5th September it is better to increase the amount of seed, say a peck per acre for each extra ten days of lateness till the amount reaches two bushels. Something will depend on the season, the soil, and the variety of wheat to be grown, and those who understand the matter know how to gauge their practice by the results of the experience obtained on their own farms.

The manner of sowing the seed is of importance, and also varies with circumstances. Broadcast sowing is probably the best where the wheat is sown early on well prepared soils, admitting of the seed being properly covered to a moderate depth, and the seedling is done by an experienced hand. But this cannot often be done, and to ensure a certainty of the seed being properly applied to the soil and covered in, drilling comes to the help of the farmer. The later the seed is sown the more necessary becomes the use of the drill, and no farmer of means should be without one. In sowing broadcast, it is better to sow on the land just as it is turned over by the plough, without any previous harrowing. Then harrow lengthwise and crosswise, but do not roll. When a drill is used, the land can be made tolerably smooth with the harrows before the drilling is done. The little ridges left by the drill machine are of great use afterwards in helping to prevent heaving by frosts; as the wheat, growing as it does in the depressed lines made by the drill, is gradually covered by the action of rain and frost in crumbling down the ridges. Be sure to brine or lime the seed before sowing, if it is desired to guard against smut.

Salt has been tried as a manure on winter wheat with good effect, increasing the growth and early maturity of the plants. Sow a barrel per acre just before sowing the wheat. We do not believe there is any real manurial value in salt, but it doubtless acts as a solvent of the mineral plant food contained in the soil. It would not be beneficial in all cases, but its application can do no harm, and the richer the soil the more likely would the salt be to prove valuable. It is now cheap and easily obtained, and every intelligent farmer should at least try what effect the use of salt produces on his soil, and in this way much may be learned by experience as to the advisability of applying it, and to what soils and under what circumstances it will pay to use it.

In another article we hope to give something further about varieties of winter wheat, and how they can best be adapted to particular sections and soils. To this end we shall await the results of the harvest now commencing.

### Growing Clover.

There are some matters connected with the growing of clover that are scarcely sufficiently attended to, and need reiterated notice. In the first place, the importance of having only perfectly good, sound seed, cannot be too strongly impressed on our farmers. In a case like this, where, from the high expense of the seed, the generality of farmers are only too apt and willing to err on the side of economy, by giving a light seeding as they think can be made to *take*, it is not to be wondered at if many failures arise from a deficiency in the quality of the seed. In selecting the seed, that which is ripest (which is shown by the greater prevalence of dark colours among the grains) is to be preferred; and according as the seed is light in colour an extra allowance should be made at seeding time. If in one hundred grains there are fifty light, over fifty per cent. should be added to the amount to be sown per acre, and so on in proportion to the deficiency of dark seeds in the sample. The light seeds being generally immature and unripe, usually fail to grow. Good seed is of the first importance in this crop, where so many adverse influences have to be contended against.

Then again, farmers usually depend on red clover alone, when if the matter of growing clover were properly understood, it would be found more advantageous to sow a mixture of different sorts, say one-half of red, one-quarter alsike, and the remainder of the large and small white sorts.

In sowing the seed, it is of importance that it should be evenly distributed over the land, a thing that can only be done where the operation of sowing is entrusted to a thoroughly reliable and experienced hand. A patch here and there, a little thicker than the rest, not only looks unsightly, but also makes the crop a very uneven one at haying-time. We often see fields of clover that look as if they had grown in long strips with great gaps between. This is caused by the want of evenness in sowing the seed; the sower having nothing but his eye and memory to guide him, takes too wide a strip at a time, and in throwing the seed the bulk of it falls directly in front of him, leaving the edges of the strip he thinks he is covering with a mere sprinkling of a few scattered seeds.

In some cases the wind will so drive the seed as to make botch work of even what the best sowers have done.

In sowing clover, the better plan is to have several small poles, with a rag on the end of each, and plant these in a line, one at each end of the field, and one, two and three in the centre, according to the size of the field, in the same way as is often done to mark the line of the first furrow in commencing a new bout in ploughing. The sower, when he starts, places a pole exactly the distance from the one standing at the head of the field as he intends to make his cast of seed extend. As he comes up to those in the line in throw-

ing his cast, he removes them exactly the same distance to the side he is to come back on. In this way there will be some regularity of casting ensured. When the land is divided by plough furrows into spaces just wide enough to be covered at two casts, the furrows may be made the guiding line.

This season will doubtless prove a very trying one on all newly seeded grass. The early part of the spring was so dry that there could not be a good *catch* of the seed; while the latter portion of the season, since the rains came, has been such as to promote a heavy growth of weeds of every sort to choke out the weak plants of clover. In cases where there has been a partial *take* of the clover, something may yet be done—after the grain harvest—to fill up the vacant spaces. The best way is to take a large garden rake and some seed to the field; sow every vacant space, and cover lightly with the rake. This late-sown seed will form plants strong enough to stand the ensuing winter, provided all stock are kept off, and the plants allowed to grow so as to make a top that will act as a winter mulch to them.

Again, we find most farmers are in the habit of turning their stock into the newly seeded clover immediately after the grain which covered the land, and acted as a mulch to protect the young plants from the scorching sun of summer, has been cut and removed. This is one of the great causes of failure. The young plants at this time want to have every chance given them to increase in size and cover the ground, so as to act as a mulch to their own roots. It is better to leave such fields entirely shut up from stock until at least the end of September, when, if there is a good growth of strong plants with a heavy top, it will do no harm to feed down with stock to only a moderate extent, that is, just so much as will still leave the plants strong and vigorous to resist the winter frosts. With a very weak, thin growth of plants, it would be better to keep stock out altogether, and try what can be done to increase the grass crop by seeding timothy on the land in September, giving a light harrowing immediately after sowing the timothy, and a dressing of superphosphate, which will greatly stimulate the young clover. The young timothy can stand the winter well, and will commence to tiller out at once after starting, so that with a favourable autumn season we should expect the following year's grass crop to be a fair one, so far as covering the ground goes.

EARLY EGYPTIAN BEET.—This new variety of early turnip-rooted beet has been grown by Mr. Thomas K. Richards, of Newark, N. J., and was exhibited by him in New York on the 15th of June. He seems to be well pleased with it, esteeming it a profitable early beet to cultivate, and a full week earlier than the Early Flat Bassano. The color is a very deep red, and the flesh tender and of good quality.

### Thick or Thin Seeding for Wheat.

Mr. J. J. Mechi, of Tiptree Hall, England, has been of late years strongly advocating a thinner sowing of seed than is generally in favour amongst even English farmers, who, with all their clean culture and fine tillage, yet still think liberal seeding helps to make liberal crops. Mr. Mechi seems to be very enthusiastic on this subject, and writes much in favour of his own peculiar views in the British agricultural journals.

His experiments seem to have demonstrated that wheat, at least, sown in the fall on rich, highly cultivated, and well prepared clay soils, will succeed well from a very thin seeding indeed. He states that he has had a good yield from dibbling in the seed at the rate of only one peck per acre. There can be no doubt of this, and that well conducted experiments of this kind are generally made with such care and at such expense that their results in any case could not well be otherwise than favourable. But the success achieved in Mr. Mechi's experiments does not demonstrate that the same success would attend the adoption of thin seeding by the generality of farmers. The mere saving of a bushel of seed per acre would be a long way from covering the extra expense of dibbling in by hand labour such large fields of wheat as are commonly sown here. So well put and plausible are Mr. Mechi's arguments in favour of thin seeding, that any one not having an actual experience of the difficulties attending a universal application of his theories to practice, and the varying circumstances of soils on seasons, would readily accept all he says as gospel facts.

In a recent number of the *Mark Lane Express*, Mr. Mechi contends that the wheat plant is naturally robust, and if allowed room will tiller out to such an extent that there is as much occasion to thin out wheat as to thin out turnips. We do not doubt that, under such favourable circumstances as are likely to occur in Mr. Mechi's practice, wheat grown as he proposes would succeed admirably, and satisfactorily to himself; but we do not suppose that it would be profitable for every farmer in the land to follow his example. His farm is worked on the very highest principles of high farming, and we have seen it questioned in the British agricultural journals whether his facts and figures are to be relied upon; and even according to his own showing he makes a smaller profit than an ordinary farmer, and much less than one would expect from such large returns of crops as he gets. He says, "Thick sowing, with high farming, produces a dense mass of vegetation, obstructing the passage of light and air, and preventing that branching or tillering which is the natural habit of the wheat plant. So eager are plants for light, that being deprived of it horizontally, they rush up vertically, become weak-legged, and tumble down prematurely. This desire of plants for light is apparent under many cir-

cumstances;" of which he cites the tendency of flowers in the window to turn to the light as one illustration.

This all sounds very fine, and there doubtless may be cases where it would apply; but the wheat plant is not a bush, spreading out and bearing fruit on every side. The success of any crop of wheat must depend on the ability of the land on which it is grown to produce, and carry through to full maturity, a given number of heads of wheat. The fuller the land is of plant food adapted to the wheat plant, the better will be the crop; and to leave such land but half seeded, on the chance that what is sown will tiller out, and so fill up the vacant spaces, is at best a doubtful policy. Wheat, and especially winter wheat, will succeed under favourable circumstances with a thinner seeding than any other cereal; but so much of the success of the tillering out will depend on the time of sowing and the character of the season between seedtime and freezing up, that here in Canada, at least, it will be better not to trust to thin seeding for the sake of the small saving in seed.

### Hay.

A farmer says he wants to let his timothy grow until it is ripe enough to haul into the barn the same day it is cut. This sounds very nice, and looks practical. But on the other side there is a horse that, if he could speak, would say he will not eat such hay at all if he can get hay that has been cut before the seed was filled, and has been well cured by the process of sweating in the cock. We think that in most cases it is the imperfect curing of early cut hay that brings it into disrepute with city buyers. Some cut it too early, and allow it to lie in the swath and burn up in the sun. Finding it does not dry, they leave it all night exposed to the dew in the swath, or even for a day or two under the sun and passing showers, till it gets wilted, not cured. Such hay has lost all its aroma and sweetness. Had it been tedded, or shaken out twice within six hours after cutting, and then put up in cocks to stay till it had gone through a slight degree of fermentation, it would have been quite a different article.

We have cured hay well even in comparatively unreliable and broken weather, by putting it up without fail in cocks. As soon as a good breeze came, and the air was dry, the cocks were opened out, and the hay allowed to get a wind-shaking before being taken to the barn. If that could not be done at once, they were again made up into cock, and allowed to stand till the teams were ready to do the work of hauling to the barn.

There is little doubt but that well-cured hay, cut before the seed is hard, is worth double the price of that which has gone on till the seeds are ripe, and the hay can be carried to the barn the day it is cut.

### Rust on Wheat.

This disease of wheat, which is properly a mildew, is caused by the presence of a minute sporadic fungus which attacks the crop only under certain conditions of the atmosphere. In some seasons and on some soils, it is much more prevalent than at other times and in other soils. The most fruitful cause of it is the prevalence of cool foggy nights or evening showers, followed by calm hot days, with a bright sun, just about the time of the blooming of the wheat plant. On low moist soils, when rapid evaporation takes place, this disease is often found in seasons otherwise favourable to the development of the wheat plant. We cannot control the atmosphere, nor prevent the appearance of this disease, but we can, as much as possible, avoid the risk of its occurrence, by not sowing wheat in low, damp soils, and taking care to have land where wheat is sown well drained. Good dry limestone soils, and those that have been well underdrained, are very rarely liable to show this disease in wheat grown on them.

Spring wheat is most subject to rust, especially late ripening fields, and those in new settlements where the land abounds in vegetable humus, and is so rich that the wheat runs very much to straw. The well-known life spring wheat is said to resist the attacks of rust, and is consequently much in favour with growers in the new clearings.

No remedy has yet been discovered for it, but reasoning from analogy that salt is a well-known destroyer of all parasitic fungoid growth, it may be possible that sowing salt on the land, or even on the crop in very moderate quantity, when the weather is such as to render the appearance of rust very probable, may act as a preventive of its ravages. We once saved a valuable and heavy crop of fall wheat from it by the simple expedient of having two men pass through the crop in the early mornings, drawing a long rope between them, over the wheat. This bent down the heads, and shook off the accumulated moisture to the ground, before the sun evaporated it.

### Buckwheat.

This crop is often sown too early, resulting in the scorching of the plants by the hot sun in July and August, and destruction of the blossoms. Still, if sown late, there is some risk of the seed not ripening before autumn frosts come. It is best to endeavour to steer clear between the danger of the flowers blasting from the heat, or the seed failing to ripen before frost catches the crop. On poor land buckwheat is an excellent crop to grow, particularly if grown with a view to enriching the soil by being ploughed under when in full bloom. It is also good on lands infested with weeds, Canada this-

cles especially, which can be kept under for a season by ploughing the land late, just before they bloom, and sowing buckwheat. An old sod freshly turned makes a good bed for this crop. If manure can be spared to be spread on the land before ploughing, so much the better. It will help this crop to some extent, but the after crops will still more reap the benefit. It is the least expensive renovating crop that can be grown, as no more than a bushel of seed per acre is required, and three pecks are usually considered enough. The crop is not of very high value, it is true, but perhaps more so than is generally thought. It is always saleable, and generally brings as much per bushel as barley. Buckwheat cakes, on a cold winter morning, are a pleasant addition to the usual farmers' fare of fried pork and potatoes. Poultry are fond of it, and thrive well on it, if allowed the addition of some other food less heating. It is also good for feeding to store hogs in winter, and when crushed along with oats forms an agreeable addition to the food of horses.

The Hay Crop.

During a week's trip the last of June we observed that many farmers had cut and carried their hay, while others, and these the majority, had not begun the work of haying, though the fields were evidently much beyond the proper stage at which grass should be cut in order to make good hay. In former years it was rare to see any grass cut before July, by which time it was usually so ripe that the clover turned dark in curing. That any should be cut at all so early as we saw this season is evidence that better ideas are beginning to dawn in the agricultural mind, and from the number of cases we observed, in which the farmers had cut and housed their entire hay crop by the 29th June, we judge that there will be a fair chance to test the merits of the plan we have all along so persistently advocated of cutting grass for hay at a considerably earlier period of its growth than has been the custom heretofore.

We were also pleased to notice that more pains were being taken to cure the grass, and judging by the feel and sweet scent of the early cut hay, it will prove a much superior article to what it would have been if left to ripen in the stalk.

Our attention was several times drawn to the different degrees of excellence of various modes of cutting grass. The work done by those machines that profess to be mowers only, was far ahead of that done by those that are called combined machines. Many of the latter did the work of cutting grass, especially clover somewhat lodged, so badly that it was evident that it would have been a great saving to employ hand labour to do the mowing, even if that cost three times the expense. On the whole, the crop this year will be light compared with last.

The Clovers.

The annexed illustration and accompanying explanations and remarks on growing the varieties of clover are taken from Mr. J. C. Morton's *Farmer's Calendar*:—

"The illustration represents heads of the natural size of the different clovers cultivated. We have heads and leaf of the natural size of—1, *Trifolium hybridum*—Alsike Clover; 2, *Trifolium incarnatum*—Crimson Clover;

seed. 2. It may be sown before the roller, when the barley is just above the ground. 3. It may be hand or horse-hoed in when the grain receives either of these operations, if the farmer is in the practice of giving them. Of these methods, the first is the surest for a crop, and the most to be recommended, notwithstanding the admitted evil which sometimes takes place in a wet season, of the clover growing so luxuriantly as to damage the barley. The second succeeds well, if



3, *Trifolium repens*—White Clover; 4, *Trifolium pratense perenne*—Cow Grass; 5, *Trifolium procumbens*—Hop Trefoil; 6, *Medicago lupulina*—Black Medick, or Yellow Clover; 7, *Trifolium pratense*—common red clover.

"There are several methods of sowing clover seed. 1. It may be sown broadcast and harrowed in at the time the barley is drilled; a pair of light harrows at the same time following the drill-machine, to cover the clover

rain follows in due time, and would, perhaps, generally succeed, if the farmer ventured to harrow it in, which he might safely do. In the third method it often succeeds, but it also often fails; nor is it necessary, in many cases, to hoe the barley.

"In any case it is best sown with a hand-harrow covering five yards in width, and if this be set to sow one-half the quantity per acre that is wanted, and made to cover the

ground twice, the work will be more perfectly done. If grass seeds be sown with the clover, then another sowing will be necessary with the same tool set for grass seeds. It is covered in by a light harrowing with either the bush or web harrow, or light seed harrows of the common kind, and rolled. Of the seeds sown at this season we have—

1. Trefoil, sown 14 to 16 lbs. per acre alone in some districts, as one of the earliest foods for ewes and lambs in spring. It is ploughed up after a first folding, and a crop of turnips may be taken.
2. Red Clover or Cow Grass, sown often by itself as affording a heavy first cut later in the summer for forage for stalls or stables—coming in after *Trifolium incarnatum*.
3. Various mixtures of clovers, i. e. 10 lbs. of red clover, 4 lbs. of white, 4 lbs. of Trefoil. The red clover is a large seed, the white much smaller, so that 4 lbs. of it contain as many seeds as 10 lbs. of the other; the yellow blossomed Trefoil is the largest seed of the three. This will yield a first, second, and third cut during summer—the latter cuts containing more of the white and yellow clovers. Alsike clover is coming into use partly as a substitute for white; it is equally perennial, and has a larger habit of growth.

#### Visit to a Farm.—Turnips.

Our investigation now turned towards the farm and stock, and Mr. Johnson showed me his ten acre turnip field, prepared last fall for turnips. Lately, this early preparation has been his custom. The seed was now just about to be sown, and was of the Purple-top Swede variety.

The land had been well and deeply ploughed the previous September, out of wheat stubble, immediately after wheat sowing was done, and was well manured, but, unlike ordinary fall ploughing, it was what we call in England ridge and furrow. The manure was first spread evenly over the land, and a deep furrow drawn, and another of at least twelve inches wide, thrown against it, leaving nearly two feet unmoved. The plough was again passed deeply into the furrow it had just drawn, but the team travelled back in the same place, and a deep trench was thus formed, and, of course, beside it there was a corresponding ridge, with all the manure buried underneath.

Early in the spring these ridges were split, and well harrowed repeatedly, so that when planting time came, all weed seed had been destroyed. The turnips were drilled in on the level land. Mr. Johnson is satisfied that to sow turnips in ridges is bad, at all events, in his land; for if dry weather came in June or July, the crop was much more injured by it on account of the ridge being higher, and consequently drier, than if the seed had been planted on the level.

The quantity of seed sown was to be two pounds to the acre, and the drill be usually

used was one that formed a row of seed about six inches wide, and a little rake and roller arrangement, following, entirely covered all seed. I asked the meaning of this, and was told that the land was greatly infested with black grubs, which took an immense number of the young plants, when far too large for the fly to affect them, and the large number of extra plants afforded sufficient for grub and fly, and a crop besides, if only quick growth could be effected, and pure seed, that would grow and could be relied on, obtained; and the turnip plants grew stronger if scattered over a space, instead of being huddled together.

Mr. Johnson always procured his seed early, and on warranty that if not found good, it should be returned. One hundred seeds were tested in moistened earth under favourable auspices, and if found good, and not more than five or ten out of the lot failed to grow, the seed was retained. If it did not come up to this standard it was sent back, or enough extra sowed to allow for the adulteration.

I thought this an excellent way to serve the vendors of inferior seed. The English papers have for some years teemed with accounts of investigations of the different adulterations of seeds, and at length Parliament has interfered, and the law will probably prevent the adulteration complained of in future; but for years a regular business in killed cheap seed (resembling those sorts wanted, but probably furnished at half-price) has been carried on, and the competition in price had gradually deteriorated the quality of seed, until it was impossible to obtain it pure, except from known houses of credit and respectability, and then, of course, at double price. The plan of trying the germinating powers of the seed some time before sowing was, I thought, simple, and within reach of all.

The last time I visited the farm I had advised the trial of some transplanted Swede turnips, and Mr. Johnson was only waiting for a wet time to try the experiment. The plants had been grown in a sand bed, made very rich with rotted cow manure—the soil, in fact, being about half manure. The seed was sown very early, and quite thick, and had been protected from the fly by every means that could be devised, and certainly the plants were very fine.

The idea was to allow the plant to sit in at the bulb about the size of the first joint of the little finger, and then to draw and plant them as fast as possible, so as to leave the roots out of the earth only about an hour; and, as they were grown in sand, the roots were very large and fibrous. Previous to drawing the bed was deluged with water. The tops were all cut off just to avoid the heart, say usually to about two and a half to three inches high. This course, I was told, was necessary, as the demand on the root from such large leaves (if all were left on) would

often exhaust the moisture of the plant itself and cause certain failure.

The land to plant in was ready, and had been prepared the same as for the other turnips, on the plan already described. This course left all the manure still buried underneath the ridges, and as the weeds were thoroughly exterminated (at least all such as were under the influence of the air and would grow), it was believed that the effort would be a signal success. The land, of course, lay rolling, with little hills and dales caused by the ridges, notwithstanding the frequent harrowing, as this operation was always performed lengthwise, not, on any account, across; and this peculiar preparation was believed to be the best in practice, as the manure was all well rotted and buried since last fall, and all laid just under the turnips. Had it been ploughed in this spring it would have lain light and dry, and the plants would probably have suffered. When about to plant, after wet weather, there was a small furrow drawn, with a little wooden plough made for the purpose, down the centre of each ridge, and the plants were dropped and at once planted eighteen inches apart, and the rows two feet from ridge to ridge. I once saw a great improvement on this plan. A farmer at home caused a sort of wheelbarrow to be made, without any felloes to the wheel, and with tapering ends to the spokes. A man wheeled this along the centre of the ridge, loading it so as to work, and it left a regular succession of holes about three inches deep and fourteen inches apart, and one boy dropped the plants, one at each hole, and another rapidly set them, and pressed the fresh earth tightly about the root with his toes. Each turnip (Mr. Johnson's) was expected to occupy at least six or seven inches, so there would be only about eight inches of space intervening between each turnip in the rows, and the rows between the bulbs would be about eighteen inches apart, measuring from turnip to turnip. It will be recollected that the ridges contained a double quantity of manure.

When in England, I have often grown Swede turnips on this principle. In a friend's garden, by some mistake, a turnip plant was set out in the latter part of June, among some cabbage plants, and when the frost came, it certainly was grown to be a monster, and weighed about seventeen pounds. We used to grow them in England of this weight, when planted early, without any difficulty, but in Canada this could not be done from seed, as the season here is too short to allow of its growth, unless sown in a seed bed; as if planted from seed in the field, the fly will surely destroy the crop, unless we wait until the middle of June before sowing.

I was next shown a draining machine, and as it was not in use that day, I was promised that I should see it worked on the following, so I may as well relate our draining experience at some future time.

## DRAINING.

After inspecting the dairy and poultry-yard, we adjourned to the fields to examine the draining that had been begun last fall, and continued this spring at convenient intervals.

A machine has superseded the old digging plan for making the ditch, and the cost was wonderfully reduced—eighty rods a day of ditch two and a half feet deep having been made by one team and two men, under favourable circumstances. The plan pursued has been quite different from that ordinarily followed. The lay of the land, as a whole, was rather level than rolling, except towards two corners, one of which was high and springy, and the other low, affording the natural outlet. The evil of low, undrained intervals had been severely felt during the prevalence of wet weather. In many places deep indentations of cattle feet were quite apparent, and of course a corresponding injury was done to the grasses in pasture fields.

During my former visit we had carefully looked over that part destined to be first operated on, and I had at that time given it as my opinion that to drain the whole twenty-five acre field as is usually done, namely, running the drains through low and high spots, towards a given point of outlet, would cause some heavy digging, and consequent expense, as the surface of the land was intersected by small rolls, and swales intervening, the high parts being sometimes of an altitude of two to three feet for rods together, and to dig a drain through these parts would have entailed a great deal of work.

Mr. Johnson had been reading some professional work on the subject the year previous, before commencing his work, and had also studied the diagrams with which it was copiously illustrated, showing a field laid out in nice oblong squares, with a general outfall at one place, and convergent leading drains towards that large one, intended to carry off the water. The whole was elaborately drawn and coloured, showing surface and subsoil, with sections and levels all over the plan. Specifications accompanied all this, showing the cost, which, "all told," including the increased size of tile required in some places, footed up to about the value of the land. I had been shown all these plans and specifications, and being somewhat of a practical drainer myself, and also having had to do a great deal on my own land with very little money to do it with, I at once condemned the whole thing as utterly impracticable for us to carry out. I therefore put all these perplexing plans and specifications aside, as too elaborate for any ordinary farmer to contend with, unless blessed with more money than we were, and advised partial practical measures, at all events at first. Accordingly this had been done, and the "modus operandi" was as follows:—

First, all low spots in the whole field were

followed from their commencement to their outlet, and white freshly split stakes or splints were stuck into the earth, following as near as possible the centre of the swaley parts. By this course we could readily follow each depression accurately, and, in consequence, we found, what the water had found centuries before, the lowest place, where a general convergence of all the stakes took place. This was made quite apparent by the white lines of stakes. We did not level at that time, as it was quite unnecessary. When this preliminary staking was done, the great object was to straighten these stakes so as to have the drains run as nearly in a direct line as possible without bends. Then again, the stakes showed us what to do, as by removing one stake a few feet one way, and another a few feet the other, occasionally cutting across small spurs of the higher parts, we were enabled to reduce the very tortuous, crooked lines to nearly straight ones, with occasional angular bends; and when these occurred they were ultimately readily contended with. We were quite surprised to find so few difficulties; the stakes, when straightened, laid out the whole field like a map, and levelling was quite unnecessary, as we had water levels to guide us almost all the way. Any one walking over undrained land will meet with hollows and depressions here and there, turn which way he will, and it seems as if some of them could hardly have an outlet; but when all the stakes above alluded to are placed, you will readily see that one depression generally falls into another at some one part, and so on to the outlet, and do not offer such an insurmountable job after all. A furrow had been drawn wherever these stakes indicated the want of drains, and another in this first one, the horses, however, travelling the opposite way. This of itself had drained almost all the low parts, but of course only partially; and we are now come to the draining machine, which had dug a clean trench, about two to two and a half feet deep, in many directions all over the field. Sometimes these trenches intersected each other, and when that was the case, of course a junction of drains was requisite and contemplated; and it now became a question what was the best kind of drain to have.

Tiles there were none within 100 miles; stones, of a manageable size, were also not plentiful. The land was not stony, or, of course, it would have paid to have had some place to deposit the stones in. Timber was abundant and cheap, and was finally decided on as the best material to use. Decay was avoided by the drain being of necessity laid nearly on a level, and as such, the principal fall that existed was in the depth of the drain itself at the head as compared with the ultimate outfall. There was some fall to every part, but in digging the trench the water did little more than run away, and in many places with scarcely any fall to the bottom of the drains. Drains of various shapes had been laid down and tried, and all had

their advocates; but as the subsoil was hardpan that would not wash, the drain that had finally become the favourite was one formed like the letter v reversed, each side being composed of a piece of board, one inch thick (full measure) by five wide. The sawyer who had cut the drain stuff had ripped a ten inch board in two, angling the cut at something about a right angle, or a little more acute. This angle was used to prevent the board splitting by the weight of superincumbent earth.

In laying in the drain on this plan there was, of course, no bottom, and the middle of the trench formed by the machine, was just about as wide as would admit of the drain being laid in it. Some little difficulty was experienced in keeping the two boards evenly together at the apex of the cone, as where any inequality in the bottom of the drain existed, the edges of the boards forming the drain had a tendency to slip past each other somewhat; but of course this difficulty ceased very soon, as no alteration could take place after the earth was even partially filled in. To avoid this slipping, however, three nails in each twelve feet drain were used, and found requisite to steady the boards in their places until the earth above made all solid. Where turns or bends existed, a portion of the drain box was bevelled to the required angle, and a perfect turn thus effected. After a large quantity of drain had been laid down (with a few shovelfuls of earth here and there at the joinings), the remainder of the excavation was rapidly ploughed in again, twenty times quicker by this course than spades would accomplish the same work.

When all was completed, a set of marker stakes, made of cedar, were placed here and there to point out certain junctions, and one of the family, who could map correctly, laid down on paper a diagram of the whole, or the principal portion, which was carefully preserved for future reference in case of accidents.

But I am trespassing again on your space; indeed it is difficult to describe these things in as few words as one would wish, there are so many peculiarities and novelties, that without a minute description there would be little use in jotting it down at all. C.

WHEAT AND CHESS.—Some years ago Mr. J. J. Thomas, who stands among the foremost practical men of this or any other country in matters pertaining to agriculture, offered a reward of five hundred dollars for a head of wheat and a head of chess from the same root. This offer was kept standing in the *Country Gentleman* several months. From the immense number of plants which the transmutationalists claim turn from wheat to chess every year, it seems that it would have been an easy matter for farmers to draw very heavily on Mr. Thomas' exchequer; but, strange to relate, not a man appeared as an applicant for the reward.

### The Curing of Hops.

A correspondent requests some information on the best method of curing hops. In reply we can only state briefly some of the more important general principles. The drying of hops is a practical art, and as its proper execution is of so much importance, we would strongly recommend persons intending to undertake it, to put themselves under the instruction of a competent person during the season of picking, in order to learn thoroughly the various details of perfectly curing hops, as they naturally arise in the course of daily practice.

Much depends upon the proper construction of the building, which should have ample space, both for drying and cooling. As hops are dried by the ascent through them of heated air, it is of primary importance to have sufficient space—say from sixteen to eighteen feet—between the fires and the drying floor; keeping up a constant ventilation by freely admitting the external atmosphere to the fires, and thence through the drying floor and the roof of the building. Begin with a moderate fire, and continue so as far as practicable, gradually lowering it as the hops get nearly cured. Hops are often irreparably injured by too hot or intermittent fires, but never by such as are slow and regular. Where two batches of hops are gathered daily, as nearly twelve hours as possible should be given to each in drying. Something will depend on each of such conditions as the state of ripeness, amount of moisture in the hops when gathered, arising from atmospheric causes, and especially the quantity placed on the drying floor, which is not unfrequently overloaded. Hops fully ripe and gathered dry, admit of curing in a thicker stratum than when obtained in opposite conditions. From eighteen inches to two feet thick, when first put on the floor, admit of being generally well managed. They should be thoroughly stirred by walking through them, taking care to keep the feet close on the drying cloth, or by a large wooden shovel, as soon as the surface begins to get dry. Some stir them again in a few hours, or, when time admits, throw them into a lump, allowing the fire to go down.

It is worthy of remark that when hops are gathered cleanly, that is without many leaves or twigs, the closer they go together on the drying floor, and the thinner they should be spread. Clean picking, and thorough, careful drying, provided the hops are sound and ripe, are the two essential conditions of success. Sulphur, in the shape of roll brimstone, is frequently used in England, at the commencement of the fires; it aids the progress of drying, and imparts a bright yellowish hue to the hops. Used in small quantities it does not injure the hops for brewing purposes; but when employed to excess its effects must be objectionable. Perhaps it would be safer not to employ it at all, as there is a prejudice against it, more

particularly by brewers on this side the Atlantic.

It is of the utmost importance that hops should be perfectly and uniformly dried, or they will not keep, especially when transported to the moist climate of Britain. If the leaf and stalk of the hop, when rubbed between the fingers, yields no moisture, the curing may be assumed as sufficient. We have frequently seen in our dry climate the centre of bales of hops mouldy, damp and clammy, solely in consequence of careless and insufficient curing, and such samples are mostly quite worthless, and not unfrequently the occasion of heavy losses to brewers.

Another very important condition is the packing. Hops may be healthily grown, cleanly picked when in full perfection, and properly cured, yet from imperfect packing and injurious subsequent exposure, their value will be greatly depreciated. Packing is now usually done by a powerful press, and the cloth of the bales should be close and strong. Hops not intended for early use should be compressed as tightly as possible, and kept in a dry place, and free from all currents of air. The pleasant characteristic aroma of the hop is exceedingly volatile, and by age and exposure its quality rapidly diminishes. More attention to the different conditions at which we have but briefly hinted, must be paid by Canadian hop growers ere they can do full justice to themselves and the trade, either at home or abroad.

### Hilling Corn.

This practice, once so common, seems now to be considered of doubtful utility. Much discussion is now going on in the agricultural press as to whether the practice of hilling corn is advantageous or not. On the one side it is maintained that the roots of the corn spread out to a considerable distance near the surface, and that the operation of hilling corn, as generally performed with the plough, tends to cut off all these roots and leave the plant nothing to hold on by, but those close to the stalk or that have gone down and into the soil. On the other side it is said that the corn requires hilling to prop it up from becoming broken down near the crown of the root (its weakest part) by the wind, and that where this is neglected much loss will occur from the corn falling before the ears are fairly set.

There is doubtless truth on both sides. Something will depend on the kind of corn used. The large coarse yellow corn of the western prairie, would be much more likely to stand up fairly without hilling, than would the finer and more delicate varieties grown in the Eastern States and Canada. Our own practical observation tends to favour the practice of hilling the corn, provided the work is properly done and at the right time. It should be done early. We fancy if the hills could be formed first, and the corn

planted in them, it would be better than planting the seed on a level surface. The work of hilling ought to be done as soon as the corn is a foot high, and if properly managed, the roots will scarcely be touched. After that, the culture should consist only of stirring the surface to a depth of one or two inches, to keep the soil mellow and the weeds down. The old practice of ploughing and cross-ploughing between the rows of corn several times during the season was very well in its day, when we had not the advantage of the modern improved implements of culture—the horse-hoe and cultivator. If the operation of hilling is carefully managed by running the plough six or eight inches from the hills and throwing the earth towards them, then following with the hoe to draw the newly turned soil in amongst the cornstalks, and so turning the hills nice, level and compact, there can not be the least injury done to the roots. This is much better than depending upon hand hoeing alone. A man or boy with a sharp hoe in hand offers cuts away carelessly into the soil close around the stalks, cutting off the rootlets that are extending outwards near the surface.

### The Hessian Fly.

This insect, *Cecidomyia destructor*, was at one time the most destructive enemy our crops of winter wheat had to contend with, though of late years, owing perhaps to the greater attention drawn towards a still more destructive enemy, the wheat midge, *Cecidomyia tritici*, it has remained comparatively unnoticed. As may be surmised from their generic names, both these insects belong to the same family, and the perfect insects are similar in outline and size, though not in colour; the Hessian fly being dark, brownish black, while the midge is orange coloured. Their habits and methods of destruction are, however, entirely different.

The flies themselves are not destructive, it being their larvæ that feed on the wheat plant. The female fly lays her eggs upon the under side of the young leaves of the wheat, near the base of the stalk, early in September. In a week, provided the weather is warm, these eggs hatch out into little white maggots, each of which makes its way to the first joint near the crown of the root; according to Harris it fixes itself and lives by suction on the juices of the young plants. This lasts until the maggot changes into a pupa or chrysalis, when it sometimes drops to the ground and buries itself in the soil; but more often still adheres to the wheat plant, ready to again appear in spring. A single maggot at one point would do but little injury; but as several—often as many as thirty—generally get together at one point, the stalk of the plant soon becomes weakened, turns yellow and bends to the ground, never again to rise; and the germ of the future wheat head, embraced in the crown of the plant, cannot become developed. If the



wheat is sown late, it often escapes in the fall, from the weather becoming too cold for the eggs to hatch or the maggots to live. But there is often much destruction done by the spring brood hatching out from the eggs laid late in the fall, or by the flies that come out of the chrysalides in May. These can do little injury to wheat that has got well forward in autumn and makes a strong quick growth in spring, while on the late sown and weaker plants it often commits great havoc. When the fly attacks the wheat in spring, its effects are not often very noticeable till the stalks shoot up, when from being weakened at the joints—the spring brood attacks the joints higher up than the fall brood does—they break down, and the field looks as if a herd of live stock had been running through it.

Those varieties of wheat having a strong flinty coating on their stalks and joints often resist the attacks of the spring brood successfully, but none can resist the attacks of the fall brood. While we cannot give any method that will result in destroying this pest when once it has found access to the wheat field, there are many ways in which we can to a certain extent prevent its ravages from becoming severe. In sections where the fly prevails largely and does much damage in autumn, we can either sow the wheat so late as to preclude the probability of the eggs hatching, or the maggots destroying the stalks, before cold weather stops their proceedings; or a strip of land in each field intended to be occupied may be sown a fortnight earlier than usual, when most of the flies will deposit their eggs on this early sown patch, and the later sown will escape, as the female fly dies as soon as she has laid her eggs, and the maggots never move from the place on which they are hatched. On a late sown crop, if the heavy roller is run over the land when dry, most of the maggots will be crushed out.

After all, the very best preventive of the ravages of this as well as other insects is to have the land in such good heart, and the soil under such good cultivation, that the wheat soon acquires strength to resist the attacks of its enemies, and will tiller out so much that new stocks grow up in place of those destroyed or affected by the fly.

On farms that have been long cleared, and where wheat has been much grown with few intervening crops, the Hessian fly sometimes effects such a lodgment that it appears year after year, and as the soil becomes less rich, and the wheat plant less able to make a quick growth and obtain a flinty covering to the stalk and joints, the crop gets poorer in yield from being less able to resist its attacks. The only way to destroy it is to cut the crop high up, and then set fire to the stubble and burn it along with the fly or its pupæ.

A somewhat similar fly, called the "Wheat ravager," at one time threatened the entire destruction of wheat growing in Australia,

but was put an end to by the simple plan of cutting off the wheat heads by machinery, leaving the straw standing, and then, as soon as the crop was removed, setting fire to the straw, which being long and dry, burnt quickly with a great heat, not only killing out all insects, but also the seeds of all weeds near the surface of the soil, leaving the land clean and mellow for the next crop to be harrowed in on the burnt surface; the ashes of the straw forming a good manure for the following wheat crop. It was very common then to grow several crops of wheat in succession on the same land.

#### Clover as a Shade.

There is probably no other plant in the world of such value to the farmer for this purpose. It furnishes the most perfect protection to the soil during the fierce, drying heats of summer. Being a constantly deciduous plant, its leaves are perpetually falling, and soon form a delicate covering for the entire soil, sufficiently thick for shade, and easily penetrated at all points by the air, which is the great carrier to the worn-out soil of those atmospheric elements that are to enrich it.

In this way the clover plant not only contributes directly to the fertilizing of the soil by giving its own substance to it, but it furnishes a protective covering to the entire ground, which encourages and stimulates those chemical processes by which the hungry and exhausted soil is recuperated from the vast supplies of nutriment that are held in the atmosphere. In this important junction it stands unrivalled, and becomes to the farmer the most valuable fertilizer in the world, as it does not impart fertility, like most manures, in spots, but to the entire soil, which becomes renovated throughout.

#### Tillage vs. Pasture.

An ox or six sheep will gnaw off all that grows on an acre of grass between April and October, and no labour is expended in the process. But the same acre, well manured, would produce thirty tons of roots, which would feed at least five oxen for six months better than the grass had fed one ox for five months. Whatever aid we may obtain from mechanical appliances, the acre of arable, and the five oxen, and next year's crop of wheat will employ a considerable amount of labour. Generally speaking, it appears the country has found the cheap system more profitable than the other, in spite of the improvement of mechanics. But when the land is fertilized by means of the waste of towns, the cost of growing a ton of roots or a quarter of wheat will be reduced, and there will be a reaction in favour of arable cultivation, with great advantage to the country.—*Agricultural Gazette.*

#### Stirring the Soil in Summer.

During the driest weather, there exists the greatest necessity for constantly stirring the soil among the corn and root crops. It may seem an anomaly to most farmers, yet it is nevertheless true, that the more you stir the soil during the dry season the more moisture can the crop imbibe. The freshly stirred soil is a great attractor of moisture and ammonia from the atmosphere, and what is imbibed at the surface during the night, especially when dews are heavy, is quickly conveyed down to the roots of the plants grown on the surface. Even on the lightest soils, the advantages of the practice are great. Our farmers do not yet sufficiently appreciate the advantage to be derived from a frequent use of the horse-hoe or turnip-cultivator. Instead of one only being kept, every farmer who grows five acres or more of roots should have one for every five acres he puts in corn, potatoes, or other roots, so that every available horse on the farm can be put to work in the early mornings and the evenings, to run the implements between the rows as often as possible, even though it should be on land that is perfectly clean, and seemingly not requiring such work to be done to it. When rain falls, this work may be suspended till the moisture is absorbed into the soil. Keep the cultivators going whenever possible, and you will reap rich results in a larger and better yield of corn or roots, more than will ten times overbalance the additional labour, which can be generally given when least available elsewhere.

Prof. Caldwell says in France and Germany, clover is put in pits when cut and allowed to ferment slightly; it comes out tender and excellent.

**TURNIP FLY.**—A correspondent of the *Gardener's Chronicle* strongly recommends dusting with lime in dry weather, as a remedy for the turnip fly.

**LIQUID MANURE.**—A correspondent of the *Annan Observer* says:—"The most simple, and perhaps best, method of utilizing the liquid manure flowing from a farm-yard was exemplified last season by Mr. John Thomson, of Nutberry Farm, Kirkpatrick-Fleming, whereby he obtained 220 cartloads of rich manure, which was spread in the drills, like farm-yard dung, on a seventeen acre field, and, with the addition of a little turnip manure, produced one of the best crops of Swedes in the district. The method is simply this:—Select a spot to which there is a natural fall from the midden-stead and from the farm-yard generally, and there dig an oblong pit down the slope, beginning at nothing but 4 feet deep at the bottom, and of a width of from 8 to 10 feet by 25 to 30 feet long, and conduct into this pit at the top, by pipe-tiles, the whole of the extra sap and

ceaves-water from the farm-yard. Having formed the pit as above, cart into it good black moss soil, or other suitable absorbent, laying it across the top of the pit so as to catch, and to be well saturated by, the liquid as it flows from the tile mouth. In a week or so, when the first layer of soil has been well saturated, throw it down towards the bottom of the pit, and lay more peat soil on the spot from whence it was removed, continuing the practice at spare times, as the moss soil becomes well saturated with the liquid. By following this system throughout the autumn and winter, a very large quantity of excellent manure may be obtained at little trouble or expense; for when the pit is once full of soil, well mixed and saturated, it can be carted out and spread upon the land, or banked up for spring use, so that two or three pitfuls may be obtained in one season."

**RICH SOIL FOR MEADOWS.**—MARTIN BURR, of Des Moines, Iowa, writes to the *Maine Farmer*: "I am an old man of seventy-eight years; sixty-seven of that time I have lived in the State of Maine, in Mercer, on Sandy River, myself a humble farmer. During the last fifty years, or more, a month or so before haying, I seldom failed to hear the cry from my brother farmers, 'if we do not have rain soon, we shall fail of a crop of grass.' This is almost the universal cry, not realizing that all men who say so, thereby virtually admit that they are incompetent and poor farmers. I have endeavoured for many years to impress upon the farmers of my acquaintance the fact, that no spring drought, or early lack of rain, ever cuts short a full crop of grass, when the soil is rich; and no farmer should be content with an average crop of less than two tons to the acre, and all the fields that will not yield that amount should be turned into pasture. Never feed mowing fields, either fall or spring; cut the grass early, and when the crop falls below two tons to the acre, enrich the soil by top-dressing, turning over with the plough, or turning it to pasture, and every farmer so doing may in raise his stock of cattle, from a quarter to a third, in from three to five years, may raise double the crops of corn and grain on the farm. All this may be achieved, simply by cultivating, not mowing, any more land than is made rich. In the outskirts of the little village in the town of my former home in Maine for eighteen years, and those years during the Southern Rebellion, I cut hay from half an acre of land annually, sufficient to pay for the bread for myself and wife, and occasional visitors and help, the ground averaging not less than three tons to the acre, with occasionally a top-dressing of manure, ashes or plaster. The above is written to impress on the Farmers of Maine, the fact that they, and they only, are to blame for the failure of their hay crops, and if they will not learn to do better, they should cease their grumbling.

## Stock Department.

### Wool.

The following article appears in a recent issue of the *Mark Lane Express*—

The winter and early spring months have an influence upon the quality of the fleece, which is worthy of a passing notice. This is a season of the year when there is a great liability to injury, which proper attention can easily prevent. The growth of wool is probably more entirely under control than any other part of the body, and gives more permanent indication of any influences which operate upon it. Its mode of growth and its source of nourishment are so completely under the system of management adopted, that we can with care improve its quality, and regulate its general character.

#### HOW WOOL MAKES ITS GROWTH.

The manner in which wool makes its growth is exceedingly simple. We find beneath the skin a series of small cells, from one of which each fibre of wool emanates. It may be compared to a minute onion, with its rising stalk. This fibre of wool, after commencing its outward growth, has to penetrate through the pores of the skin; it then becomes visible to the eye, and by its extended growth clothes the animal with a covering, varying in character according to circumstances of its growth. Like every other organic structure, it needs suitable nutriment, upon which it may feed, and from which it may extract the materials required for building up its frame-work. This nutriment is secured by the small cells, by which the wool is rooted beneath the skin, which absorb all that the wool requires from the blood circulating beneath them. This will tend to show how the nourishment of wool is so much under our control. If the blood does not contain the materials required for the wool, it is simply impossible for any growth to be secured. The cells cannot absorb the necessary supplies if not presented to them in blood. It therefore becomes evident, that unless the animal's food is of such a character as to supply the nutriment required, its growth must cease. On the other hand, a liberal supply of proper matter promotes a rapid growth, and gives it a strength of texture considerably greater than is obtained from inferior food, whilst its softness is fully preserved.

#### FOOD PROMOTIVE OF THE GROWTH OF WOOL.

The food required for promoting the growth of wool differs but little from that usually given under any liberal system of feeding. The special requirement is a supply of sulphur, which it usually secures from such green crops and corn as clover, vetches, beans, peas, lentils, &c. The influence which these have on wool has been frequently observed, and we have in this fact an explanation of much of the softness of texture which is then produced. Wool appears to require other

materials for growth, but only such as are necessary for the production of flesh and fat. We shall therefore be perfectly safe in promoting the growth of wool—so far as food is concerned—if, in addition to our ordinary supplies of food, we give the animal some variety of the leguminous crops already named. We have already noticed that the wool has to penetrate the skin in its outward growth. The condition of the skin has for this reason a most important influence upon the character of the wool. It acts as a sort of gauge, regulating the size of the fibre. Any circumstances which enlarge this gauge produce an opening for the growth of coarser wool, and the opposite result is secured by any agency which decreases the size of these apertures, thereby producing a finer fibre. It is essential to the character of a good wool that there should be an evenness of staple. Irregularities in the size of the fibre are always undesirable, causing weaker portions, which do not withstand equal tension, and, consequently, decreasing the general strength of this wool for manufacturing purposes. This arises from the influence of the skin in contracting, or expanding the pores, and usually originates in great change of temperature. Excessive heat naturally opens the pores, and favours the production of coarse wool; any great severity of cold contracts the pores and makes the wool small in the fibre. It is therefore clear that, to secure an even growth of wool, we must shield the animals from extremes, both of heat and cold, and, as far as may be practicable, moderate by shelter their respective influences. The value of wool is also materially influenced by the softness of the skin, and this is in its turn very much a consequence of a sufficient supply of good food. It has been very generally noticed that, when the growth of wool is rapid, and of a healthy character, there is not only an abundance of yolk in the wool, giving it a soft or greasy feel, but the skin has much the same condition. This is never found upon sheep which are badly fed, and in poor condition. Under such circumstances the blood is naturally free from any oily matter, and, consequently, the roots of the wool cannot get their supply; neither can the skin maintain its soft and greasy condition. A liberal supply of good food is therefore an essential for the production of the best quality of wool. The influence of food does not end here, for a regularity in the supply is almost as important as the quality. Any period of short supplies or of inferior food leaves a clear record in the fibre of the wool, producing a harsher and weaker structure, which is readily distinguished from the growth produced when the animal is well fed. These portions are of necessity less able to stand the strain of manufacturing processes, and the value of the wool is decreased. Large quantities of wool are thus injured by a short supply of food, which would have been materially increased in value if some ad-

ditional food had been given so as to supplement the ordinary supply. These cases unfortunately occur more frequently at a time of the year when the severity of the cold increases the damage; but on every principle of economy they should be very carefully guarded against.

#### INFLUENCE OF CLIMATE ON WOOL GROWTH.

The climate also exerts a great influence on the growth of wool, and if it has to be produced of good and even quality this agency must be duly considered. It has been already mentioned that the pores of the skin act as a sort of gauge for the wool, and it is therefore perfectly clear that if sheep are so much exposed to cold and wet as to allow the skin to become chilled, the size of the wool must be reduced thereby; the extent of the damage is consequently regulated by the intensity of the cold. For this reason, shelter from the full force of the cold winds is found to improve the staple of the wool, and prevent, in some degree, this inequality in the size of the fibre. Injury arising from the wet shows itself more generally by giving the wool more the character of hair, and thereby injuring its felting properties. The excessive heat of summer has just the opposite influence. The warmth of the skin being considerably increased, the pores become more open, and a coarser wool is produced. The injury thus occasioned is far from being as important as that arising from cold and wet; but still, if we desire to produce wool under the most favourable circumstances, we must give shelter from extreme heat as well as from excessive cold.

#### IMPORTANCE OF BREEDING.

However much by judicious management we may enable a flock to produce wool under the most favourable circumstances, it is perfectly clear that the natural character of the breed will be a very important agency. Management will go far to favour the growth of good wool; but it certainly cannot do all we need. Hence the importance of securing sheep which are of a suitable breed, and from which we may be sure to obtain wool of the desired quality and weight. The value of long-continued and careful breeding is shown as forcibly in the wool as in the general form of the body. These flocks which, for several successive generations, have maintained one steady and uniform character of wool, offer the best source from which to breed when it is desired to improve the wool of any flock. The buyer should not look for rams suitable for this purpose without duly considering the previous history of the flock from which they may be selected. Many a sheep possesses the external qualifications desired—so far as the eye is able to judge—but unless the flock from which it has been obtained has been carefully bred, the buyer will probably be disappointed. The value of a good wool is a strong inducement for making its growth as abundant and as good as the local circumstances of a farm will allow.

#### Rearing Calves.

The following extract from a work on cattle and cattle breeding, lately issued in Scotland, from the pen of Mr. W. McCombie, of Tillyfour, contains many practical suggestions, which if they do not suit the dairy farmer in this country, will be useful to those who are more anxious to raise good stock than to save their milk. The experience and success of the eminent writer entitle his opinions and advice to great consideration, and all will be interested in learning the treatment that in his hands has proved so satisfactory. He says:—

“If the calf is to be milked from the hand it should be taken from the cow as soon as it is dropped, and before the mother sees it; if allowed to remain with the cow for some time and then removed, it will be a cause of great irritation to the mother and very prejudicial to her milking. When it is to be suckled, the calf should be left quietly with the cow; and by licking the calf and eating the placenta the cow will be settled, the calf will get to it legs, and all may be expected to be right. A warm drink should be given—cold water must be avoided—and the cow made comfortable. She should be milked out after first suckling, and this will require to be repeated two or three times a day for a few weeks, until the calf is able, and can with safety be allowed, to take all the milk. In a day or two after the calf is dropped it ought to be muzzled, and allowed a limited time to suckle the mother three times a day. It must not be allowed a full allowance for the first fourteen days after birth. A confidential servant must remove the muzzle, stand beside the calf until it has taken a safe allowance, and then return the muzzle. When the calf has got the cud, which will be observed about fourteen days after its birth, it will then be safe to remove the muzzle. I muzzle all my calves to prevent their eating straw, hair, etc., which they cannot digest, and which accumulate in the stomach and prove the death of the animal. Many thousand calves are lost in this way, the owner never suspecting the cause. If the calf is opened up after death, there will be found in the stomach a large, firm, round ball, composed of straw, hair, and other substances, with knots of curdled milk conjoined. After the calf has got the cud, and is fourteen days old, it may be allowed to suck at pleasure. It must be seen, however, that the calf has ability to clean out the udder of the cow; be part of the milk is retained, the cow must if milked by the hand.

“Plenty of good milk is the proper foundation to make a good animal; if stinted when a calf, a year's growth is lost. Selling a great deal of butter and rearing a good bullock are incompatible. Good calves are milked from the pail, and they thrive better after they are weaned; but it will generally be found that the sure way to make first-class calves is to allow them to suckle. There will be many

drawbacks at the expense of the calf if it is brought up from the pail; drafts will be required by the housekeeper for milk, butter, and cheese for the family, which cannot be made if the calf is suckled by the mother in the field. The plan adopted by some of giving skimmed milk to the calf cannot be too much reprobated; and to give old milk to a newly-dropped calf is perfectly preposterous; it is unnatural, and will probably prove the death of the calf.

“The calf should be allowed to suckle or be fed from the pail for six or eight months. It has then strength to stand weaning, and if properly cared for, will not be checked in its growth, and it will retain the good calf-flesh it has put on. The loss of the calf-flesh cannot be remedied, and great care should be taken to avoid this. If the calf-flesh is lost, the animal will be reduced in value, and can never be made to yield first-class meat. Great care, therefore, must be taken by the breeder when his calves are weaned.

“To guard against black-leg, the calves should be immediately corded in the dew-lap, and receive, along with other nourishing food, each one and a half pound of oil-cake a day. This treatment is absolutely necessary during their first winter. The open straw-yard for calves is of great importance. If they are kept regularly going on, black-leg will be prevented. While proper treatment is adopted, there will be little to fear from that dreadful scourge.

“I have never lost more than two of my breeding stock from quarter-ill. There is no question that the cause of this dreadful malady is sudden transition from a restricted diet to a full and nutritious one, from a poor pasture to a rich and luxuriant one, or from a poor pasture in autumn to a full allowance of turnips; the increase of blood on the system is so great that the constitution cannot stand it. I have seen almost every calf on several large farms carried off by black-leg. There is no secret as to its prevention. Keep the young calf gradually growing, never let him want; give one to two pounds of oil-cake a day; and keep up the irritation by cords with a good hold of the dew-lap. After the first winter black-leg is little to be feared. I have had a case or two in two or three year-olds, but it is very uncommon. Prevention is the only safeguard, for I have never seen black-leg cured. To some, one to two pounds of oil-cake a day may look an expense that the calves cannot repay; but if any of my friends will divide a lot of their calves, and give the one lot turnips and straw, and the other turnips, straw, and one to two pounds of oil-cake daily to each calf, if they are dissatisfied with the result on the 1st of May, I shall pay the balance. I shall not enter upon the point of the great additional value of the manure, but leave that to the chemist.

“I allow my calves to suckle till October, and the late ones two or three months longer. Butter, and even corn, are but secondary to our cattle, and in these days of progression we must advance with the times or go down.”

### Ram Letting.

The practice of letting rams instead of selling them has been in fashion in Britain for many years past, and seems to have proved of great value in enabling the tenant farmers to improve the quality of their flocks at a much less expense than would have been the case had they been obliged to buy out and re-sell each year at a loss. It is also of advantage to the great ram breeder, who can now, through the facilities of transit by rail, send stock great distances at small expense, and consequently those who have acquired a high reputation for the careful breeding of rams of a high standard of excellence in quality, can readily dispose of all they can raise at highly remunerative prices. We are not quite certain as to the custom connected with ram letting in Britain, but believe that the rams are put up by auction in a lot, to be bid for, so much each, one at a time, the first choice falling to the purchaser of the first and therefore highest bid. As each is knocked down, the purchaser of that bid takes his choice and removes it out of the lot.

The rams are usually first let as shearlings, and can be returned to the owner as soon as the season is over, when if one proves a good stock getter it is again put up the next year, and so on. By this method the expense and trouble of keeping the rams over between seasons is saved to the user, who can obtain one from another ram breeder next year, and so prevent too close in and in breeding in his flock; which in the case of sheep is always to be avoided. No ram can be successfully and profitably used in a flock for more than two seasons consecutively, and good sheep breeders consider a change of rams every season to be best.

With the extension of railways over Canada, and the facilities we now possess for the transportation of stock, it would be well for those of our sheep breeders who reside at easily accessible points, to give particular attention to the matter of breeding rams of a high standard of excellence, and adopt the British practice of letting rams instead of selling them. We are confident that in this way a much larger demand would arise for them, and the idea of saving the cost of several months' keep, the annoyance of having to hunt up a purchaser for the ram in use before getting another, would induce many of our farmers to pay more attention to breeding sheep of a high standard of excellence, and give as much, or perhaps more, for the lease of a good ram for the season, as they would to purchase it. No loss could result to the ram breeder, as each ram returned would be available for sale another season till three years old, by which time the butcher or the compost heap should get its carcass. The purchaser for the season in all cases should take and return the ram at his own cost.

### Weaning and Rearing Five Hundred Calves.

An English exchange gives the following account of an experiment on an extensive scale in rearing calves artificially. It states that:—

“Five hundred calves are at present being weaned at Buscot Park by Mr. Campbell. Far too many together, some of our readers may rejoin; but whether the criticism be just or not can only be proved by the result. Certainly, Buscot presents facilities for a work of this kind possessed by few farmers. It is an estate of well nigh 4,000 acres, all in the hands of the spirited owner.”

The following is the method of treatment pursued:—“First, they receive very little milk, but are fed first upon milk, and gradually changed when about a fortnight old on to a diet of gruel. At present, Indian meal and a little linseed cake ground fine are the materials used, and the general method adopted is based upon the same principle as was enunciated by Mr. Henry Ruck before the Cirencester Chamber of Agriculture three years ago.

“The leading idea, both at Buscot and Mr. Ruck's farm, was to wean calves with the smallest possible amount of milk, and Mr. Ruck has not hesitated to state that any number of calves may be reared on his principle, say after the first fortnight, with little or no milk at all. Indian corn meal is the staple of the gruel used at Buscot, and this is diluted with the requisite amount of water, and given in buckets to the calves at the temperature of new milk. Mr. Ruck's method is rather more complicated, but it must be remembered that young animals will repay extra trouble and attention, and that a method of feeding may be so simple as to become monotonous to the animal and scarcely fitted to the special requirements of individuals.

“Mr. Ruck's plan may be thus described: 7 pounds of finely ground linseed cake is dissolved in two gallons of hot water, and to this are added two gallons of hay tea; 7 lbs. of mixed meal, consisting of equal parts of wheat, barley, oat, and bean meal, are also added with two gallons of water. This mixture, which may be described as 7 lbs. of linseed cake ground fine, 7 pounds of mixed meal, two gallons of hay tea, four gallons of hot water, is given to the calves as follows:—Two quarts in the morning, further diluted with two quarts of water; and two quarts mixed with two quarts of water at night. Upon this gruel the calves thrive well, and are weaned at twelve weeks old, having cost not more than from 1s. 3d. to 1s. 6d. per week. Mr. Ruck is fully convinced of the practical character of the method of weaning calves just described, but insists upon the importance of strict personal supervision and attention to the wants and peculiarities of appetite of each.”

### A Drover on Fattening Cattle.

Mr. Bela S. Hastings, who is one of the leading drovers from Vermont, in supplying cattle for the Boston market, gave his experience and observation in relation to fattening stock, at a late meeting of the Caledonia Co. Farmers' Club:

He said the main object of the farmer was to get the most out of his fodder. It does not pay to feed grain to a poor creature, one that does not take on flesh rapidly. Farmers will do better to dispose of such stock for what it will bring, and procure animals of good style. He believed that one-half of the grain fed was wasted by not being fed to good cattle. Another important point is, farmers do not feed heavy enough. He would commence with as much feed as they could bear at first, and then increase. In feeding twelve quarts of meal, the last four quarts are worth twice as much as the first four for fattening purposes. Some farmers complain that they do not get pay for the grain they feed out, but he had noticed that it was only those that fed light that thus complained. Whether the animal was to be fed a long or a short time, he would recommend heavy feeding. Mr. Hastings said he knew nothing better than corn meal. The cob is not worth much, if anything. Those persons of whom he purchased fat stock, who were the most successful, and made it most profitable, were those who fed meal largely. If a farmer has potatoes or other roots, it is well enough to feed those in part, but a farmer will do better to exchange some of his roots for corn than to feed roots altogether. It is important to feed regularly and not too often, as the stock will eat and lie down and ruminate. It is better to feed cattle but three times a day, and sheep but once.—*N. E. Homestead.*

### Judging Cattle by Points.

Cannot our Provincial Board of Agriculture get together a small committee of experienced men, with the view of framing a set of rules for the judges of cattle to go by in awarding the premiums at exhibitions. It might be tried first in one class only, say the Shorthorns, and if it was found to work well and proved satisfactory, the same plan could be gradually introduced into other classes. It is always a difficult matter to obtain the most desirable men as judges in a particular class, and it must be conceded that unless really first-class judges and men of experience can be obtained, there is always more or less dissatisfaction with the awards.

In framing the rules, regard should be had to the value of each point in the particular breed to be judged upon, and by fixing a sort of arbitrary scale, the acme of each point being designated on the set of rules by a number, and graduated according to the value or desirability of the presence of that particular point, so as to make up, when all

the points are complete, the highest quality incident to the breed. These certain points being specified, and numbered gradually from lowest to highest on the scale of rules, and each judge having a book into which to mark his opinion of the value of each point, the sum total of the whole, as set to the credit of each animal named in the book, would be added together, and the animal attaining the highest number of marks would be entitled to the first place, and so on.

The report would then be made up of the opinions of the different judges on each separate individual point, instead of, as now, being derived from the impression made upon the judges collectively after consultation, and interchange of opinions with each other, which in many cases results in one judge moulding the opinions of the others to his own. Exhibitors, too, would thus be better satisfied, and know on what grounds each particular animal had been approved of or rejected.

#### Turning out Horses to Grass.

A correspondent of the *Times* writes as follows on this subject:—"When horses have suffered in their work from anything of the nature of strain of the sinews or their ligaments, or when their legs are very much the worse for wear, they should be allowed no exercise but such as they can get in a loose box; they should be treated as a man would be who had sprained his ankle and must be confined to his sofa. On the other hand, I have seen horses which were good on their legs, but stale, groggy, and tuckered up from hard work and dry and exciting food, improve as if by magic when turned out to grass on the following plan. I have housed them during the day time in a well-ventilated building, darkened so as to exclude the sun and flies, giving them about half a peck of grain daily, with bran and clover chaff; they have then been turned out at night in a pasture in which there was an abundance of grass. Under these circumstances they are never tormented by flies: when they are out all is cool and quiet, the long grass saturated with dew supplies an admirable, cool, refrigerating poultice to their legs and feet, and the grass they get, combined with their daily feed of grain, seems to plump up their bodies without much interfering with their condition for work. I have taken up horses treated in this way as late as September, and had them in very fair order for work by the commencement of the hunting season. I am aware that this system will not suit all horses; small barrelled washy horses are too much purged by green food; they are also, in general, restless and irritable, galloping about and teasing their companions, and so are better at home. It may be said against this plan that it gives more trouble than keeping the horses altogether in the stable, and is not economical. This may possibly

be the case, but with valuable horses we must not grudge a little trouble; and I believe, in the long run, it will prove more economical than leaving the animals out in the field all day exposed to the heat of the sun and the attacks of the incessantly persecuting flies.

"I cannot sufficiently praise what Mr. Cartledge said some time ago respecting the allowing horses a more liberal supply of water than is done by many horsekeepers; in fact, the supply should be unrestricted, and where it can be possibly managed it should be always placed before them. The mastication and digestion of such dry provender as hay and corn are cannot be properly carried on without occasional sips of liquid to wash them down. Let a man try to make a hearty meal on oatmeal cake or biscuit without any drink, and he will soon find himself nearly choked."

#### Bulls among Cows.

A bull should never be suffered to run at large with the cows of a dairy. "But why this stringent rule?" it may be asked. Simply this: The propensities of his nature lead him to begin teasing a cow from the moment her sexual heat is discovered by him, which may be several hours before she is willing to receive him, therefore he neither feeds himself, nor permits her to feed, and as a matter of course her secretions of milk measurably cease, and what milk she does secrete becomes feverish, and when drawn affects the quality of all the milk with which it comes in contact. When the cow comes in heat, it will always be discovered either at night, or in the morning when the milkers go among them. When the milking is done, separate the affected cow from the others, and lead the bull from his stable, or yard in which he is kept, and admit him to one, and not exceeding two services to her. One effective service is as good as more. Then take back the cow to her stall, stable or small enclosure by herself alone, and if at night, let her remain until morning, or if in the morning, five or six hours: then her heat will have passed off, and she will graze, or feed quietly, and the other cows will not interrupt her. The bull, of course, will be quiet and fit for service when again needed.

It may be objected that this makes too much work. Not so. It is far less trouble than to let the bull run at large, ranging about, always in the way, wearing off his flesh for no good, besides keeping him under control. Bulls sometimes get cross, and are dangerous to passers-by when running at large, besides acquiring mischievous habits. A bull should no more be suffered to run loose among dairy cows, than a stallion should among mares, and nothing but sloth or negligence will tolerate it.

Another fact has been lately developed in dairy districts where abortions have been frequent, which is that bulls, from excessive

copulation, become diseased in their generative organ from serving lately aborted cows. They take the aborting disorder in such service, and communicate it to the wombs of other healthy cows, which, when the portion gets to a certain stage of growth, proves fatal, and it is discharged in abortion, and the use of the cow for the season is lost. Therefore, a cow that has aborted should be taken from the herd, for a length of time, some weeks at least, and get into perfectly good condition before suffered with the healthy again. It may be said that this is only a theory; but it is a theory so well founded on recent experiments as to be well worth the dairyman's attention.—*L. F. Allen in Prairie Farmer.*

Mr. John Snell, of Edmonton, has recently sold to Mr. J. L. Armstrong, of Guelph, the Shorthorn bull-calf "Welcome Duke," three months old, sired by Loudon Duke, dam Welcome by Baron Solway. Also one Berkshire boar-pig. Mr. Snell has also sold a Berkshire boar to Mr. Edward Jeffs, of Bond Head, and one to Mr. James Nichols, Newmarket.

SALE OF HER MAJESTY'S YEARLINGS.—The annual sale of the royal yearling foals was held at the Hampton Court Paddocks on the 11th of June, when Mr. Tattersall submitted seventy-four colts and fillies to public auction. There was a large and distinguished company present: the bidding was spirited, and high prices realized. The total sum of the sale amounted to 4,630 guineas, making an average of 193 guineas per head. The highest price secured was 950 guineas for a colt by Trumpeter out of Ayacanora, which was purchased by the Marquis of Anglesey. 650 guineas was the next price, given by Mr. T. Brown for a filly by the same horse out of Hepatica. 520 and 510 guineas respectively were given for other colts, also purchased by the Marquis of Anglesey.

SHOEING HORSES.—Two gentlemen connected with the British army—Mr. George Fleming, veterinary surgeon, and Col. Fitzwygram—have recently published works on the treatment of the horse, and both energetically protest against the paring and cutting away of the sole and frog which often accompanies the operation of shoeing a horse. Nothing can be more barbarous than the carving and cutting of a horse's foot before shoeing, though on his skill in this many a farrier prides himself. The idea that the frog must not be allowed to bear on the ground—that the sole must be thinned till it "springs on the thumb," is a most pernicious one. On this subject Mr. Fleming's precept is: "The sole, frog and bars must on no account, or under any conditions, except those of a pathological nature, be interfered with in any way by knife or rasp." At each shoeing the hoof must be shortened to its natural proportions, beyond which it has grown behind the protecting shoe: it is this which forms the chief difficulty of the work, and is the criterion of the good workman.

## Veterinary Department.

### Sunstroke in Horses

The extremely hot weather of the past few weeks has been very severe upon horses in some parts of the country. We have known of several cases where death was the result, whilst in others recovery took place even after the animal had been completely prostrated for a considerable period. The premonitory symptoms of sunstroke are dullness and impaired appetite. The horse, although apparently weak, does not perspire freely; the pulse is weak, and the breathing is accelerated. When these symptoms are exhibited, and the horse is still kept at work, he becomes unsteady in his walk, will fall down, and is unable to rise; the pulse becomes very quick, the breathing is laboured and the animal becomes almost blind; he will occasionally raise his head and moan. Such cases are best treated by sponging the head and upper part of the neck with cold water, and also applying ice between the ears for a short time. The body should be rubbed over, and the animal kept as much as possible in the shade. A stimulant carefully administered is of the greatest benefit. A convenient and useful stimulant is four or five ounces of brandy, given in eight ounces of water, or instead, one or two ounces of sulphuric ether in eight ounces of water. The mouth should be washed out every few minutes with cold water, and whenever the animal appears to revive allow him a few mouthfuls of water. An enema of soap and water should also be given. When the horse recovers so far as to be able to stand, he must be kept in a well-aired box, and fed on bran mash for a few days, and made to take a little walking exercise morning and night.

### Sheep Dipping.

Most dips agree in containing largely dissolved in water a certain quantity of alkaline or saponaceous material. Uniting with the natural greasy matters abundant in all healthy fleeces, the alkaline ingredients of the dips form a soap which cleanses and brightens the fleece. These cleansing effects are secured by a dip containing soft soap and carbonate of potash; but such materials do not suffice effectually to kill the ticks which at this season affect the lambs. Some more potent or poisonous substances must therefore be added to the soap and alkali. Impure carbolic acid has lately been in great favour; it commends itself on account of its cheapness, and the certainty with which it destroys insect life, but it has the serious disadvantage, when freely used in an impure state, of communicating a dark colour and disagreeable odour to the fleece. Sulphites of soda have been used; they whiten and soften the fleece, and in tolerably strong solutions they are destructive to the ticks, but they have the disadvan-

tage of being somewhat expensive. Much has been lately said and written against dips containing poisonous matters. The losses which have certainly resulted from the abuse of arsenical and mercurial dips have been made the most of. But such dips, although dangerous when carelessly used, may, with reasonable precautions, be safely employed. For the certain destruction of the ticks they are undoubtedly superior to most of the non-poisonous dips. The two active ingredients usually employed are arsenic and corrosive sublimate. The latter is usually added to the soap and alkali in the proportion of from three to five grains to every gallon of water. The arsenic or arsenious acid is, however, in more general use. The proportions generally employed for the arsenical dip are a pound and a quarter each of arsenic, carbonate of potash, and sulphur, dissolved, with from three to five pounds of soft soap, in a few gallons of boiling water, and afterwards diluted, so as to make about fifty gallons of fluid. This quantity will suffice to dip fifty strong lambs, or about the same number of sheep, if they have been recently shorn. To add whiteness and lustre to the wool, and to free the flock for a short while from the flies which in damp hot weather are so apt to pester them, a pound or two extra of sulphur is often added to the mixture.

Dry warm weather should, if possible, be selected for sheep dipping; large tubs or square baths made for the purpose are used, each sheep should be kept immersed for about a minute; the head, however, must of course be kept clear of the fluid, on a dipping-tray the fleece is squeezed so as to rid it from most of the fluid; the traps with which it is usually convenient to secure the legs are removed, and the sheep turned into a yard from which fodder and straw have been previously removed; here they will remain for at least an hour, until the fleece is so dry that there is no risk of the poisonous materials falling upon the grass, and being thence cropped up by the hungry sheep. Until the ewes are shorn it is scarcely worth while to dip the lambs, which in a few days would receive a fresh supply of the annoying ticks from the fleece of their mothers. So soon, however, as the ewe is out of the wool, when she will cease to be troubled with ticks, the lambs should be dipped. Many flockmasters take this opportunity of weaning the lambs; but it is generally desirable to permit the lambs to remain longer with their mothers. —*North British Agriculturist.*

### Urinary Organs of the Horse.

The urinary organs consist of the kidneys, the ureters, the bladder, and the urethra. The kidneys are two glandular bodies, situated in the lumbar region of the abdominal cavity. They secrete the urine, and are very powerful in their action in the horse, and may be considered as the great elimina-

tors of the body. The kidneys are supported in their position by cellular tissue, and the peritoneum, and also by the blood-vessels in connection with the organs. Each kidney is formed of two substances, an outer or cortical substance, and an inner or medullary. The latter is of a dull friable nature; easily torn when denuded of its covering. The cortical substance, forming the outer part of the gland itself, sends in prolongations towards the pelvic portion of the organ. Each kidney is supplied with blood by means of a large blood-vessel, the renal artery, and the urine is secreted by the minute branches of that artery into minute tubes called the *tubuli uriniferi*.

The urine leaves the kidneys by means of two ducts, called the ureters, which are continued to the bladder; they are muscular membranes, and are about the size of a quill. They are continued towards the pelvic cavity, and terminate at the upper and back part of the bladder, entering one on each side, in an oblique direction, by a narrow opening which is guarded by a fold of the lining membrane of the bladder.

The bladder is situated within the pelvic cavity, and serves as a reservoir for the urine, and is formed of an inner or mucous coat, a middle or muscular, and an outer or serous, which is not a perfect coat, covering it only partially. It is held in its place by ligaments, and occupies the pelvic cavity according to the quantity of fluid it contains.

The contents of the bladder are evacuated by means of the urethra, which also conducts the seminal fluid in the male animal. This canal, in the horse, is upwards of two feet in length, and presents a sharp curve not far from its commencement. Therefore, in cases where it is necessary to remove the urine by an operation, the elastic catheter is the only one that can be used.

### Cutaneous Irritation.

To the Editor.

Sir,—I have a horse that is apparently afflicted with worms, which sometimes pass from him. They are about one inch in length, white and round, and about the diameter of a knitting needle. I have tried various remedies without effect. The horse will straddle a small tree or stump or the corner of the fence, and rub himself for half an hour. Can you advise me what to apply?

DUNHAM.

REPLY.—Your horse appears to be suffering from some disease or irritation of the skin, probably eczema, perhaps brought about by faulty digestion, the result of improper feeding. We would recommend a smart dose of purgative medicine, as six drachms of Barbadoes aloes. After the physic operates, give one drachm daily of Iodide of Potassium in his water or in his food. Have the irritable spots washed every second day, with Castile soap and water, and give the horse a good allowance of nourishing food.

## The Dairy.

### Some Causes of Bad Butter.

It is not so easy to make bad butter in June and July as in November and December. Hence it happens that we sometimes, by accident, stumble on a palatable roll at a city store. Still, in spite of the advantage of the season, and all that has been written on the subject, there is great defect in the general quality of the article supplied to the Canadian market. The causes of failure are various. In some cases the prevalence of weeds in the stubbles and pastures after harvest seriously affects the quality of the milk given by the cows. To ensure the milk being good, the cows should be kept in clean pastures, that are full of herbage yet entirely free from weeds.

Sometimes the cream from the milk of one cow will spoil all the crockful for butter-making. It is not easy to account for this, or the how or why of its occurrence. A cow that is very nervous and timid, always running off on the approach of another cow, is liable to give milk, the cream from which has a bad effect on other cream. The same may occur with a cow that is being continually chased about in the effort to make her stand still or get into a corner to be milked. As a general rule, the quieter and more contented a herd of cows can be kept the better, and if there are any animals among them that show a contrary and vicious disposition, the sooner such are sold off and replaced by better ones, the better for the success of the dairy.

The use of bad water, either supplied to the cows through allowing them access to places where pools of muddy, stagnant water abound, or the washing of the butter when going through the process of butter-making with water from wells or springs that are in the slightest degree tainted in any way through sink drains, rotten curbs or other means, is also one fruitful source of butter not keeping well after being made.

The use of impure salt is another error sometimes committed more from carelessness than otherwise. Nothing but the very best and finest dairy salt (if fresh from the salt works so much the better) should be used.

### Packing Butter for Winter Use.

It occurs to us that a great improvement might be made in the quality and price of the autumn-made butter, if the farmers' wives would endeavour to inaugurate a new system of packing, and instead of using the large packages supplied by the storekeepers, holding forty pounds or more, and requiring several churnings, each perhaps differing in quality from accidental causes, and so making the whole package of unequal quality and value throughout, they would order the

cooper to make them of graduating sizes, holding from eight to thirty pounds each, according to their ability to fill each at one churning from the cows kept on the farm. If to this was added particular care in preparing and properly salting each lot according as the season is early or late and the weather favourable or not, it is likely these small packages would find a ready sale at much higher prices when the season of butter-making was closed, than under the present system of selling to storekeepers or filling large packages. Good stone jars might be used, but care must be taken that the inside glazing is not such as is formed of materials that if dissolved by the salt would injure the quality of the butter. For this reason hardwood packages are to be preferred; customers should be willing to pay the small cost of these to get a good article.

### Essentials to Dairying.

No man need expect to succeed in the dairy business, unless well provided with good shelter for his cows, as well as the proper grasses and water, and accommodations for milking, feeding and whatever else appertains to the conveniences and labour connected with it. It may be well to enumerate a few of these items, which are here offered for consideration.

1st. Permanent blue grass and white clover pastures on dry, elevated soil, or their equivalent in other grasses or herbage, enabling the cows to give abundance of rich, good flavoured milk. Common prairie and lowland grasses will not answer.

2nd. Abundance of pure water supplied by living springs, running brooks or permanent rills. Ponds or stagnant water are not healthy for dairy cows, and will not aid in making a high flavoured cheese or butter.

3rd. Barn stables or sheds into which the cows may be driven in excessive heats or cold storms for shelter, as all excessive temperatures, whether of heat or cold, of drought or moisture, affect the milk both in quality as well as quantity, and influence, more or less, the quality as well as quantity of the dairy products.

4th. Quietude of the cows, continually, whether at pastures in their yards or stables, together with gentleness in their treatment, and a continuous lovable care for them, so that they repose entire confidence in those who go among, care for, or handle them.

5th. Plenty of salt once a week to keep their bowels open, and their appetites good.

6th. Steady milkers; the same milkers to the same cows, continuously as may be possible, so that the cows get accustomed to those who draw their milk; and let the milking be done silently, without talking, as all unnecessary noises disturb the cow, and more or less affect the equable and steady flow of her milk. The milk cow is a very sensitive animal.

7th. Perfect cleanliness in the pails and vessels which receive the milk, and clean hands to the milker. For these purposes a bucket of water, washbowls and a soft linen or cotton cloth to wipe off the udders, should always be in attendance.

8th. In addition to all these requisites, when a prolonged drought dries the pastures, green crops of grass, the small grains, or Indian corn should be sown in the spring, to help out the pasture grasses, and keep up the flow of milk. For the want of these, oftentimes half the dairy products of the season are lost. Their food should be daily cut, and fed to the cows in clean mangers.

The enthusiastic dairyman just beginning the business may say "If I have to encounter all these difficulties, I may as well throw up the business at once, for I have neither the capital to expend in so multifarious a preparation, nor have I the convenience on my farm to supply all requirements, even if I had the moneyed means to provide them." The answer to this is: No man should attempt dairying unless he goes into it as a permanent business; and every kind of permanent occupation requires a certain amount of preparation to prosecute it to its most successful results. He may have his cheese house, his kettles, cauldrons and presses in ever so good order, and which can be suited in one place about as well as another; but the material of which his cheese or butter is to be made, must be of good quality and perfectly arranged, or his work will prove a failure.—  
L. F. ALLEN in *Prairie Farmer*.

### Milk and Butter Obtained per Cow.

In the *Agricultural Gazette* for Feb. 8, 1868, a correspondent gives his experience of dairy farming. He says: "I consider 720 gallons (2,880 quarts) a fair return in a year for a cow, and this quantity of milk, if the food do not contain more than 80 per cent. of moisture, will produce from 280 to 290 lbs. of butter." This same writer says that 25½ lbs. of milk, or about 10 quarts, will make 1 lb. of butter. He also states that 5 gallons, or 20 quarts, was the highest daily yield of one cow. He was evidently a practical man, for he actually kept 48 cows. He states that 47 cows actually gave throughout the year an average of 84 gallons daily, or 84 by 365—30,660 gallons, or 122,640 quarts in one year, from 47 cows, or 2,610 quarts from one cow; and if 10 quarts produced 1 lb. of butter, that would be 261 lbs. of butter yearly from each cow, as the average from 47 cows in one year. Again, in the *Farmer's Almanac* for 1868, I find it stated that a Holderness cow gave 29 quarts daily, yielding 1 lb. of butter from each 12 quarts. An Ayrshire cow gave 20 quarts daily, yielding 1 lb. of butter from 9½ quarts; an Alderney cow gave 19 quarts, yielding 1 lb. of butter from 12 quarts; and a Devon cow gave 17 quarts, yielding 1 lb. of butter from 9¾ quarts. Of course these last are exceptional cases, but your own cor-

respondent gave his actual experience of one year of a dairy of 47 cows. Now, I reckoned on 3,000 quarts, but I allowed 12 quarts to produce 1 lb. of butter, which gave 250 lbs. in a year, instead of 261. I do not think that I have greatly over-estimated the produce of a cow. Moreover, in Dorsetshire, it is by no means uncommon for a farmer to let out his dairy to a dairyman at £15 and even £18 per cow per annum, and that dairyman makes a profit out of it.—*Scottish Farmer.*

### Winter Feed for Milk Cows.

Hay for the cow in the winter is the main food, and there is nothing so good as early cut hay, or that can or will take its place. A cow will do well on hay if she is dry, and hay plenty and good. But here come the pinch—plenty and good. A cow that has all the hay she can eat from morning till night, given in three or four feeds, has plenty, and if the hay is green and fine, and will tie in knots without breaking or shaking, we will call it good; if not, we call it poor, and the cow needs better feed if she is dry. But for cows in milk, they require something more than this good hay added to the rest.

Now, we believe that feed that will make the most beef in the shortest time, will also make the most and best milk in the shortest time. This is our experience. We would say feed corn meal and roots mixed, and would prefer the potato to any other root. But the weather has a great deal to do with feed. Corn meal being a hot food, or generating heat, and roots cool food, to feed light we should mix more meal in cold weather, and less in warm weather, with the roots.—*Country Gentleman.*

### Advantages of Not Colouring Cheese.

Among the advantages of not colouring cheese, an English authority thus states—

1. An uncoloured cheese will ripen sooner, and be fit for use.
2. No intelligent dairy farmer, either of Cheshire or Somersetshire, has on his table coloured cheese. They always prefer one uncoloured, as richer and higher in flavour.
3. It is curious to remark no country except Great Britain colours cheese. The only uncoloured cheese is the Stilton, which is one of the best flavoured and richest cheeses. We find no coloured cheeses in Holland; none in Switzerland, where Gruyere is made; none in Lombardy, the country of the Parmesan; nor in France, which produces the delicious Rochfort cheese. It greatly behoves our dairy farmers to do all they can to improve their Cheddar, and to prevent it being lowered in value in the market by the superiority of the American. And as it is ascertained that colouring cheese affects its quality and richness, surely this ought to be a chief reason to abandon it, and bring into the market the best-made Cheddar uncoloured, to cope with that which comes from America.

## Entomology.

### New Treatment of the Curculio.

It will be remembered that last season, in a communication to the CANADA FARMER, I stated that a certain plum tree set out in a hard door-yard had borne fruit the same year it was planted. There were on it about seventy-five plums of the best and largest description. I also stated that some other trees of the same age, planted in a different position, namely, amongst other fruit trees and vegetables, were loaded in a similar manner with fruit, but it was all destroyed before ripening by the curculio. I also mentioned that we had six Black and White Heart cherry trees within thirty feet of the door-yard, but also planted amongst vegetables; the fruit of which was entirely destroyed from the same cause.

I proposed the same cure for the cherries that had been tried with the plums in the door-yard. I even went further for proof, and last fall I removed one of the plum trees from the vegetable bed, and planted it in the door-yard, with the full belief that it would this year escape the pest by that treatment. In this, my expectations have been entirely fulfilled. Both the tree removed last fall, and also the one planted the fall previous, are quite free from curculio, and not one plum has fallen or is bitten by that insect.

I determined to treat the six above-mentioned cherry trees on a similar principle; but as they were about four inches diameter at the stem, they were too large to remove. I therefore constructed a yard of smooth, hard-packed earth, about 15 feet wide by 52 feet long, which allowed a margin all around the trees. This yard I carefully attended to, keeping it swept, and the weeds sheared off with a very sharp hoe, without disturbing the earth more than one-eighth of an inch in depth. This was done to prevent the curculio having any harbor whatever. To test the presence, or otherwise, of the insect, the trees were shaken every day for some days, with a sheet carefully extended underneath on the ground to catch any insects that might fall, but I never saw more than three, two only of these I succeeded in killing. The result of the curculio experiment is a splendid crop of fruit, where for about four years previously all had been destroyed each year. Not one cherry that I know of has been bitten or fallen to the ground this season. There may have been a few, but they have escaped notice, if there were any.

As the result, then, of this experiment, the cherry trees that for the past four years, though loaded early in the season with fruit, had not ripened a dozen cherries during the whole period, have this year yielded an abundant crop, and this notwithstanding the fact that the cherries are a very late variety, and

therefore exposed much longer to the attacks of the curculio. My experiment shows that they will mature in a smooth swept yard, where not a weed is allowed to grow. I have still reserved one row in the old situation to test in future seasons. The shaking did not of itself do any material good, for I shook one of the plum trees that I was obliged to leave in the garden, the same as I shook the cherry trees, yet plum after plum has fallen, and I doubt if one will ripen.

The principle on which I shook the tree was—to disturb any chance curculio, and cause it to fall to the ground, believing that if I could so disturb them, they would probably pass to some other locality; my theory being that the curculios that do the mischief are indigenous to each locality, that they are born there, and, in fact, have a home, and to break up that home gets rid of the inhabitants.

There were, as before stated, some curculio at first, as a few were caught—three in number—but I easily account for them by the fact, that some remained in the earth and had passed to the trees before the hard smooth surface was formed, as it was only completed in May, whereas had it been done in April, before any curculio were about, I have no doubt whatever there would have been none to be seen afterwards.

I subsequently constructed a frame and covered it with paper, as the best mode of catching the falling insect when the trees were shaken, but never saw more than the three in number before alluded to.

I am now, so far, quite sure of the remedy—provided only it has been thoroughly and carefully carried out, not half done or neglected. The soil must not be loosened by hoeing, which, in fact, amounts to partial cultivation. There must be no fissures allowed, or of course there will be an excellent harbor provided for curculio. When weeds appear they will do so at first—they must be shaved off with a very sharp hoe, as keen as a knife, probably a good sowing with salt and ashes would keep the weeds under, and would do good; but the broom is the only thing that will fulfil all requisites. It fills up all inequalities and cracks, and at the same time disturbs all such harbors that the insect might have been accustomed to occupy. The recent discovery of the use of the so-called "traps"—i. e. bits of chips or other small substances laid at or near the foot of the tree, to afford shelter to curculio, would go far to substantiate the views herein set forth, and the absence of such shelter may be the cure required.

I am about to construct a plum garden, and mean to act on these recent ideas, and when success has proved the course pursued to be correct, I shall be pleased again to ask the required space for its ventilation. C.

NOTE BY EST. ED.—We insert the above communication, as the writer is a valued correspondent on many subjects, but we do not



subscribe to all his remarks. We do not think, for instance, that any individual curculio "has a home," and that by breaking up that home we can get rid of him. Curculios are winged insects, and are able to fly to considerable distances if they choose; increase of numbers and scarcity of food will, no doubt, cause them to migrate to other localities beyond their native haunts, but we hardly imagine that uncomfortable domestic arrangements would trouble them much. As a very small crevice in the bark of a tree, a tiny chip, stone or clod on the surface of the ground, will afford them a sufficiency of shelter, it would be no easy task to deprive them of a home, even in a garden of very minute proportions. If we persistently kill all we can by "trapping" in the spring, jarring in the summer, and destroying the fallen fruit, we may hope to reduce their numbers to such an extent as to prevent their depriving us of any serious amount of our fruit, but we do not believe that there is any other way.

### The Colorado Potato-Bettle.

#### Invasion of Canada!!!

In the WEEKLY GLOBE for March 11th, and the CANADA FARMER for April, we warned the potato-growers in the extreme western part of Canada, and especially along the banks of the River St. Clair, of a probable invasion of their fields by a most destructive insect pest—that scourge of the far-western country, the terrible Colorado Potato-bettle. A few days ago we received the following letter from Mr. John Gunn, of Windsor, County of Essex, which, with the specimens of the beetle enclosed, proved that our warning had not been uncalled for, and that our prediction had been only too soon fulfilled:—

"SIR,—Enclosed I send you a number of beetles which, I think, are the Colorado Potato-bettle referred to in the GLOBE during the month of March last. Whatever they are, they have more or less damaged every potato patch in this locality, and according to all appearance will be the means of destroying the potato crop altogether. If you can give the farmers of this neighbourhood any suggestions that will tend to mitigate the ravages of this insect, you will confer a great favour. It made its appearance about two weeks ago; some pieces of potatoes have been so far saved by shaking the beetles off and killing them. Among the specimens I send you, four appear to be fully developed. As soon as they are able to fly they go and deposit their eggs in some other place.

"Windsor, Ont."

"JOHN GUNN."

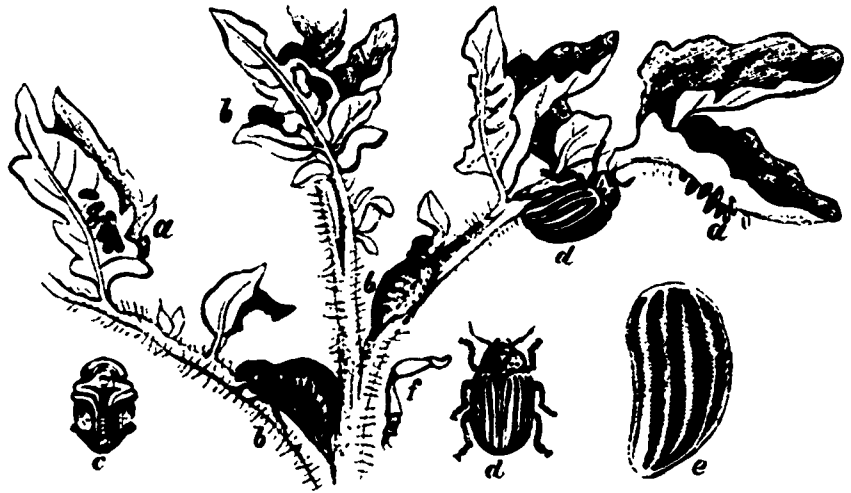
The specimens sent us by Mr. Gunn, consisting of eleven larvæ and four beetles, proved conclusively that he was correct in believing the destroyer to be the dreaded Colorado potato-bettle, (*Doryphora 10-lineata*, Say). As we related in the article alluded to above, this insect has been gradually march-

ing eastward from the Rocky Mountains, advancing from one potato field to another at the rate of about fifty miles a year; in 1859 it was a hundred miles west of Omaha in Nebraska, in 1870 it has landed on the western shores of Canada! The late Mr. Walsh was the first to observe closely the movements of this insect, and to predict its eastern advance, which he lived to see verified to a great extent; to his coadjutor, Mr. Riley, is due the credit of being the first person to rear the insect through all its stages from the egg to the beetle, and to record his observations. From the writings of these two eminent entomologists we are enabled to give the following particulars respecting the life and habits of this pestilent creature: of course we have had no acquaintance hitherto with it personally, and have had to depend upon the observations of others for our knowledge of it; till we received the specimens from Mr. Gunn, we had never seen the creature alive, though quite familiar for years with dried specimens sent us from the United States.

back. The larvæ are quite as voracious feeders as the beetles themselves. The insect belongs to the same family (*Chrysomelidae*) as our common Three-lined potato-beetle (*Lema trilineata*, Oliv.), but is larger and very much more destructive.

The accompanying illustration, representing this insect in its various stages, will enable any one to recognize it and distinguish it from the common Three-lined Potato-beetle. The engraving and references need scarcely any explanation. *a* shows the eggs; *b* the larva; *c* the pupa; *d* the perfect beetle; *e* a single wing-cover, and *f* a leg, both magnified.

The depredations of the Colorado beetle are almost entirely confined to the potato plant, though it occasionally feeds upon the egg-plant, horse-nettle (*Solanum*), tomato, ground-cherry (*Physalis*) and Jamestown weed or thorn-apple (*Datura*), all of which belong to the botanical family Solanaceæ. Its original food-plant in the Rocky Mountains is a species of wild potato (*Solanum rostratum*), to which it was confined until the advance of



The Colorado Potato-bettle, regarded as a mere specimen, and not considering its destructive qualities, is a very beautiful insect indeed; its wing-covers are cream colour, with five longitudinal black stripes on each; its head, thorax, and under side orange-red spotted with black; when flying, its expanded wings are of a bright rose colour, giving it a beautiful appearance as it flies in the sunlight. There are about three broods of larvæ in the year, each of which goes under ground to pass into the pupa state, the two first broods coming out of the ground in the beetle state about ten or twelve days afterwards, while the last one stays under ground all winter, and only emerges in the beetle state in the spring, just in time to lay its eggs upon the young potato-leaves. The eggs are of a yellow colour, and are laid in patches of twenty or thirty on the under side of the leaves. The larvæ are of a deep orange-red colour, with a black head, black margin to the thorax, and two rows of black spots along each side; they are, when fully grown, about half an inch long, and have the body much humped up about the middle of the

civilization brought the cultivated potato within its reach.

It is satisfactory to learn that this creature has many insect foes which tend to keep it in check and prevent it from having everything entirely its own way, though they are as yet quite insufficient to stop its progress from one part of the country to another. In the *American Entomologist* for November 1868 there are enumerated about a dozen different species of insects that prey upon the Colorado beetle in some one or more of its stages, viz. a parasitic two-winged fly (*Tachina*), which lays its egg on the living larvæ, from which a maggot hatches out, burrows into the body of its victim, and eventually destroys it; from different kinds of lady-birds—the Spotted (*Hippodamia maculata*, De Geer), the Nine-marked (*Coccinella 9-notata*, Herbst), the 13-dotted (*H. 13-punctata*, Linn.), and the Convergent (*H. convergens*, Guer.), all of which are common in Canada—these little beetles, which are so useful in destroying the plant-lice or aphides of the hop, devour, both in their larval and perfect states, the eggs of the Colorado beetle, and thus, as we may say,

"nip the evil in the bud;" the Spined Soldier-bug (*Arma Spinosa*, Dallas), which thrusts its beak into the enemy's larva, sucks his body dry and throws away the empty skin; the Bordered Soldier-bug (*Strictus fimbriatus*, Say); the Many-banded Robber-bug (*Harpactor cinctus*, Fab.); a large species of Tiger-beetle, and several species of the Common Ground-beetle, to which we some time ago drew attention as being thoroughly beneficial insects. All of these, and many others, assist in the good work of keeping the enemy in check, but as they are not sufficient to cause his complete rout, man must come forward and lend his aid also.

**Artificial remedies.**—The first remedy tried has the simplest and most natural one, namely, hand-picking; but this soon proved to be too troublesome and expensive for application on a large scale. Various poisons were then tried, such as white hellebore, etc.; but the most efficacious has proved to be a mixture of Paris Green and flour. Take, say, a pound of Paris Green, mix it thoroughly with twice the weight of flour, then dust the mixture through a coarse muslin cloth over the affected potato plants early in the morning while still wet with dew; the beetles and larvæ eat of the poison adhering to the leaves, and die in a few hours. The quantity mentioned will suffice for an acre. This is a deadly poison, and therefore great care must be exercised in its use; do not let children near it or the plants to which it has been applied, on any account; be very careful not to inhale any of the dust; and apply it in the field in such a way that the wind may blow it from you, and not over you. Ashes may be used instead of flour, if more convenient. No efforts should be spared to exterminate these wonderfully prolific and destructive insects whenever they make their appearance.

### Noxious Larvæ.

Whilst insects are much more beautiful and perfect, and consequently more attractive and interesting, both to the entomologist and the amateur, in the imago or winged state, than in the larva or grub state, yet it is in this last condition that they are of chief importance to the farmer and horticulturist. This we shall easily understand from the following considerations. In the first place, it is in the larva state that the insects accomplish the whole of their growth; no insect increasing in size after it has attained the winged form. It is therefore in the larva state that the greatest amount of food is required, and accordingly it is in this state only, with a few exceptions, that insects commit those extensive ravages which often render them the scourge of the husbandman.

Secondly, many insects which in the larva state are furnished with mandibles or teeth fitted for gnawing herbage, are so completely changed, that in the perfect state the mouth consists of a long flexible tube or sucker, incapable of injuring vegetation. Such are the

extensive tribe of caterpillars, which, in their perfect state, become converted into moths or butterflies.

Thirdly, as a general rule, insects live much longer in the larva than in the perfect state, and therefore have more time for mischief. Many of the Lepidoptera live several months as larvæ, but only a few days as imagines or perfect insects. Some of the most pernicious Beetles, namely, the May-beetle, which comes from the White grub, and the Two-striped Saperda, which is the parent of the Round-headed Apple-tree Borer, exist three years in the larva state, and not often more than as many weeks in that of the perfect insect.

It is in the larva state, therefore, we repeat, that insects are of the most importance to the agriculturist, and it is natural, when he meets with these mischievous creatures, that he should feel interested to know what is their name and nature, and into what kind of winged insects they will ultimately be changed. It is in order to afford some assistance in gratifying this laudable curiosity that we have drawn up a few practical generalizations, which are recorded in the sequel.

Insects, with respect to their transformations, are divisible into two widely different sections. In one the metamorphosis is said to be incomplete; that is, the insect retains the same form, or nearly the same, in all its stages of larva, pupa, and imago, and is active in the pupa, as well as in the other states. The pupa is distinguished by having rudimentary wings, and the imago by having wings fully developed. The grasshopper furnishes a familiar example of this kind of metamorphosis.

In the other section, the metamorphosis is complete; that is, the insect undergoes such a total change that its several states bear no resemblance to each other, and the insect is inactive in the pupa state. The caterpillar changing to a chrysalis, and then to a moth or butterfly, furnishes a well-known instance of complete metamorphosis. To the former division belong the orders Orthoptera (Grasshoppers, etc.) and Hemiptera (Bugs, Leafhoppers, etc.); whilst the latter includes the vast majority of insects constituting the comprehensive orders of Coleoptera or Beetles, Lepidoptera or Scaly-winged Flies, Hymenoptera or Clear-winged Flies, and Diptera or Two-winged Flies. The order Neuroptera, which is in a great measure aquatic, forms a connecting link between the two sections, the greater number being active in all their states, whilst in a few families, such as the MYRMELEONIDÆ (Ant-lions), and the HEMERORHIDÆ (Lace-wings), the species undergo a complete transformation.

If, in accordance with the views of some recent authors, we unite the anomalous group of STREPSIPTERA to the order Coleoptera, and moreover include the harmless PHRYGANEIDÆ in the order Neuroptera, then we can make the broad assertion that every

order of insects contains species injurious to mankind. By far the larger proportion of noxious insects belong to the two orders Coleoptera and Lepidoptera, either one of which contains nearly as many injurious species as all the other orders together.

Of the one hundred and seventy-eight families recognized by Mr. Westwood in his classification of insects, sixty-five, or rather more than one-third, contain noxious species. Of these sixty-five families, I find but six in which the species are injurious exclusively in the imago state, viz., the Cantharides, the Rutelidæ and the Cetonidæ amongst the Coleoptera, the Formicidæ (Ants) in the order Hymenoptera, and the Culicidæ (Mosquitoes), and Tabanidæ (Horse-flies) in the order Diptera. And of these six, none except the Cantharides can be classed with the more seriously injurious insects. The species of all the other fifty-nine families are injurious exclusively or chiefly in the larva state. In some instances, indeed, and especially amongst the phytophagous Coleoptera, namely, the Chrysomelidæ and their allied families, and also in those orders wherein the species undergo an incomplete metamorphosis, the larvæ and perfect insects usually feed together, and it might be thought impossible, at first sight, to tell which are the more destructive. But when we consider the important fact to which we have before adverted, that the whole growth of insects takes place in the larva state, we must conclude that even in these cases, the principal damage must be effected whilst the insects are in the preparatory stage. If to this we add that one of the most destructive orders of insects, namely, the Lepidoptera, commit all their havoc in the larva form of caterpillars, we shall be able to form some estimate of the preponderance of damage effected by insects in the larva state.—Dr. W. Le Baron in *American Entomologist*.

### PART II.

Let us now enquire if larvæ exhibit any characters by which we can so classify them as to determine to what orders and families they will respectively belong when they shall have attained their perfect state.

The difficulty which has attended all attempts to classify larvæ upon their own characters, and at the same time preserve their relationship to their respective imagines, strongly exhibits the comparative inferiority or degradation of the larval state. We can indeed classify larvæ into what seem to be natural groups, founded upon their most important and prominent characters; but when we come to put opposite to them, in parallel series, the perfect insects which these larvæ produce, we are astonished to find that every vestige of relationship is lost. Take, for example, the classification of larvæ by Kirby and Spence. These authors arrange larvæ in five principal groups. The first group produces, when arrived at the perfect state, a heterogeneous mixture of Coleoptera, Hyme-

neptera and Diptera. The second group produces Diptera only. In the third, two of the most remote orders of insects, the Coleoptera and Neuroptera, are brought into juxtaposition. In the fourth, a part of the Tipulidæ are separated from the rest of their family, and from the Dipterous order, and associated with the Micro-Lepidoptera. And in the fifth group, Coleoptera, Hymenoptera and Lepidoptera are indiscriminately associated together.

Still the practical question remains whether any general rules can be established, by which we can know what form the noxious larvæ we meet with will ultimately assume.

In order to understand what follows, it is necessary to state that larvæ have legs of two kinds: first, the true legs, representing the legs of the perfect insect, which are comparatively firm, conical, and jointed, and, when present, are almost always six in number, and attached to the first three segments of the body. Secondly, the spurious legs, or prolegs, which are short, thick, muscular and unarticulated, varying in number from two to sixteen, and attached to one or more of the eight last segments.

1st. *Generalization.* All larvæ generally known as Caterpillars, and distinguished by having both legs and prolegs, produce either Lepidoptera, or Saw-flies in the order Hymenoptera; and the larvæ of the Saw-flies are distinguished from those of the Lepidoptera by having more than five pairs of prolegs; and by having only two eyes, whilst the true caterpillars have ten or twelve, and also by their habit of rolling themselves into a spiral coil.

2nd. As a general rule, hairy Caterpillars produce moths, whilst spiny or naked ones produce butterflies or sphinges. The rule may be more accurately stated thus: All densely haired caterpillars produce moths, but all the larvæ of moths are not hairy. The caterpillars of the butterflies and sphinges are either naked or ornamented with spines, or with very short or scattered hairs.

3rd. Wood-boring larvæ belong mostly to the Coleoptera; but also to a few families of the Lepidoptera, namely, the *Ægeridæ*, the *Hepialidæ*, and a few exceptional *Tortricidæ*. The larvæ of the Lepidoptera can always be distinguished from those of the Coleoptera, by the presence of prolegs on the intermediate segments. A few Coleopterous Larvæ have one pair of prolegs on the anal segment, but more generally only one such leg.

4th. All leaf-sucking larvæ belong to the order Hemiptera (including the Homoptera).

5th. All leaf-gnawing larvæ, excepting grasshoppers, and the caterpillars above treated of, belong to one tribe of Coleoptera, distinguished by the title of Phyllophaga, or Leaf-eaters, and comprising the four families *Crioceridæ*, *Galerucidæ*, *Cassididæ*, and *Chrysomelidæ*. These larvæ, moreover, can generally be identified by their short, wrinkled forms, their sluggish motions, and some of

them by the singular habit of protecting their bodies by their own excrement.

6th. All larvæ found underground, excepting those which enter it only for the purpose of undergoing their transformations, are divisible, according to their habits, into two sections. First, the subterranean larvæ, properly so called, which live underground, and feed upon the roots of plants; and secondly, those which subsist above ground, but burrow into it, when not feeding, for the purpose of concealment. True subterranean larvæ are found in the orders Coleoptera, Hemiptera, Homoptera, and Diptera. None of the last order, except a few of the Tipulidæ, have ever been known to multiply so as to be seriously injurious to vegetation. But in the Coleoptera we have the well-known White-grub of the May-beetle, and the large Grape-root Borer, in the family *Priomidæ*; and, belonging to the Homoptera, is the pernicious Apple-tree Root-louse. The second section is limited almost exclusively to the notorious tribe of Cut-worms, all of which belong to the family of *Noctuidæ*, in the order Lepidoptera.

These are a few of the more obvious general results which we derive from the observation of insects, under the two limitations of noxious habits and the larval state. Others, less remarkable, perhaps, but equally interesting, would be suggested by a more minute study of the subject. But this would extend our article to an unreasonable length.—Dr. W. Le Baron in *American Entomologist*.

#### Toads vs. Insects.

As summer advances the question of Toads versus Insects is sure to come up, and perhaps an experiment of mine on the capacity of a toad may be of interest. Dr. T. W. Harris remarked to me some twenty years ago, that he supposed the odour of the Squash Bug (*Coreus tristis*), would protect it from the toad, and to test the matter I offered one to a grave-looking *Bufo* under a cabbage. He seized it eagerly, but spit it out instantly, reared up on his hind legs and put his front feet on top of his head for an instant, as if in pain, and then disappeared across the garden in a series of the greatest leaps I ever saw a toad make. Perhaps the bug bit the biter. Not satisfied with this, I hunted up another old toad, who lived under the piazza, and always sunned himself in one place in the grass, and offered him a fine Squash Bug, which he took and swallowed, winking in a very satisfied manner. Twenty other fine bugs followed the first, in a few moments, with no difficulty nor hesitation in the taking or swallowing, though, from his wriggling and contortions afterward, it seemed as if their corners did not set well within. The stock of bugs being then exhausted, I found a colony of smooth black larvæ on a white birch, each about three-quarters of an inch long, and fed him over a hundred of them. Touching one of them with the end of a straw, it

would coil around it, and then, when shaken before him, he would seize and swallow it, at first eagerly, but with diminished zest as the number increased, until it became necessary to rub the worm against his lips for some time before he could decide about it. He would then take it and sit with his lips ajar for a short time, gathering strength and resolution, and then swallow by a desperate effort.

There is no telling what the number or result would have been, but the dinner bell rang as the 101st worm disappeared, and by the close of the meal he had retired to his den; nor did he appear for four days in his sunning place. It is to be hoped he slept well, but there may have been nightmares.—*Cor. American Entomologist*.

#### Trapping the Curculio.

"We have published an account of the mode of catching curculios devised by Mr. W. B. Ransom, of St. Joseph, Mich.—by closely packing the earth around the trees, and then surrounding the trunks with small pieces of bark, chips, &c., under which the curculios will gather, and where they can be destroyed. Very large numbers of these troublesome insects were caught by this plan.

"Dr. Hull, State Horticulturist of Illinois, and Dr. Le Baron, State Entomologist of Illinois, visited St. Joseph May 23. The former gives the result of their observations in the *Prairie Farmer*. From these it seems that the hope that a mode of exterminating the pest had been discovered, will not prove well founded. When the weather becomes warm, it seems the curculios mainly go into the trees, and do not descend to the traps. On May 22 the weather had become warm, and the number taken under the traps was much diminished, while the number in the trees had increased. In each instance where both the traps and jarring were tried, many more were caught by the former than by the latter.

"As the curculios do not sting the fruit at the very first, Dr. Hall raises the question whether all the curculios which had been collected under the traps might not have been caught by a thorough jarring of the trees on the morning they first began stinging the fruit. He says he has long since determined that it makes no difference how many curculios come into the orchard for mating, provided the trees are thoroughly jarred twice before any of the fruit is stung.

"At first it was a question whether the curculios caught were the plum or the apple curculios, but it was decided that they were the former.

"In the June number of the *American Entomologist*, Mr. Riley has an article in which he says this plan will not prove successful in exterminating the curculios, but says Mr. Ransom has laid the country under

lasting obligations to him for demonstrating that so many can be entrapped in the way described. He thinks the simplicity of the method entitles it to universal adoption, but says we must not give up jarring the trees and destroying the fallen fruit."

The foregoing notice of the new mode of trapping the plum curculio we have taken from an American exchange, and as it contains the remarks we were about to make ourselves, we insert it as it is. This new method is most valuable for application, together with jarring, in the spring and early part of summer, but when the weather becomes hot, the process of jarring alone must be resorted to as before.

### Poplar Tree Caterpillars.

To the Editor.

SIR,—I send you specimens of a caterpillar which is at present devastating the poplar trees in this village, and also the galls, from which I take it the insect is hatched. You will find in the inside of the galls, numbers

land as the "Camberwell Beauty" (*Vanessa antiopa*, Linn.). They are black, with minute dots of white; along the back there is a row of eight reddish-brown or brick-red spots; and on each segment, except that next the head, there are six or seven stiff black compound spines, which give the creature a very formidable and repulsive appearance. They first appear early in June, feeding in large numbers together upon the leaves of various species of willow and poplar, often completely stripping the branches of their foliage, and causing the destruction of the tree if it be young and small. When full grown they descend from the tree, and wander off singly to find suitable places for changing into the chrysalis state: even, as our correspondent has observed, entering into houses. Their favourite resorts for this purpose are the little projections afforded by buildings and fences, especially the sides of clapboarded houses, where they may often be found in considerable numbers. The chrysalis is greyish-brown, with some prickly humps on the back, the portion beneath the thorax present-

two broods in the year; most of the butterflies from the later brood live through the winter and come forth very early in the spring.

The galls enclosed have nothing whatever to do with the caterpillars, but are the work of the parent of the little flies found within them, which are not Ichneumons but Gall-flies.

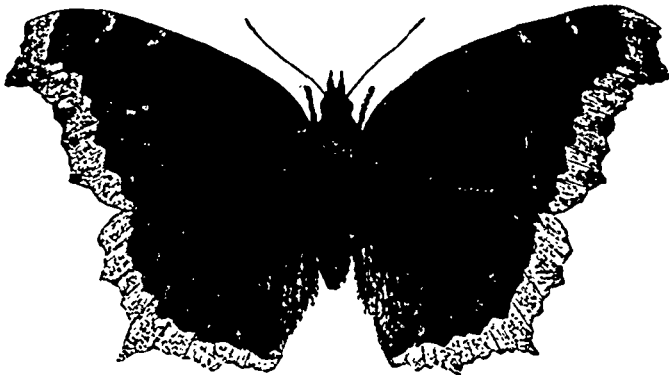
### Entomological Queries and Replies.

THE THREELINED POTATO-BEETLE.—R., Brockville, Ont., has sent us two of the Threelined Potato-beetle (*Lema trilineata*) found on a "Strawberry-tomato" plant; when captured they made a peculiar creaking noise by a movement of the thorax. This insect, both in its larval and beetle states, is very destructive to the potato plant; but we have not observed it attack the tomato. The specimens captured may have only alighted on the plant, without actually feeding upon it. They very closely resemble the Striped Cucumber-beetle (*Diabrotica vittata*).

WOOD-BORER.—W. McJ., Blyth, Ont.—The specimen is a Wood-boring beetle (*Saperda vestita*, Say); it is not at all uncommon, but we do not know what kind of tree it attacks. It is a very pretty beetle, three-quarters of an inch long, and covered with very minute greenish-yellow hairs, and with long antennae.

MEASURING-WORM.—We have received from C. L. H., of Thornhill, Ont., a large Measuring-worm or Geometer-caterpillar, of a dark brown colour, which "was found on some clothes spread on the grass." It is the larva of a moth of the family *Geometridæ*, but the name of the species, its habits and food, we cannot tell without rearing the insect, as we are not familiar with it.

COLORADO POTATO-BEETLE.—Mr. C. Mungahan, of Colvinville Moor, County of Lambton, has sent us three specimens of the larva of this most destructive insect, which he found upon his Early Goodrich potatoes. He says that they devour the leaves very rapidly, but that he did not find them on any other variety of potato; he gathered about half a tea-cupful and destroyed them. As we have already noticed, this insect has made rapid progress, and is penetrating far into the country. Our friend Mr. W. Saunders, of London, has received specimens from Sarnia, and had heard of its being found at Amherstburg; he also tells us that a single specimen of the larva was brought to him, alleged to have been taken in the neighbourhood of London. Should this be the case, the insect is spreading with unwonted rapidity, and will in a few years, if unchecked now, cover the whole country. We implore every one who grows potatoes in the western part of the Province to keep a sharp lookout for the invader, and treat him at once to a dose of Paris Green and flour, as we have already recommended. Do not spare a little trouble or expence now, or you and the rest of your neighbours will bitterly repent it next year.



of little white or clear-winged flies. Are these Ichneumons, or have they any connection with the caterpillar whatever? After stripping a limb to its topmost twig the caterpillars make a "right about turn," march down, and ascend another; or, if they have already eaten enough of nutriment, they descend quickly to the ground, over which they crawl with astonishing rapidity, even entering houses and sheds in search of a place to lay themselves up in the cocoon state. As I am an old country naturalist you will excuse me for asking the name of this ugly hairy customer. I hope he is not the so-called "army-worm," of which we hear so much at times, and in regard to which so many mistakes are made by those ignorant of natural history or the habits of insects. A. F.

Hon. Mem. Glasgow Nat. Hist. So.  
Drumho, Ont.

REPLY.—The caterpillars are the larvæ of a common Canadian butterfly, known in Eng-

ing the appearance of a grotesque human face. It is suspended by the tail to a little knot of silk, and hangs with its head downwards in a quiescent state, except when a rude disturbance causes it to jerk itself about in an absurd manner. The butterfly comes forth in less than a fortnight; it is a beautiful creature, with the wings above of a deep rich velvety brown, edged exteriorly with a row of light blue spots followed by a rather broad cream-coloured margin; it expands about three or three and a half inches.

Being gregarious in their habits, these caterpillars can generally be readily observed and knocked down from the branch on which they are feeding, when, of course, their destruction is easy. Our correspondent may be surprised to learn that, although so common as to be at times a nuisance in this country, they are very rare in England, a genuine native-bred specimen there often fetching the enormous price of a guinea! There are

## Apiary.

### Bees—Their Nature and Habits.

#### HONEY GATHERING.

Many still think that bees make honey, some believing that the workers make it, others that it is the work of the drones to make honey, others again suppose that both classes make it. Such is not the case, however; neither workers nor drones ever made a drop of honey. Honey is nothing more nor less than the sweet nectar found in almost every flower, and is gathered from the flowers by the workers only. Lighting upon the flower, they thrust in their proboscis or tongue, and, extracting the sweet, they convey it to their stomach or honey-bag. As soon as they have obtained all the honey-bag will hold, they return to the hive and empty its contents into a cell. One can readily see that it would not undergo much change in so short a time, while careful experiments prove that it undergoes no change whatever. If they feed upon syrup made of sugar, they will deposit syrup in the cells, and if it is strongly scented with any flavouring extract it will retain the flavour as long as it remains in the cells. This being true, it is evident that different flowers yield different kinds of honey. With a little practice any bee-keeper may easily determine, from the taste of the honey, what flowers it was gathered from. I will not say that it can be done in every case, but in many cases it can.

Some might be ready to ask, how can that be, when they gather from flowers of different kinds and mix it all together? It would certainly be difficult to tell, if such were true; but they do not mix it together. As a rule, a bee that commences to work upon white clover continues to gather from that flower until its honey-sack is full. Such is their nature; they do not go from one kind of flower to another, but having commenced to gather from any one kind, they continue to do so until their honey-bag is full; and each kind of honey is also deposited by itself in the combs. Bees working upon different flowers do not deposit in the same cells. Any person wishing to prove this can do so by examining the combs about the time the bee commences to work on buckwheat, and they will find the dark-coloured buckwheat honey in cells by itself, quite separate from the light white clover honey. They also do the same when gathering pollen or bee-bread; each kind is kept by itself as much as possible. Why they do this is more than I am able to say. It is, however, a very convenient arrangement for the bee-keeper, as he can select the best honey and keep it by itself for his own use, or sell it at a higher price.

*The Workers Make Preparations for Swarming.*—The philosophy of swarming is but little understood. Many suppose that when spring opens a swarm begins to grow, and

when sufficiently large and numerous enough in bees it is cast forth with its queen. Hence the question is often asked: Is there more than one swarm in a hive? There is never more than one swarm in a hive, strictly speaking. Though we may put two, or even three swarms together, and all in one hive, yet in a short time, if they do not swarm out, the queens are all killed but one, and the two or three swarms become one. It is often the case that there are bees enough in the hive at one time to form two or three good swarms; still it can only be called one swarm until divided either artificially or naturally. The preparation for swarming is all made by the workers. The hive, or rather combs in the hive, being filled with brood and honey, and the harvest good, and the hive populous, the workers construct queen cells and commence to rear young queens. In about eight days a swarm comes off, and the old queen with it.

Generally the swarm clusters on a convenient tree or bush, and a number of the workers go out to hunt a home. When such is found, the whole swarm takes wing and goes to it. In some cases a home is found before the swarm comes off; in which case the swarm is quite likely to leave for it without clustering. There are also instances where a swarm coming off discovers an empty hive, and at once enters it. Two or three cases of this kind have occurred in this vicinity this season.

When the swarm remains long in the cluster, a part of the workers go out and gather honey, bringing in food for the others; and in a few instances swarms have commenced comb-building on the limb or bush where they first clustered, and before a home was secured. This comb becoming large, and the queen having deposited eggs in it, the swarm has refused to leave, making the bush or tree their home, have built large combs and remained in the open air during the season. About nine days after the first swarm has issued, a second swarm comes off if the colony is populous. A separate cluster of bees guarding each cell, when a queen escapes from one cell she is not allowed to destroy the others, but like the old queen goes off with a swarm, which is called a second swarm. The queen in such a swarm is a virgin queen, and does not commence to lay for several days after the swarm is hived.

Third and fourth swarms are the result of the other cells hatching; each cluster of workers guarding its queen, will not allow them to meet and destroy each other; the consequence is, several little swarms come off, called third, fourth and fifth swarms. In some cases they all come off together, and all cluster together, forming what is called a swarm with several queens. Such a swarm being put into a hive during the night following, the queens are set at liberty, and all are destroyed but one.

J. H. THOMAS.

Brooklin, Ont.

## Correspondence.

### Agricultural Matters in the Northern Districts.

To the Editor.

SIR,—Along the whole extent of the Northern Railway the crops look well, in consequence of the fine growing weather—alternate heavy rain and warm, sunny days—of the past month. Throughout the southern portion, near Lake Ontario, it came too late, however, to fully remedy the effects of the long and severe drought experienced in spring.

In the township from which I write, St. Vincent, which is situated on the Blue Mountain range, overlooking the western part of the Georgian Bay, and in that part of Grey adjacent to it, several circumstances have this year combined in favour of the agriculturist. Though the unusually heavy snow had by winter-killing thinned the fall wheat, the dry spring did not hurt it, and the frequent showers of late have given it an excellent head. Much of it will average thirty bushels per acre, and the quality will be first-class, as neither rust, smut, nor midge are visible to any appreciable extent. Partly to avoid the midge, partly owing to the backward season, spring wheat was sown very late, just avoiding the dry time, and obtaining the full influence of the favourable weather. The "Club" variety is out in head; the "Glasgow" not so far advanced; but both looking exceedingly well. The prospects of the hay crop are not so good. The crop was rather light, and now, when hay-making should be in full progress, constant showers intervene.

Root crops are good. Potatoes look well, and so do turnips, which, however, are but just coming up. They are generally grown here on new ground, and sown late to avoid the fly. Although this is over a hundred miles north of Toronto, I observe tomato vines here in advance of any I have seen in the city gardens.

Oats are a full crop, as are peas. Of these I noticed particularly the "Daniel O'Rourke" variety, as having by far the largest number of pods to the vine. The vines in this field were not so many as they should have been, owing, as the grower remarked, to the fact of the seed having been infested with bugs. One or two fields of peas had been totally destroyed by mice—unprecedentedly numerous here this year, eating the seed. Another, and a more beautiful little animal, the squirrel, will work mischief this summer. The gray squirrel, the black, the red, and the little "chipmunk," are present in numbers that bode no good to our ripening wheat ears.

When I passed through Collingwood, I observed that a large apiary there did not ap-

pear in so flourishing a condition as formerly, and was told that the proprietor had lost a hundred out of one hundred and fifty stocks last winter. The mortality among bees appears to have been very general; many stocks dying which had plenty of honey for their winter food. An enterprising farmer of St. Vincent, Mr. Joseph Howe, told me he had succeeded in wintering his bees in excellent condition by covering his hives, in the open field, with straw one foot in thickness, nailing the usual wire netting over the apertures, and removing the straw from the front on sunny winter days.

It is to be regretted that, while so much scientific farming is practised in the frontier townships, back here there is very little of it. The fields are now to a great extent free of stumps, and mowers and reapers are beginning to be used. But large root crops, even to the extent of five acres of turnips, are things almost unknown; underdraining has hardly been attempted, and the fields are generally cropped without manure. I am aware of one or two cases here where wheat has been grown, without manure, on the same field for eight or ten successive years, always yielding good crops. Summer fallowing is resorted to when the land gets too full of thistles. Good prices are always obtainable for everything, and this whole north country, from Collingwood to Owen Sound, offers an excellent opening to scientific farmers from the front, who will come here with improved stock, and, what is necessary to good farming, some capital. To give an idea of the adaptability of this soil, I will mention that on some ten acres of their heaviest clay land, cropped with wheat last summer, and not seeded to grass, I saw a thick crop of self-sown red clover and timothy, mixed with wild grasses, growing this summer.

It is expected here that the Northern Railroad will shortly be continued along the coast of the Georgian Bay to Owen Sound.

The winters here, it is said, are no colder than at Toronto, but in summer there is always a cool and pleasant breeze. Many city people now send their families to pass the "heated term" at the small lake ports in this locality. It does not present the same attractions to the sportsman obtainable at places further east, near Orillia and Muskoka, but it is more healthy, and, in point of grandeur of scenery, more picturesque. For instance, the farm house from which I write commands a view over probably a thousand square miles of mountain, lake and valley.

R. W. PHIPPS.

St. Vincent, Co. Grey.  
July 14th, 1870.

**MINKERY.**—A correspondent from Woodstock is informed, in reply to his inquiry, that a private minkery has been established by the foreman of Mr. Patterson's Agricultural Works, at Patterson Village, near Richmond Hill.

**LESTUS NATURAL.**—A. S. should advertise. "PRO BONO PUBLICO" will find a cut of the Plum Curculio in the CANADA FARMER for June last, a copy of which he can procure for ten cents.

The same correspondent wishes some experienced miller to describe the best method to prevent "pasting" of millstones while grinding "soft wheat."

**ANTS IN GARDENS.**—A subscriber, Cornwallis, N. S., is troubled with ants in his garden, and having tried boiling water and pickle without success, is at a loss to know what to do. If he is not afraid to go to a little trouble, we should advise him to try the following remedy which has been highly recommended,—"Entrap the ants by means of narrow sheets of stiff paper on strips of board, covered with some sweet, sticky substance; the ants are attracted by the sweets, and sticking fast, can be destroyed as often as a sufficient number are entrapped." He might also try the effect of pouring a little coal-oil into their holes.

Advertisements for the "Canada Farmer" must be sent in to the office of publication early, and in order to secure their insertion in the forthcoming number, must in no case be later than the 7th of the month.

## The Canada Farmer.

TORONTO, CANADA, AUG. 15, 1870.

### The Season and Crops.

The past month of July has maintained throughout a uniform character with respect to the weather, which has been sultry, with frequent, almost daily, showers and storms. The effect of this on crops has been, as would be expected, favourable to growth and ripening, but unfavourable for harvesting. Hay and all early crops which had suffered from the previous drought, made a rapid increase, such as would bring up the yield fully to the average, though some grain fields are lacking in the due proportion and length of straw. Considerable trouble, however, and occasional loss have been experienced in harvesting. Hay in some places has lost quality in the curing; barley, for the in-gathering of which a dry season is so necessary, has also suffered, and will be less bright than it should be; while fall wheat, according to some accounts, has sprouted considerably. Yet, notwithstanding these drawbacks, the general character of the reports throughout the country has been favourable, and there is no reason to anticipate any serious deficiency either in the quality or quantity of field products.

The northern portions of the United States have passed through a season much resem-

bling our own, and while some crops will perhaps be short, others promise abundantly. Corn will undoubtedly be greatly in excess of last year's returns.

From Europe the latest mails bring representations not unfavourable. In England the drought may be fairly considered at an end, and refreshing showers have brought timely help to every crop. France appears to have suffered most, and though doubtless the case has been exaggerated, it is quite evident that there has been very short pasturage, and that the cereals will be much below the average. Beet-root, too, a most important crop, has in some parts been very seriously affected, and the total yield will probably fall considerably short of the usual amount. Other continental countries, however, have experienced favourable weather.

Quite independently of the season, the political aspect of affairs and the war in Europe can not fail to affect the prices of grain, and amid the lamentable consequences of the conflict abroad, the farmers on this continent will reap a benefit in advanced prices, though the extent of the rise will very much depend on the complications that may ensue and the probable duration of the contest. At present the market has not been influenced to that degree that many speculators anticipated and perhaps desired.

Happily for us, in a moral point of view, the hostilities that engage the agriculturists of this country arise from insect foes, though as regards the amount of injury they can inflict, such hosts are by no means contemptible. During the past month we have had to record the invasion of a new enemy, whose devastations in one crop at least, unless the incursion is vigorously met, it will be difficult to estimate. The Colorado Potato-beetle has for years been steadily marching eastward, and has at length appeared in considerable numbers on our western borders. No trouble should be spared to encounter this new danger, and a war of extermination should be vigorously waged wherever these destructive insects show themselves. If we cannot completely succeed in arresting their progress, we may at least very materially diminish their numbers and ravages.

The temperature and other meteorological conditions of the month, throughout the country, have been much the same as in the neighbourhood of this city, where, as we learn from the records of the Toronto Observatory, the mean temperature of July has been  $68^{\circ} S$ , being 1.4 above the average, and 3.3 above that of the corresponding month of last year. The warmest day was the 23rd, the mean temperature of which was  $75^{\circ} .6$ , and the coldest day the 15th, with a mean of  $60^{\circ} .8$ . The highest degree reached was  $87^{\circ} .4$  on the 23rd, and the lowest  $48^{\circ} .0$  on the 15th.

The rainfall in this neighbourhood amounted to 1.562—less than the average by 1.489, and less than that of July, 1869, by 2.748. Rain fell on 16 days. There have been 6

clear days, 22 partially clouded, and 3 entirely so. The westerly winds have largely prevailed. Thunder-storms have been unusually violent and frequent, eleven having occurred in the neighbourhood of Toronto, and although the rainfall has been comparatively small, in some districts great quantities have fallen, accompanied by heavy storms of wind, occasioning much damage to buildings and crops. The western districts have suffered most severely.

#### Field Labour at 90° Fahrenheit.

In this climate few summers pass over without the occurrence of numerous fatal instances of disorders brought on by the excessive heat of the weather, the most serious and sudden being cases of "sun-stroke." We hear less of these fatalities in the country than in towns, probably for the reason that city life is enervating, and the more robust health of those engaged in rural occupations enables them to resist to a greater extent all depressing and morbid influences. Besides this, the heat in cities is usually more intense on account of the confined space, and the reflection of the sun's rays from buildings and sidewalks; while in the country the freer play of pure air, the evaporation from foliage, and the prevalence of cool green hues, even where there is no shade, render the temperature less oppressive. Still the healthiest districts are not altogether free from these calamities, and instances occur every summer of men being struck down, while at work in the field, from the overpowering effects of the heat. A few plain directions, therefore, as to the best methods of preventing such attacks, and the instant treatment required upon their occurrence, may not be out of place.

Little need be said in regard to dress. Common sense and custom in the country are not far wrong in this respect. Clothing of light material and light in colour is essential, and the ordinary straw hat with broad brim affords an excellent protection for the head, while it admits the escape of the vaporous perspiration. In very hot weather the common practice of inserting green leaves in the crown gives additional protection. A modification of the Havelock—one of the most sensible innovations in military costume for hot climates—might be introduced with advantage into the harvest field.

The diet should be light and nourishing. There is far less need for food in hot weather than in cold; as a consequence the appetite commonly fails to a great extent, and where there is no need for physical exertion, it is quite safe to follow the leadings of nature and take little food; but severe labour causes much waste of the system, which must be repaired by nourishment, or debility and disease will ensue. Vegetables in abundance and variety, as well as fruit, are the natural and wholesome diet during hot seasons. But the labourer requires in addition something more nutritious, and fresh meat is necessary.

Salt pork and fat bacon, the too common fare of the farm, are by no means suitable. They increase thirst, and afford very little nutriment, being rich in the heat-producing rather than the flesh-forming elements of nutrition. Besides beef and mutton, the farm-yard yields, in the shape of milk and eggs and poultry, most appropriate material for summer diet. The morning and evening meal, both occurring in the cool of the day, should be specially substantial. Care should be taken to eat the principal meal immediately after a full night's rest. Indeed, in very hot weather it will be found advantageous to commence labour as early as possible in the morning, and in like manner to make the most of the cool hours after sundown, allowing a long intermission during the middle of the day. In the matter of beverage, the instincts of nature, demanding an extra quantity of fluid, are not to be resisted. Men and animals alike, working in hot weather, must have an abundant supply of water to make up the unusual loss by perspiration. Indeed, by promoting this natural exudation, both the blood and the surface of the body will be kept the cooler. An error to be avoided, is going too long without water, and then, with the body in a fevered and exhausted condition, drinking immoderately of very cold water. We believe cold water is altogether the best beverage for the field. If stimulants are required, tea and coffee are far preferable to alcohol in any form. Set it down as an axiom that whiskey in the harvest field is simply pernicious. If you want lazy and insubordinate labourers, supply them freely with spirits. The hotter the weather, the more hurtful will alcohol prove; and scarcely anything you could give would have a greater tendency to produce such affections as "sun-stroke."

And now for a word or two as to the immediate treatment to be adopted when any one has been struck down by this alarming affection. It should be borne in mind that "sunstroke" does not arise so much from the effect of the direct rays of the sun on the head, as from the general exhaustion of the system produced by excessive heat. There is not usually any great determination of blood to the head. The attack, though not identical, is more allied to fainting than to apoplexy, and must be treated accordingly. Blood-letting would most likely be fatal. The greatest gentleness is requisite; all violent treatment should be avoided. To be instantly carried from the field, and roughly shaken in a waggon, would often greatly endanger the patient, and remove the small chance of recovery that the exhausted condition of the system allowed. Shade is essential; no crowding round the patient should be permitted. A free access of air should be secured; the clothing should be loosened so as to facilitate as much as possible the feeble breathing. If the countenance is turgid and veins full, ice or cold water should be applied to the head and face; but if there is great

pallor and a feeble pulse, these applications had better be dispensed with. A small quantity of diluted spirits should be given at short intervals until there are signs of reaction. Coffee will also be found a useful stimulant. These simple measures are about all that can be safely recommended to non-professional attendants. Of course no time should be lost in sending for medical aid.

If a person has once been attacked in this way, he will be very liable to a recurrence of the accident, and must exercise the greatest caution during the rest of the season.

There is a class of farm labourers of whom, under the trying ordeal of excessive heat, we should be specially mindful—namely, working horses. These cannot tell us their sufferings, and will sometimes fall down in the field from just such an attack as that which in the human subject we call "sun-stroke." Let horses have plenty of water, and be worked with caution during the heat of the day; and if by their gait and appearance they show signs of exhaustion, let them at once be taken out of the field and allowed to rest.

Shade, either by trees or sheds, should be provided for all farm stock. Shelter in summer from the fervour of the sun is sometimes as necessary as protection from the cold of winter.

The subject suggests a word in passing on the great advantage of shade trees in cities. Besides their ornamental appearance, they exert a purifying influence on the atmosphere. The constant evaporation by their leaves materially cools the air, and the grateful shade they give is a most welcome refuge from the heat, enabling the pedestrian to proceed in comfort, and defending him from the liability to such calamities as we have been considering. Every city and village should be provided with these natural safeguards, and municipal authorities should be liberal in undertaking or encouraging their introduction and preservation along our highways.

#### Provincial Exhibition—Prize List.

The Prize List for the twenty-fifth Exhibition of the Provincial Agricultural Association, to be held in Toronto during the first week of October next, is now issued. It has been, as heretofore, made up in a liberal spirit, the aggregate of premiums amounting to nearly \$14,000, of which more than one-half has been appropriated to the live stock department. There are but few changes to be noticed from the list of last year, but such alterations as have been made appear judicious. The Prince of Wales Prize, which was last year awarded to the best herd of Durham cattle, is this year offered for the best flock of Leicester sheep. Liberal premiums, however, are again offered by the Association for the best herds of the various breeds of cattle. In the classes for swine, an improvement has been introduced by making a class for Essex pigs, a breed deserving of special encouragement. In the imple-

ment class a prize of \$100 is offered for the best steam plough, a novelty and sign of progress which we have yet to see in Canada.

Amongst agricultural productions, grains are separated from small seeds, which have hitherto been included in the same class.

Improvements have been made in the classification of horticultural productions, the list having been revised by the President and Vice-President of the Fruit Growers' Association, both of whom are members of the Council, and were authorised by them to add \$200 to the amount assigned for this department. While the professional list remains the same, in the general list an important change has been made, by awarding premiums for separate varieties of fruit. Thus, for instance, instead of the sections for the best twelve winter apples, or fall apples, specific varieties are named, as the best twelve Baldwins, the best twelve Rhode Island Greenings, etc. Similar alterations have been made in the sections for pears and for grapes. This arrangement will facilitate the work of the judges, and give deserved prominence to special varieties of fruit. The growing importance of the vintage in the Province is recognized by the offer of a prize of \$20 for the best essay on wine-making. Two prizes, of \$40 and \$20, are offered for collections of fruit instead of one only of \$50.

In the Arts department there are no material changes.

Intending exhibitors should take particular notice of a rule which, though existing previously, has not hitherto been rigidly enforced, if we except the last exhibition, when an unexpected adherence to it provoked much dissatisfaction. We allude to the regulation fixing the time for making entries. The Council notify, and very properly, that this rule shall be strictly enforced. After this notice, exhibitors will have themselves only to blame if they seek to enter articles when the proper time has expired, and find themselves excluded from competition. Such a rule is absolutely necessary to enable those who have the charge of an exhibition of such magnitude as the Provincial to make orderly and complete arrangements. In accordance with the requirements of the case, entries for live stock and implements will close on the 3rd of September, four weeks preceding the show. Grain and other agricultural products, machinery, and manufactures generally, must be entered not later than the 10th of September, three weeks preceding the show; and horticultural products, etc., may be entered up to Saturday, Sept. 24th, one clear week preceding the show.

It is earnestly to be hoped that no difficulty will arise in carrying out this wise regulation.

Among the improvements in contemplation it is announced that a catalogue will be issued for the live stock and implement departments. This will be a great convenience to visitors, and no small advantage to exhibitors themselves.

The Local Committee includes the Mayor of Toronto and members of the City Corporation, besides some of the leading men of the Province, whose names are a guarantee for the efficient management of the Exhibition, and there is every reason to expect a success equal to that of any preceding year.

### Westward Emigration.

In spite of the adverse experience of Canadians who have emigrated from this country to the Western States, we still continue to hear too frequently of similar mistakes, by the reports of those who have recently tried the experiment.

The accounts are, with very few exceptions, altogether discouraging. Few have succeeded in accordance with their ideas of speedy wealth. Many, very many, have deeply regretted the change, and would gladly be back again in Canada; but the return is not always practicable. The money they took to spend on land is locked up; and generally but a small portion of the emigrant's funds have been so paid away. A full year has usually been lost in getting settled, and a very large sum has been spent for maintenance during that year. These expenses, in addition to the heavy cost of settling on a new farm, have sadly reduced the exchequer, if they have not already involved the adventurer in serious debt, while the prospect for the future is less bright than that which the old home afforded.

Whatever facilities the sister country may seem to offer for the successful prosecution of trade and manufactures, we are more than ever convinced that to the agriculturist Canada offers the fairer field. Why else do we still continue to supply our neighbours to so large an extent with our agricultural produce in the shape of horses, cattle, sheep, hogs, wheat, barley, and many other articles; all paying a heavy import duty? This duty and the profits of the dealers must impose no light tax on American consumers, as they are coming to feel and acknowledge. Where, then, we are naturally led to ask, is the advantage of their boundless prairies, if our cattle, raised in a wooded county, can successfully compete with those raised on the plains of the Far West in supplying their own market? The abundance of natural pasturage in those plains affords apparently an immense advantage to the western grazier; yet so long as dealers from the other side, in the face of a protective tariff, will buy our produce, and get rich by supplying American consumers, it must be evident that from some cause or other Canada is the better farming country.

We owe the advantages which we undoubtedly possess, in part to peculiarities of climate and our ready access to the seaboard and markets; but also in no small measure to our lighter taxation. So long as the disparity—a most happy one for us—be-

tween the two countries in this respect continues, our discontented farmers will not mend their circumstances by emigrating to the Western States. They will find there, the cost of living enormously increased, farm labour scarce and beyond all reason dear, climate uncertain and crops precarious, exposed to more unfavourable contingencies and adverse influences than our own, and the prices of produce by no means such as to compensate in any measure for the attendant expenses. Some of the most serious evils that the farmer here has had to contend with, such as the midge, seem, by the operation of natural and other causes, to be gradually disappearing, and the prospects of Canadian agriculturists in the present day are in a high degree encouraging. Temporary reverses, and difficulties that call for the exercise of mental resources and energy, will still present themselves, and they will encounter the emigrant wherever he may go; but a patient determination and hopeful spirit will overcome them all, and we are persuaded that the British emigrant especially, as well as the native Canadian, will find in Canada a better field for the pursuit of agriculture, and the founding of a home, than he will meet with in any other country.

### Carriage of Cattle by Railway.

A decision of some importance as affecting owners of cattle and other live stock conveyed by railway, has just been delivered in the Michigan Supreme Court. The judgment has the effect of relieving railway companies from liability for injury sustained by delay or negligence to live animals in transit. Judge Chistaney, in delivering the opinion of the Court, held that a Railway Company was not responsible as a common carrier, (on which the plaintiffs relied) for the transportation of live animals. He said that:

"The transportation of cattle and live stock by common carriers by land was unknown to the common law when the duties and responsibilities of common carriers were fixed. Live animals have peculiar wants of their own, and their carriage requires peculiar care and skill. The risk may be greatly lessened by care and vigilance, by feeding and watering at proper intervals, by getting up those that are down, and otherwise. But this imposes a degree of care and labour so different from what is required for other property that it is concluded this kind does not fall within the reasons upon which the common law liabilities of common carriers have been fixed. There being nothing in the charter of the Company or the statutes of the State making railway companies liable as common carriers for such property, the Company is released."

The judgment of the Michigan Court of course extends only to actions arising



within the limits of its own jurisdiction, but as several English and American cases were cited by the Judges in support of their views, it is probable that the ruling might be sustained elsewhere. If so, persons transporting cattle by rail have no redress for losses arising in the manner above referred to, unless companies by express contract make themselves responsible, or some specific statute exists declaring them to be liable.

### The Western Fair.

An association composed of prominent citizens of London, together with farmers and stockbreeders of Middlesex and other western counties, was formed in 1863, and their first fair was held at London that year. It was but a beginning, with a prize list amounting to some \$2,000. Last year the Provincial Exhibition coming by turn to London, no fair was held; but so great had been the attendance and so marked the success of the first fair in 1868, that they determined to continue on, and have this year made arrangements to hold the Fair in London, Sept. 27th to 29th, the week before the Provincial. The prize list just issued now lies before us, and a most liberal one it is, the aggregate of prizes amounting to \$6,000, divided over 47 classes, of which the live stock get a very large share, which is as it should be. Arrangements have been made by which stock and articles exhibited will be conveyed, if desired, to the Provincial Exhibition at Toronto with care and despatch at very low rates. The western farmers are live men, and what they undertake they will be sure to accomplish, as they are hampered by none of that red tapeism, or ancient prejudices that are apt to creep into the management of older public institutions. They deserve success, and from the nucleus formed may grow a society that may prove of vast benefit in furthering the agricultural interests of the western portion of Ontario.

**IMPORTED AYRSHIRE CATTLE**—We direct attention to the advertisement in the present issue of a recent valuable importation of Ayrshire cattle from Scotland by Mr. Gibb, of Compton, Quebec. The lot comprises some of the choicest animals of this excellent dairy breed, and will no doubt prove an important acquisition to the country.

**CANADIAN POULTRY CHRONICLE.** The second number of this periodical is punctually out, and more than fulfills the promise of its predecessor. It is a capital number, full of articles of practical value and interesting correspondence. We trust this effort to provide a special medium of inter-communication for poultry fanciers, to disseminate information, and increase the public interest in this important branch of stock-raising, will be appreciated, and cordially hope that the enterprise will be well sustained.

## Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

### Fruit Growers' Association of Ontario.

The summer meeting was held at London, July 13th, 1870. A telegram having been received from the President, stating that he was unavoidably detained, the Vice-President, J. C. Rykert, Esq. M. P. P., took the chair. Minutes of last meeting were read and approved.

The CHAIRMAN stated to the meeting, in reference to the matter of the prize list of the Agricultural Association, that the revision of the Fruit Department had been entrusted to the President and Vice-President of the Association, and that two hundred dollars had been added to the prize list.

The first question was then discussed, viz.

WHAT VARIETIES OF RASPBERRY ARE BEST AND MOST HARDY?

Mr. CHAS. ARNOLD, of Paris, named the Philadelphia, Mammoth Cluster, and General Negley. The latter is of the Black Cap family, being equal to the Mammoth Cluster in size and favour, but he thought it on the whole to be more productive, it being a perpetual bearer. The Mammoth Cluster ripens later than the Doolittle. The Philadelphia is an immense bearer, medium in flavour. All these are perfectly hardy. He spoke also of the Orange King, a seedling raised by himself, which is perfectly hardy and of superior flavour, quite thornless, not as large a berry as Brinckle's Orange. Has grown it for seven years; has about an eighth of an acre; the fruit is too soft to ship to distant market.

Mr. HORTON, of Hamilton, named for market use the Doolittle, Davison's Thornless and Miami, and for home use the Brinckle's Orange.

Mr. JAMES DOOLITTLE, of Windsor, said that his soil is rather heavy, and with him the Black Cap varieties do best. He named the Doolittle and the Philadelphia as being very prolific, while for flavour he esteemed the White and Red Antwerp.

Mr. SANDERS, of London, was much pleased with the great productiveness of the Philadelphia. The Mammoth Cluster is also very productive; ripens later than the Doolittle.

Dr. FRANCIS, of Delaware, had found the Antwerps all too tender. The Philadelphia is an immense bearer, but too soft to be sent away to market. Doolittle is hardy, and the berry quite firm.

Mr. McCOLL, of Stratford, had thought that it did not pay to raise raspberries for market in Canada, there was so much competition from the wild raspberries, and the common red cherries.

Mr. A. M. SMITH, of Grimsby, was pleased with the Davison's Thornless; it ripens two

or three days earlier than the Doolittle; thought it is not quite so productive, but that is more than overbalanced by the ease with which the fruit can be gathered, because the plants have no thorns. The Clarke raspberry promises well.

Mr. FARRELL, of Cayuga, spoke of the White Antwerp, which, when not too highly cultivated, bore abundantly, but if it was largely manured, produced leaves, but not fruit. The Brinckle's Orange had failed with him.

Mr. A. LESTER, of London, said that the Philadelphia was the hardest red raspberry he had grown. The Black Cap are hardy, and do well.

Mr. CHAS. RIDOUT, of Clinton, said that the Red Antwerps did not require any protection in the County of Huron; the snow giving the plants all the protection they required, so that any and all varieties could be grown there.

Mr. BEADLE, of St. Catharines, said that he had found the past season very severe upon the raspberry canes. The Franconia canes had been nearly all killed to the ground, so that he had very little fruit of that variety. Yet he thought that variety very valuable, usually passing through our winters without much injury, and bearing good crops of fruit. The berries are of good size and flavour, and sufficiently firm to bear transportation to market. Has known them to have been sent by rail from Lockport to New York City, arrive there in good order, selling readily for twenty-five cents per quart. The Yellow Antwerp is often much injured by our winters, and the berry quite too soft for market use. The Philadelphia is the most hardy of all the red or yellow raspberries; it passed through the past trying season without injury, and is bearing an immense crop; is the most productive of them all. The berry is not of the largest size, but is above medium, and sufficiently firm for a near market. The flavour is not the highest, but is sufficiently good to make the berry quite acceptable to buyers. Davison's Thornless is a decided acquisition; the fruit is of fair size, of good flavour, and ripens early, while the canes are *without thorns*, and bear an abundant crop of fruit. The Mammoth Cluster is late in ripening, very productive, fruit of large size and good flavour. Is valuable by reason of its extending the season of raspberries. Brinckle's Orange is a very fine variety for family use, of excellent quality, and continuing to ripen over a period of six weeks. It is tolerably hardy, usually passing through our winters, without suffering very much.

A vote was now taken in order to ascertain the position which the different varieties held in the estimation of those present.

#### FOR MARKET.

The Philadelphia had the highest number of votes.

Doolittle's Black Cap received only one vote less than the Philadelphia.

Mammoth Cluster had three-fourths of the number cast for the Philadelphia.

Davison's Thornless had nearly half as many.

#### FOR HOME USE.

Brinckle's Orange had the highest number of votes.

Franconia had half the number cast for Brinckle's Orange, and so had Orange King, Mr. Arnold's seedling.

Fastoff and Yellow Antwerp had each one less than Franconia.

On the subject of Insect Enemies of the Raspberry, members had not much to say. It would seem that on the whole this fruit is remarkably free from the ravages of insects. Mr. Saunders referred to his essay on small fruits as comprising the results of his investigations up to this time, and remarked that this season there had not been as much of the raspberry saw-fly as last year.

Mr. ARNOLD had seen a small bee boring out the pith of his raspberry canes.

ARE BEES INJURIOUS TO FRUIT BLOSSOMS?  
was the question then discussed.

Mr. ATTWOOD, of Vanneck, said that some corporation had enacted a by-law forbidding the keeping of bees within its limits, on the ground that they caused the loss of the fruit. He was of an opposite opinion, believing that they and other insects helped to carry the pollen so as to fertilize the fruit-producing organs, remarking that if wet weather prevails while the fruit trees are in blossom, the bees not being able to fly about, the fruit does not set well.

Mr. SAUNDERS remarked that it was true that fruit did not set well if cold wet weather prevailed during the time of flowering, and it was also true that the bees did convey the pollen from one flower to another, but that he thought the failure of the setting of the fruit in wet weather was not wholly to be attributed to the absence of the bees; that the pollen being damp in wet weather, did not float in the atmosphere, and hence was not carried by the currents of air, as it is in dry weather.

Mr. DOUGALL spoke of the necessity of fertilizing melons by hand which are grown under glass, and felt confident that bees were useful rather than injurious to fruit.

This appearing to be the general opinion of the meeting, the next question was then taken up.

#### THE PLUM CURCULIO, HOW TO CATCH AND KILL?

Mr. SAUNDERS read a very interesting report on the curculio, based upon the information he had received from those who had sent collections of this insect to him for the prize offered by the Association. Mr. Saunders asked leave to extend and complete his report, and when finished it will be published in full. A vote of thanks to Mr. Saunders was then passed for his very interesting report, and his service to the Association in receiving and counting upwards of ten thousand curculio which had been sent to him.

Mr. ARNOLD stated, in reply to an inquiry, that he had found his plan of whitewashing the ground under his plum trees to be of great service, and believed that the insect did not lay its eggs on his plums, knowing that the young larvae could not penetrate through the crust of lime, and must therefore perish.

Mr. SUNDLE had also tried this plan, but the curculio had failed to see that the larva would be unable to penetrate into the earth, and had continued to sting his plums and deposit their eggs the same as they had done before. He had fancied it to be a good plan to bore a small auger hole into his plum trees, and insert a bolt of iron just fitting the hole, and to strike smartly on that. The jar thus made caused them to drop off at once, and the blow did no harm to the tree. This was better than to drive a spike into the tree, as had been done by some, for each blow on the spike drove it farther into the tree, and there was danger in the end of splitting the tree.

Mr. DOUGALL had found that jarring apricot and nectarine trees brought down the fruit. His plum trees, some two hundred, are enclosed with a high board fence; in this enclosure he keeps his fowls, and they catch the curculio for him. Young pigs were also suggested as good to eat up the fallen fruit, and with it the larvae of the curculio in the fruit. Large pigs sometimes would gnaw the bark off the trees.

The method of jarring the trees and catching the curculio on a cotton sheet as they fall, had been most tried, and had served a good purpose. It was also remarked by Mr. SAUNDERS that the plan of laying shingles, chips, pieces of bark, and the like, under the plum trees, and seeking for the curculio under these, might also be employed in connection with that of jarring the trees, and that by these combined methods a most destructive war could be waged against them.

#### THE BLACKBERRY BEST AND HARDEST VARIETIES.

Mr. SAUNDERS had found the Kittatinny to winter-kill the past season, but the Sable Queen had passed through without injury.

Mr. FARRELL had succeeded well with the Lawton.

Mr. ARNOLD had tried Wilson's Early, Missouri Mammoth and others, but found them all to be quite inferior to the common wild sorts.

Mr. SCHOFF had not been successful in growing the blackberry at all.

Mr. HOLTON found the Dorchester to do well; it was good flavoured, not so large nor as acid as the Lawton.

Mr. SMITH had found the Dorchester the hardest variety; thinks the Early Wilson the best in flavour. The Dorchester berry is rather small, and the plant not a very heavy bearer.

#### PROTECTION OF ORCHARDS FROM MICE.

Mr. SAUNDERS had saved his apple trees by raising a mound of earth about them. He

had learned that the mice would destroy spruces and other evergreens.

Mr. SCHOFF had found banking up with earth a preventive.

Mr. DOUGALL had known small trees protected by placing a couple of horse-shoe tiles so as to enclose the tree.

Mr. ATTWOOD had known the mice to build their nests inside of pieces of bark that had been put around the trees with the view of protection.

Mr. SLAUGHT recommended, besides banking with earth, to tramp the snow hard around the trees. Had known Horse-Chestnut trees girdled with mice.

Mr. SAUNDERS thought that if the trees were washed with a strong decoction of quassia, the mice would not gnaw the bark, because of the very disagreeable bitter taste of the quassia.

Mr. WELD had found banking with earth in the fall would prevent the mice from girdling the trees.

Mr. McBRIDE had placed pieces of stove-pipe around his, and in this way had saved them.

Another had strewed poisoned corn about his trees, and killed off the mice. He had found that in most cases the trees could be saved after the mice had girdled them, by immediately, as soon as the snow went off, banking fresh earth around the tree, so as completely to cover the part that had been gnawed. Had also saved trees by inserting scions so as to keep up the circulation of sap across the girdled portion.

Mr. SAUNDERS had applied a mixture of sulphur and cow-dung to his evergreens, covering the girdled part; some of them seemed to be doing well, others died.

Mr. ATTWOOD had tried inserting scions according to the plan recommended in the CANADA FARMER, and had succeeded admirably. If the inner bark is not all eaten off, the tree can usually be saved by covering the girdled part with earth sufficient to keep it moist all the time. This needs to be done before the girdled part has been exposed to dry winds or the sun, and become dried.

Messrs. SCHOFF, DOUGALL and FARRELL had all tried the inserting of scions after this manner, and had succeeded.

Mr. SMITH had poisoned the mice, and so got rid of them.

Mr. ARNOLD spread butter and arsenic on bread, and placed it in old tin oyster cans, and laid them in the way of the mice, and saved trees by thus poisoning the mice.

A communication was read by the Chairman from Mr. D. Noxon, of Allisonville, on the Flea-Beetle that infests the grape vine. The following is the paper:—

#### THE GRAPE FLEA.

"Its habitation will be found at the root of the vine, scattered some three or four inches from the stock, leading down into the ground. After removing about an inch of earth you will begin to find them, even down on the

large roots leading off. This examination is presumed to be at the time of opening or uncovering the vine in the early spring, when they will be found in a partially dormant state.

"*Their Destruction.*—Presuming the earth has not been pulled away from the root of the vine—take of common wood ashes from two quarts to one gallon, more or less as the vine may be large or small, spreading the ashes at the stock of the tree, an inch thick, gradually thinning them for a foot each way. This will effectually kill every flea that may be beneath the ashes.

"Let the ashes remain undisturbed around the vine for fourteen or fifteen months—for this plain reason. In the months of May, June, and probably July, the full-grown flea lays her ova, in the earth around the stock of the tree. When incubation takes place they subsist upon the sap and juices of the root, and remain there until their age or maturity furnishes them with the necessary means of preying upon the buds and foliage of the tree. As the ova will not incubate in the ashes—and I presume sawdust would answer quite as well in this case—the plan of allowing them to remain for so long a period, completely cuts off the possibility of the next year's generation.

"These are the results of several years of unwearied and vexatious trial, and searching examination against that little destroyer of the grape vine.

"In regard to the slug or grub found on the under side of the grape leaf, I am not able to say anything of its habits; whether they burrow at the root of the vine—which I am inclined to think they do—for they were equally troublesome to my vines. I saw no more of them when I discovered the habits of the flea, and destroyed them as above. My discovery, if it may be called such, has its date from the spring of 1869, and since that time I have not discovered half a dozen of the flea, and not any of the slug."

Some gentlemen present suggested that the Flea-beetle in the larva state fed on the leaf of the grape vine, and that the slug mentioned in the communication was doubtless the larva of the Flea-beetle; that the larva probably went into the ground to pass into the pupa state, and that the alkali of the ashes caused the death of the insect at that time.

On motion of Mr. SAUNDERS, it was resolved that Messrs. Beadle and Rykert be a committee to draft a series of questions to be submitted to members.

On motion of Mr. SAUNDERS, it was unanimously resolved that the sum of fifty dollars be appropriated for the purchase of electrotype plates of insects, for the illustration of that part of the entomological report which related to fruits.

Miscellaneous business being in order, Mr. SCHOFF inquired if other members had lost their grape vines during the past winter.

He had lost many, varying from two to fourteen years of age. Had lost three or four each of the Adirondac, Hartford Prolific and Delaware; some five or six Isabellas, and one Catawba. Some of the Isabellas and Catawbas were killed down, but are now starting from the ground or near the ground. The ground is well underdrained, and the vines are on a trellis. He did not lose any of his Clintons. Does not cover his vines in winter. When he used to cover them he got a crop of grapes one year out of three, but since he ceased to cover them he has had good crops every year until this. He regards this year as very exceptional, and attributes the death of the vines last winter to the want of sufficient heat last summer to ripen the wood.

Mr. SAUNDERS said that he had lost none in his garden but one Diana; in the field he had lost a few of the Rebecca, Delaware and Hartford Prolific.

Mr. PETERS and Mr. ATTWOOD had not lost any.

Mr. SLAUGHT wanted a cheaper remedy for the currant worm than the white hellebore.

Mr. SAUNDERS thought that the hellebore was not very expensive, that it was sold at forty cents a pound, that an ounce mixed with a pailful of water was quite sufficient for twenty bushes.

Inquiry was made concerning the best method of killing the pear tree slug.

Mr. SAUNDERS had tried sand, also unleached wood ashes; and though they were well coated with it, the slugs merely crawled out of their skins and came out quite sleek and fierce, and went to eating again as if nothing had happened to disturb them. He then tried the solution of hellebore, and it killed them.

Mr. SCHOFF had used fresh slaked lime, and it killed them.

Mr. ARNOLD had killed them with unleached wood ashes.

Mr. DOUGALL said, if they are quite young the lime and wood ashes will kill; if old, they crawl out of their skins and go to work again.

On motion, adjourned to meet at Toronto during the week of the Provincial Exhibition.

There was a collection of many varieties of raspberries on the table, some cherries, gooseberries, plums, apples of last year, and ripe Doyenne d'Été pears, the latter brought by Mr. Dougall from Windsor.

Mr. ATTWOOD also exhibited some jars of very fine honey, taken from the combs this season by the revolving comb separator; a part gathered from the white clover, and some from the basswood flowers. At the close of the meeting the members seemed to resolve themselves into a tasting committee of the whole, and fruit and honey were laid under considerable tribute.

The meeting was very pleasant and profitable; the London Directors did everything possible for the comfort of members from a distance, and we can only regret that there were not more from abroad to enjoy the occasion.

## The Fruit Growers of Western New York.

The regular summer meeting of this Society was held on the 22nd June, at Geneva, N. Y., in connection with the Geneva Horticultural Society.

The display of fruit was not large, owing to the extreme drought, which has prevailed with unusual severity, yet there were a good many varieties of strawberries and cherries exhibited, and some currants and gooseberries.

There was a seedling gooseberry exhibited which had been raised by Mr. Sisser, of Geneva, from the seed of some of the varieties of English gooseberries, and which had not been attacked by the mildew. The fruit was about the size and shape of the well-known Whitesmith, and said to be of equal quality. This seedling gooseberry had not been tested in many localities as yet, but it is to be hoped it may prove to be as exempt from the mildew as the Houghton. Should this expectation be realized, it will be a most decided acquisition.

There were also on exhibition some very large strawberries, measuring six inches in circumference. These were of the coxcomb shape, dark crimson colour, and made a very showy appearance. The proprietor had named them the "Panic."

The display of flowers and foliage plants was very choice, and the hall was most tastefully decorated with central pyramid and graceful festoons. But we noted nothing new among the roses, nor indeed in any class, except double geraniums. The Golden-banded Lily, not yet become common, and the miniature Ampelopsis, were there. But these were quite eclipsed by the very charming collection of double geraniums, exhibited by Mr. Chorlton, of Rochester, N. Y. There were twelve varieties of these most beautiful and attractive flowers. They were all good, and deserve a place in every garden and window in the land. There was quite a variety of colouring, from the soft rose of Madame Le-moine to the glowing scarlet of Smith's Victor. Each flower is a miniature doublerose, of which there are a large number on each truss, and these remain a long time in bloom. We gave our readers an engraving in the April number of the CANADA FARMER for 1870, showing a truss of these most desirable flowers.

We also saw, on the grounds of Messrs. Graves, Selover & Willard, a beautiful variety of the Ash-leaved Maple (*Acer negundo*) having fine silver-variegated foliage. As the Ash-leaved Maple is very hardy, growing in the coldest parts of the North-west, there is every reason to expect that this pretty tree will be perfectly adapted to our climate, and make a most desirable addition to our list of hardy trees with ornamental foliage, contrasting finely with the purple-leaved beech and maple.

The afternoon was devoted to the discussion of questions relating to ornamental tree planting, and to varieties of fruits, and the effects produced by thinning out the fruit. It was generally conceded that the cost of thinning out the fruit, when the trees are overlaid, is repaid many times by the increased size and more perfect appearance, and improved quality of the fruit, and greater vigour and health of the tree. A tree that is allowed to overbear is very sure to be injured by the overbearing, and often becomes stunted, never again recovering so as to be healthy, and is consequently worthless. Fruit that is grown upon a tree that is overloaded is deficient in size, colour, form and flavour, and will not sell as well as fully developed fruit. Besides the loss on the present value of the crop, the grower may lose his reputation for sending out fruit of the very best quality, a loss which it may be very difficult to estimate in dollars, but which is nevertheless most decidedly a pecuniary loss.

On the advantages to be derived from ornamental planting some very good suggestions were made, and among them the effect produced upon the mind of an intending settler by the appearance of the place, if made inviting by the general planting of ornamental trees and plants. One gentleman stated that he knew of two farms that lay adjoining, each of 150 acres, and as nearly alike in soil and natural qualities as could well be. On one of these farms the owner had expended about one hundred dollars in ornamental planting; on the other nothing of the kind had been done. The buildings on these farms were nearly equal in value; if anything the preference was with the farm upon which there had been nothing done in the way of ornamental planting, and yet the owner of the farm which had been improved by the expenditure of one hundred dollars in ornamental planting was offered seventy-five dollars per acre for his farm, while the owner of the other offered his farm for fifty dollars an acre without making a purchaser. Here was a difference of \$3,750 in the value of a farm of 150 acres, and all to be attributed to the judicious planting of ornamental trees, shrubs, and plants, that had required an outlay of only one hundred dollars.

Mention was also made of the remaining influence of these little attentions to the adornment of our homes and their surroundings.

A large number of trees and shrubs were named as suitable for this purpose. Chief among these were the Tulip-tree, the Cucumber-tree, the White and Red Oak, the American Chestnut, the Ash-leaved Maple, Norway Spruce, conceded to be the best of all the evergreens for general purposes, the Double-flowering Dentzia, &c.

Inquiry was made concerning the qualities of Grimes' Golden Pippin, but no one present had fruited it except Mr. Hoag, of Lockport,

N.Y., who had raised a few specimens, and judging from these, did not think it equal to its Western reputation.

The Curculio came in for his share of attention, and the meeting came to the conclusion that he was the worst enemy the fruit grower had, and that the best way of catching him was the plan of jarring the trees in the morning and providing a spread sheet under the tree for the insects to fall upon. In this way great numbers had been caught, and if there were united action in this direction on the part of fruit-growers, their numbers throughout the country would soon be materially lessened. Some had tried the plan of strewing the ground under the tree with chips, sticks, bits of board, and the like, and sought for them in the early morning under these chips, &c., expecting to find them adhering to the under side, but had not been very successful.

Some discussion was had concerning the Apple-tree Borer, and the remedies against this pest of the orchard, which resulted in the opinion that a wash of soft soap or ley, or other alkali, applied to the trunk of the tree during the month of May, would destroy the eggs if laid on the bark, and be very likely to prevent the insect from depositing its eggs on the tree.

In the evening the Society listened to a very interesting address from H. T. Brooks, Esq., of Wyoming County. In the course of his remarks, he humorously charged the fruit-growers with having been the cause of the increased price of fruit within the past thirty years, saying that formerly apples were plenty at twenty-five cents per bushel, while peaches and plums might be had for the asking, but now, since fruit-raising had become a science, apples were scarce at a dollar per bushel, while plums and peaches were dreams of the past. On the subject of rural embellishments he more than intimated that one of the greatest and most beneficial would be the entire removal of fences from along our highways, and complimented the farmers of that section on what had already been accomplished by them in doing away with these unsightly objects that line the roadsides, arguing that they were an unnecessary expense, while they greatly disfigured the landscape. He concluded by expressing the hope that the day was not far distant when horticulture and entomology would be taught in all the common schools, a sentiment to which the audience gave a most hearty response.

DOUBLE FLOWERED GERANIUM.—At the meeting of the Royal Horticultural Society, England, held 18th May last, quite a number of these beautiful geraniums were exhibited, of which *Thomson's Gardener* says that Gloire de Nancy, Wilhelm Pfitzer, Madame Lemoine, and Marie Lemoine were decidedly the best.

### Air Treatment of Wines.

R. d'Heureuse has patented, in the United States, a method of passing air through the substance to be fermented, claiming that by this means fermentation is accelerated and controlled, the time being reduced to from four to six days after the violent foaming, and that drawn from the fermenting vats a few days after the completion of the fermentation, a perfect clarification takes place in from two to four weeks, when the wine is free from all the obnoxious ground-taste, peculiar to most American wines, and has the decided ripeness that fits it for shipping in about three months after the grapes are pressed. His theory is, that the oxydizing influence of air, admitted during fermentation, has the same effect in the course of a few days, which the air, slowly permeating through the sides of the cask, effects only in the course of years in wine fermented by the exclusion of air; namely, that it effects the elimination of all nitrogenous-glutinous matter from the wine, by the presence of which after-fermentation is caused.

His method is to place a pipe in the bottom of the fermenting vat, which is fully perforated with holes, much like the rose of a watering pot, and forcing the air into this tube by a pump, which air is allowed to escape through the perforations and rise into the must. The air rising through the must produces a mechanical action, by the stirring up and reviving of the ferment or yeast, and a chemical action by the oxydation of the gluten. Thus the gluten oxydization is going on while the sugar is being converted into alcohol, and both processes are completed at the same time. The wine then clarifies readily, and in a couple of months is equal in purity of taste, maturity and stability, to wine of two or more years.

We have been aware of this process and of these claims for more than a year past, but have been waiting to learn the opinion of those who had given this process a trial, before presenting the subject to our readers. In the *Grape Culturist* for June, an excellent monthly, devoted wholly to the cultivation of the grape and manufacture of wine, we find a letter from Mr. Cook, who says, "On the 27th of October last I elevated the casks into the fermenting room, and raised the temperature to 80° Fahrenheit. The wine was at the time one month old, and very sweet. The first application was vigorously applied ten minutes, and resulted in heavy foaming, followed by regular vinous fermentation; air was regularly and moderately impelled every eight hours, the room kept at a regular temperature of 80° F. At the close of the fifth day the sugar was perfectly alcoholized, and a perfectly dry wine obtained. The wine was drawn from the lees in three days afterwards into sweet casks, and in five days more was drawn perfectly clear and fine, and bottled for exhibition at the State Fair, where it obtained a diploma."

Mr. Younglove also writes to the *Grape Culturist* that in the fore part of September, with Mr. d'Heureuse's permission, he tried the air treatment on forty-three gallons and ten gallons sugared must, mostly Concord. He borrowed a gas-fitter's pump, added to the india-rubber tube a pipe about eight inches long made of perforated tin. The air was pumped into the must every day for a week, thermometer 75° to 80° F., when it became clear. His partner in the vineyard, a Frenchman, says that he does not want any better wine.

The able Editor of the *Grape Culturist* adds that he shall try the air treatment on a large scale next fall, as he does not doubt its applicability, and believes that it will help to obviate one of the great drawbacks to American wine-making, which is the excess of gluten in the must, that can alone be removed by rapid and thorough fermentation.

With this direct and competent testimony in favour of the air treatment, we commend the subject to the careful attention of those of our readers who are interested in these matters. So simple a thing as pumping air into a tin tube perforated with holes, and placed in the bottom of the fermenting vat, may be easily tried without any great expense.

### Strawberries in 1870.

AGRICULTURIST—has proved to be but a poor bearer on light or sandy soils; but on clay loam, with good cultivation, will yield good crops of fine berries.

BARNES' MAMMOTH—also requires careful cultivation in order to produce large fruit, and, judging from this year, is not very prolific.

BOYDEN'S No. 30—is quite large and fine, and too soft for distant market. It may prove valuable for home and near market use.

CHARLES DOWNING—is a handsome berry, of good and quite uniform size. Mr. Purdy considers it one of his best sorts, while Mr. Elliott, at Cleveland, complains that the footstalk is so weak that he cannot keep the fruit out of the dirt. We shall report in another season to test this variety, but think it promises well.

CORFAY—We shall give this in the year's trial; it seems to be a wild-growing thing, berries too small and too soft.

DOCTOR NOBLE—is certainly very large and showy; but of no value save as a curiosity.

JUCUNDA—grown in strong soil, the runners kept off, and well fed, yields a good crop of fine sized fruit.

KENTUCKY—is a large berry, strong grower, and quite productive; will be better able to form an opinion after another season.

LA CONSTANTE—does not endure our hot sun, the leaves burn very badly; yet the berries are fine and in some places may do well. We believe that Mr. Dougall, of Windsor, is very successful with it.

NAPOLEON III.—is of large and uniform size, and seems to promise well.

NICASOR—Perhaps our soil is not strong enough for this variety; the fruit is too small.

PHILADELPHIA—is highly recommended by Mr. Purdy as a profitable early sort when strawberries bring fifteen cents per quart.

TRIOMPHÉ DE GAND—is valuable because it comes in later than the Wilson, and is firm enough to bear carriage well; but it is not sufficiently productive, and this year many of the berries were not well filled out. It thrives and fruits best where grown in a strong, rich, clayey soil, and kept in hills, the runners being all cut off.

WILSON—Here and everywhere from all quarters there comes but one expression—this is the most valuable and productive sort in all soils.

MICHAEL SPRENGER—Mr. Purdy is changing his opinion of this variety, and now speaks of it as a very fine sort, quite firm, and of a bright scarlet colour. We have not tried this berry, having formed a poor opinion of it from what we saw of it a year ago in Mr. Purdy's collection at Geneva.

COL. CHEENEY—is a new sort introduced by Mr. Purdy, a cross between the Triomphe de Gand and the Russell, more productive than either, uniformly large, surface firm, bright scarlet, hermaphrodite. We are sorry Mr. Purdy has adopted the miserable idea that the *Small Fruit Recorder* can not stand on its own merits, but needs the support which can be given it by offering to give away a plant of this new strawberry for every new subscriber. Now the *Small Fruit Recorder* is well worth, yes, many times worth, the small subscription price of fifty cents a year, and it is too bad to throw suspicion upon the value of both the paper and the strawberry by this method of increasing its circulation. We know he is treading in the footsteps of very illustrious predecessors, and can only say we are very sorry that he feels it to be necessary.

### On Grapes.

The writer does not propose to give any new theory about this valuable fruit, but there is so much enquiry about raising grapes, that the supply of information is barely sufficient for the demand. It is scarcely ten years ago that the growth of grapes in Canada was neither heard or thought of outside of a few gardens in Ontario, and now we have our nurseries, our fine broad vineyards, which may be reckoned in the aggregate by the hundreds of acres, and we have our Arnold for hybridizing. I estimate that in the next ten years the growth of this delicacy, both in the open air and under glass, will be more than ten-fold; in fact, in old sections of the Provinces, from Goderich to Gaspé, both amongst farmers and gardeners, grapes appear to be settling on the brain.

There is no doubt the hot summers of Canada are well adapted to the culture of the

vine, as the growth of it in its wild state throughout the length and breadth of this country shows conclusively that it may be cultivated with advantage upon every soil, and in any sunny locality. I have heard of a wild vine having been discovered by some parties last autumn, whilst prospecting for plumbago in the Province of Quebec, on the border of a stream about ten miles distant from the Ottawa River, below the village of Buckingham, and if the results are what I have been led to expect, this new variety—as such it undoubtedly is—will not only be a valuable grape in itself, but also exceedingly valuable for the purposes of hybridizing. The bunches are described as large, and the berry itself equal in size to many of those cultivated. As the place is difficult of access, I have not yet been able to test this discovery, but I hope this autumn to obtain some of the fruit, and also some layers for planting out next spring. Perhaps Mr. Arnold could inform me whether wild fruits are improved easiest by planting the seeds or stones, or by propagation and high cultivation from layers. But to my subject. The multiplying of vines is one of the easiest things in husbandry, and may be done in three different ways. First, by layering; this should be done by laying down shoots in June. These will have well rooted by October, and may be either buried at the end of that month for protection from the winter's frost, or after having been divided from the parent vine, removed to some dry sand in the cellar until spring; or, what perhaps is best, dig a short trench in a dry sandy spot in the garden, and bury the young vines about a foot deep, driving a stake at both ends of the hole to indicate the position of the plants, so that no injury may be done to them when taken up in the spring.

Secondly. By cuttings of two or three eyes in each, which may be made from the trimmings of vines in the fall, these should also be buried for spring planting, and treated like currant or other cuttings in the spring, but should not be set out until all sign of frost has passed, and the ground has become warm. It will be more advantageous to soak them in a warm stagnant pool for a few days before planting.

Thirdly. And by a method that is the easiest method, i.e. cuttings from single eyes, leaving about an inch on each side of the bud. These should be planted in fine rich earth in flower pots, or without, if none are at hand, in a moderately warm bed in the middle of May, or sooner if convenient. Another method may be used for this purpose after tomatoes, cabbage, melons, etc., have been either put in a cold frame or set out in the open ground, they will then make a good growth before the end of the season. It will be perfectly surprising to a novice how readily and easily vines can be started by this method. If grown in pots, a six inch one will hold about five cuttings, and these may be transplanted, so soon as the pot gets the least crowded with

roots, into the open ground or cold frame. These young plants may be moved with remarkable facility, as no drooping will be experienced in the hottest weather, if the work is carefully done and the plants are copiously watered a few times afterwards. I should have stated that the eyes should be firmly pressed into the soil, so that the bud is just under the surface, no more, and all cuttings should be made from well-ripened vines.

I did intend to have said a few words on the mode of constructing cold glass graperies, but find my letter is quite lengthy enough, and so will reserve that for next time.

P. E. B.

### Strawberry Culture.

In the *Rural New Yorker* of July 2nd is a very sensible and practical essay on this subject, from which we take the following suggestions.

The soil should be well drained, warm, and in good condition. A cold, wet, or very light soil is not suitable. On good, strong, heavy or clayey lands, well enriched, the strawberry will produce immense crops. On such lands only can strawberry culture be made profitable.

Liberal applications of manure should be given every year. The best method of applying manure is to spread it on broad-cast, the fall before planting, if the soil be strong; if light, put it directly in the hill. The best manure is good stable manure. The second best is swamp muck composted with lime, allowed to lie all summer, and thoroughly worked over in early winter. Fill a furrow with the muck, and plant directly over it. Next to this is pure bone meal. Superphosphates are not always reliable. Bone meal, at the rate of a thousand pounds to the acre, scattering it immediately over the plants just before a rain or on a cloudy day, will give good results. The best time of year to apply it is about the first of August. Liquid manure is always good. A pound of potash dissolved in a barrel of water, and applied to the plants, will cause them to throw out an abundance of runners. A pound of sulphate of ammonia dissolved in a barrel of water, and applied to the plants, will cause them to produce an immense amount of fruit, and has a tendency to cause the fruit to mature late.

Many cultivators have failed because they choose rather to buy their plants of some cheap dealer, than to pay a fair price for superior, well-rooted stock. Good strawberry plants cannot be properly grown, dug and packed at less than eight dollars per thousand; a thousand good plants are worth more than three thousand obtained at a cheap rate. Every time I have purchased cheap stock I have lost money.

The Spring is the best season for planting in the latitude of New York, and to the northward of that, Fall plantations are often a failure. Never take up your strawberry plants in the fall, and heel them in through

the winter, nor buy plants that have been heeled in over the winter; they will usually prove a failure. In handling your plants keep the roots from the sun; select a cloudy or wet day for planting; if possible, just before a rain or at nightfall.

For family use, plant in rows two feet apart and one foot apart in the row. For market, grow in hills eighteen inches apart, in rows two and a half feet apart. It is decided injury to put plants too close together. Their roots need considerable space to ramble in, and if they have sufficient room the stools will be stronger and more productive.

Keep the cultivator stirring every week the first year. Keep down the weeds and clip off the runners thoroughly. Every fall, just as the ground freezes, cover the field completely with a mulch of coarse hay, or of straw, leaves or chopped corn stalks. This is the most important point of all; it prevents the plants from being injured by the winter, it protects the soil from the sun in time of drought, and often doubles the crop by keeping the roots moist and cool, while it also keeps the fruit from the ground. Plantations that are thoroughly mulched need never send any sandy or gritty berries to market. After a hill has borne for one or two seasons, it is well to cut off the old leaves and fruit stalks, and permit an entirely new top to form. This practice is a common one among many English gardeners.

The profits of strawberry culture have been greatly exaggerated. It costs me three hundred dollars per acre to properly get a plantation of strawberries into bearing, exclusive of the land. Of this, one hundred dollars is capital expended in buying baskets. Still, I make my land pay all expenses, interest on cost and a profit of from one to two hundred dollars per acre per annum. Our neighbours call me lucky, for none of them are able to approximate these figures. I do not believe in strawberries as a farm crop by ordinary farmers. I advise no fruit grower to depend upon one crop alone, but to have a variety, one succeeding the other. Even then I would not depend on fruit alone, but would have a little extra land on which to grow food for the family, horses and cattle. He will need immense quantities of manure, and that should be made at home.

The varieties most profitable for market are the Wilson, Jucunda, and Triomphe de Gand. All that a market berry needs is good size, firm flesh and deep red colour; flavour is of minor consequence. The Wilson is our main reliance; the Triomphe de Gand pays with fine treatment, heavy soil, and good prices. The Jucunda is doing better every year. The Fillmore is hardly second to the Jucunda. These must be grown only in hills, and the runners kept carefully cut off.

Strawberry growers should locate near the markets where the fruit is sold. Home-grown fruit, being also more fresh, is also worth a higher price.

D. Hexamer, of Newcastle, N. Y., says that he finds that the better and more carefully he cultivates, the greater the profit. The Wilson is the berry for the people; it grows anywhere, under any culture, and sells well. Triomphe de Gand on heavy soil is more profitable than the Wilson, because in the New York market, when the Wilson sells at twenty-five cents per quart, the Triomphe will bring seventy-five. He contracted his entire crop of Triomphe at forty cents per quart, net. The Jucunda is not of as good a quality as the Triomphe, yet it is showy, and sells as well. About three-fourths of its crop is large, marketable fruit, while only about one-half of the Triomphe are of first-class size. If it were as firm a berry as the Triomphe, it would be more valuable for market. Nicanor is valuable, ripening just before the Wilson. The Charles Downing is valuable, good flavour, good shape, hardy and productive. Colfax is the poorest berry he ever had.

### Cauliflower Maggots.

Last year I planted two hundred cauliflower plants, and as I had determined to be specially careful, to prevent the black grub having more than his share, I enclosed each plant in a paper cone or cup—the apex of the cone being tied round the plant just above the roots, and the cup extending to about two inches above the earth. My idea was, that this would effectually prevent the black grub from biting off the green portion of the plant. The remedy was effectual; they all grew, and not one was injured by the grub, but the cups afforded an excellent laying establishment for the fly that deposits the eggs that form the maggot, so destructive to cabbage and cauliflower plants; and ten days after the plants were set out, on examination I found nearly half a tea-spoonful of white maggots in the apex of each cone, prevented, however, from going downwards by the string that fastened the cone to the root. I soon saw that in avoiding Seylla I had run into Charybdis, and in protecting against the grub I had established a perfect maggot factory.

My brother proposed dealing with these "secundem artem," and as the cup afforded an excellent means, he desired me to procure a quarter of an ounce of corrosive sublimate, a most deadly poison, and after dissolving it in two gallons of water, to water each plant with it, pouring about two wine glassfuls into each cup. This I carefully did, and the maggots being all exposed to the direct action of the poison were entirely destroyed, and as fine a crop of cauliflower was the result as I ever saw grown in Canada. Many years since my brother had been accustomed to use this remedy, and always with success, for the maggots at the root of the plant. His course was to water immediately after planting with about half a pint of the above mix-

ture, and the plant and earth around being completely saturated with the poison, destroyed the egg and worm. Some prejudice has existed as to the use of this active mineral poison, from its dreadfully corrosive properties; but if kept from all chance of contact with any living thing, there is no danger whatever in using it on the cabbage or cauliflower plants. One watering at the time of planting will suffice, and if well done and a small depression formed about the plant to receive the liquid as described, a cure, or rather *kill*, is pretty certain. But it is no use to wait until the mischief is done, and the roots of the plant half eaten, as it will never again thrive; it may live, but that is all. C.

NOTE BY EDITOR.—We would earnestly recommend any one trying the above remedy to be very careful. It is a most actively corrosive poison, and ought never to be left within reach of children or of domestic animals, or where it may be used by mistake for something else.

### Grape Vines in Central Canada.

To the Editor.

SIR,—Will you be kind enough to let me know, through the columns of your valuable paper, what variety of grape is best suited to the climate of Central Canada; also, the best time for planting, and the probable yield per acre; or refer me to some public work, which is easily accessible, and which contains the information required, and oblige,

INQUIRER.

REPLY.—Inquirer must help us answer this question by asking those who have planted different sorts of grape vines in his vicinity, and giving us in a letter the answers he receives.

For the purposes of this inquiry our outdoor vines may be divided into three classes, those which are hardy enough, but require a longer season in which to ripen their grapes than is afforded by the climate, and those which suffer so much in winter as to lose their fruit buds.

In the first class we place the Catawba, Cuyahoga, Diana, Herbemont, Norton's Virginia, Maxatawney, and To Kalon.

In the second class, Allen's Hybrid, Iona, Isabella, Rebecca, and Union Village.

A third class, which is the class "Inquirer" is seeking, would be those vines which are sufficiently hardy to endure the climate, and which mature their fruit within the short time of the summer of that latitude.

The information elicited by the inquiries on this subject which were made by the Fruit Growers' Association of Ontario and contained in their report for 1869, is very meagre. Yet we believe most of the following varieties would be found to answer the purpose, and would advise "Inquirer" to give them a trial, namely, Concord, Clinton, Creveling, Delaware, Israella, Martha, Barry, Brant, Canada, Cornucopia, Lindley, Massasoit, Wilder and Sherman.

### Second Fermentation in Wine.

To the Editor.

SIR,—Would you please inform methrough the GLOBE what will prevent home-made wine from working the second time. I made 300 brls. Myatt wine last year, and in filling up some of the barrels with wine out of another barrel, I find it has commenced to ferment. You will greatly oblige me by giving me the desired information. R.

REPLY.—Perhaps some of our readers can give the required information.

The juice of the Rhubarb plant contains very little sugar, but an abundance of acid, which we believe to be mainly oxalic acid, not a very desirable beverage. In order to reduce this acid to a drinkable proportion, it is necessary to add a large quantity of water, but as this mixture would not generate sufficient alcohol to preserve it, an addition of sugar must be made; this sugar is by fermentation converted into alcohol; when the sugar has been wholly changed to alcohol, then alcoholic fermentation will cease, and if sufficient spirit has been formed to preserve the liquid from further change, it will remain in that state. If there be not sufficient alcohol to preserve it, then acetous fermentation will set in, and the alcohol will be converted into acetic acid. When the liquid is kept from all contact with the atmosphere, by being closely corked in bottle or barrel, a small percentage of alcohol can be safely preserved; but if exposed to the air, weak alcohol begins to oxydize, and is converted in a short time into vinegar, especially if the temperature be high. It is probable "R's" mixture did not go so far in its fermentation last year as to change all the sugar he put into it into alcohol, hence, on the return of warm weather, facilitated perhaps by some agitation on pouring more liquid into the barrel, alcoholic fermentation has commenced anew, and will continue until the sugar is all converted into alcohol. The prevention of this second fermentation probably lies further back, namely, in making the first fermentation so rapid and complete that the sugar shall at that time be wholly converted into alcohol, and the liquid clarify itself, and be racked off from the vegetable matter that incites to fermentation. Yet so complete a fermentation may not be possible but that a slight second fermentation will set in on the return of warm weather. It is well known that wines usually undergo considerable change during the summer following the vintage, and that the light wines in particular need careful packing and handling to prevent the occurrence of acetous fermentation.

We trust, now that grapes suitable for wine-making have become so abundant, that "R" will cease to use the stalks of the rhubarb, which at best can yield him only a very disagreeable acid; and, if he wishes to make a light summer drink, take instead a few bushels of grapes, whose acids are wholesome and refreshing.

### The Double Tiger Lily.

There is not much tendency in the lily tribe to produce double flowers, the only two double-flowered sorts that we know of beside the present being the double white and double purple Martagon lilies. There is a variety of the common white lily known in florists' catalogues as the double white, but instead of flowers it simply produces a long spike of white leaves differing but little from the ordinary green leaves of the plant, and is therefore known among botanists as *L. candidum spicatum*.

The variety *Lilium tigrinum pictum* was introduced into this country by Mr. Thomas Hogg during his late residence in Japan, is very rare in this country, and has not, so far as we are aware, been yet introduced into European gardens. It is very double, frequently having thirty petals to each flower, of the same colour and spotting as the single species, and is both beautiful and remarkable.

Mr. Hogg has also introduced a gold-striped-leaved variety of the Tiger Lily, the foliage of which is very beautiful; of this only one plant is known to be in this country. The flower is single, and of a somewhat lighter red colour than the common species. —Rural New Yorker.

### Fruit at Berlin, County of Waterloo.

The prospect of the grape crop in this locality is the best I have seen; the Delaware in particular shows a fine blossom. The apple crop will only be partial; some varieties have suffered severely from the effects of last season. The root-grafted Baldwins on my ground are killed, the injury being just at the ground, while those budded about three or four inches above are safe. The Golden Russet, Hubbardston Nonsuch, and even the Snow apple, have suffered severely on last year's wood.

Some varieties of plums, which were considered very hardy, have been badly injured, such as the Lombard and Yellow Gage, while the Imperial Gage escaped without the least apparent harm, all my specimens being loaded with fruit. My plum crop will be good—at least twenty bushels of the green and yellow varieties. Lucombe's Nonsuch carries off the palm; on one tree alone there are five bushels. The next best is the Washington, then the Bingham, and Imperial Gage.

The curculio has not been quite so destructive, nor yet so abundant, as formerly. It is of no use for me to try to compete for the Fruit Growers' Association prize; I did not find one hundred, although at work every morning for at least two hours, having a spread of some twenty yards of cotton to catch them on.

SIMON ROY.

Berlin, June 20th, 1870.

### Watering the Garden.

Although for some weeks past rain has been abundant, most places suffered during the early part of the summer from drought, and those who had gardens to cultivate were meditating upon watering-cans, and tubs, and sprinklers.

Much can be done when preparing the ground for planting to mitigate the severity of dry weather, by deep loosening of the soil, thoroughly breaking it up and pulverizing it, and applying to it a liberal dressing of well-rotted manures. Indeed, when this is well done before planting, and the surface of the ground is kept loose and friable by cultivation after, it will seldom be necessary to water the garden, even in the driest season. As a rule, much more can be done to prevent plants from suffering from drought, by the use of the hoe and the rake, than by the application of water. When the surface of the ground is kept loose and well pulverized, the evaporation of the moisture from the soil below is greatly retarded, but when the surface becomes hard, the whole soil bakes and dries out.

But sometimes it becomes necessary to water our gardens, and yet oftentimes more injury is done by the improper use of water than would have resulted without it. It is in the hope of giving some reasonable hints that will be of service to our readers, that we now write.

Do not use *cold* water, such as it is when taken fresh from a well, or spring, or covered cistern. Let it be exposed to the sun and air, at least one day, in some open barrel or tub, or other, reservoir.

Do not water plants in the morning, or during the day, while the sun is shining hot, but just at evening after the sun has declined so far as to lose its scorching power, and the coming night will give time for the water to soak into the ground, and evaporate gradually from the leaves and be absorbed by them.

Do not give the plants a mere sprinkling, barely wetting the leaves and the surface of the soil; but give the ground a thorough soaking, so that the water will penetrate to a good depth. It is far more beneficial to the plants to receive one thorough watering that penetrates down to the lower roots, than a dozen mere surface sprinklings. Indeed, one such thorough watering will usually carry the plants through our most protracted droughts, if followed by the surface stirring mentioned below. The reason of this is very simple. The dry weather has compelled the plants to send their roots deep into the soil in search of moisture, and in order to give immediate benefit to the plants the water should go where the roots are. If, on the contrary, the water is only just sufficient to moisten the surface, it will dry up before the roots find it, or if it is kept moist long enough to induce the plant to send out surface roots, which it will do to get it, then the plant ceases to send out roots below,

and depends upon getting moisture through these surface roots. If then the supply be not daily kept up, and the surface be allowed to dry up, the hot sun soon causes these surface roots to perish, and the plant, deprived of its moisture, flags, and often dies.

In the morning, after watering the previous evening, stir well the surface of the soil, so that it shall be quite loose. This will prevent the surface from baking, and keep the soil below cool and moist.

Do not water often. Water thoroughly, as has been already directed, and pulverize the surface well on the following morning, before the sun is hot, and let that suffice for a week at least. In this way by taking one bed, or two, at a time, the whole garden can be gone over, and the plants benefitted. Better not to water the garden at all than to give it the mere surface sprinkling so commonly practised, and that without any subsequent stirring of the soil.

### Hamilton Horticultural Society.

The second exhibition of this Society took place July 1st in the Drill Shed, Hamilton. The show in many respects was much behind what we have seen in former years; there being not nearly so large a display of cut flowers and floral gems from the greenhouses. We did not observe any novelties amongst the floral beauties. Of early vegetables there was a very fair, though not large, show, and the articles appeared to be well grown and well arranged. We noticed sixteen pecks of new potatoes, of which five were Early Rose. The best, however, seemed to be the Kidneys, which were very fine, appearing more ripe and attractive than the Early Rose.

Of fruit there was a most excellent exhibition in strawberries, cherries, currants and gooseberries. There were twenty-two plates of strawberries, mostly different varieties; of which the Dr. Nicaise were extraordinarily large and fine, while Jucunda, Russell's Proflie, and Triomphe de Gand showed off to great advantage. Of cherries there were sixty-seven plates, the Black Tartarian and Napoleon Bigarreau being very fine and large. Some ten new seedlings, not yet named, were shown, of which two or three light sorts appeared to be of first-rate excellence as regards size and appearance. It was too early for currants, gooseberries and raspberries to be ripe, although those shown did not lack for size; the gooseberries especially were very large.

### Preserving Fruit by Carbonic Acid Gas.

To the Editor.

SIR,—In your report of the winter meeting of the Fruit Growers' Association of Ontario, it appears mention was made by some of the members of experiments which they had made in keeping fruit in cans charged with sulphurous acid gas; and it was thought to be advisable to make experiments with carbonic acid gas with the same end in view.

Being desirous of making the experiments above mentioned, I should feel greatly obliged if you, or some of your numerous correspondents, would kindly inform me as to how the gas is generated; how the cans are charged; and when charged how the atmosphere is excluded, or any other necessary knowledge on the subject.

JAMES MCINTOSH.

Colborne.

REPLY.—Carbonic acid gas may be readily obtained by pouring sulphuric acid, diluted with two or three times its weight of water, on small fragments of chalk or marble. A wide-mouth bottle with a nicely fitting cork, a few pieces of glass tubing, and a piece of India-rubber tubing about the same diameter, is all the apparatus required. One piece of glass tube should be made to pass through the cork down nearly to the bottom of the bottle, so as to be under the liquid when the gas is being given off. Through this, fresh acid may be added from time to time as required—we will call this No. 1. A second tube, No. 2, should be made to pass through the cork, and to the upper end of this a short piece of rubber tube should be attached, having a third of piece glass tubing at its upper extremity. The object of having the rubber tubing between the two pieces of glass tube is to enable the operator by its flexibility to convey the gas into any sort of vessel he may desire.

Having put some pieces of chalk or marble in the bottle, pour in through tube No. 1 some of the acid, when a brisk effervescence will immediately take place, the gas being given off rapidly. Carbonic acid gas being heavier than atmospheric air, it first displaces the air in the bottle, driving it out through tube No. 2, after which the gas comes over in comparative purity. Place the exit tube into the bottle, or other vessel you may wish to fill, having its extremity near the bottom, when the gas will gradually displace the air as it enters, in precisely the same manner as water would. To ascertain when the bottle is filled, light a small piece of twine or other combustible, and introduce it slowly into the bottle. As soon as it reaches the gas, the flame will be immediately extinguished. The fruit to be preserved may be put into the bottles before they are filled with the gas; then fill to overflowing, and cork and seal with wax in the usual way.

SALTING CABBAGE PLANTS.—A writer in the *American Agriculturist* thinks that salt is an excellent fertilizer for cabbage in places remote from the sea. He sprinkles a pinch of salt on the centre of each plant when they are wet with the rain or dew, a few days after they have been set out. When the plants begin to form heads, he sprinkles another pinch of salt upon them, using in the whole a quart of salt to five hundred plants. He thinks that it improves their vigour, and promotes their heading. Will some of our readers try the experiment, and send the results to the FARMER?



### Long John Strawberry.

The *Rural New Yorker* for July gives an illustration of a strawberry with the above name. The fruit was sent to the *Rural* by John Burdett, of La Salle, N. Y., who says that he thinks it to be "superior to any known variety for flavour, size, colour, quantity and shipping qualities."

The *Rural*, judging from the samples received, says that "it retains its colour well, which is a bright crimson; that it has no neck, is tolerably firm, though not first-class in that respect; is not fragrant nor of high flavour, with little or no acidity; and that for local market it would probably prove of much value. The fruit is glossy, showy and large, and the plant a strong grower, with heavy foliage."

We presume this to be the strawberry mentioned on page 34 of the Report of the Fruit Growers' Association for 1869, by Mr. Geo. Leslie, Jr., who there speaks of it as a "large berry and of good quality." He further says that "the plant is much more robust and hardy than the Wilson, while its productiveness is fully *one-third more*, thus placing it at the head of the list for market berries. It has been planted and tested side by side with the Wilson for some years, and has fully borne out these statements. To the enormous productiveness I can bear testimony, having been an astonished witness thereof." Mr. Leslie saw it on the grounds of Mr. John Cross, at Oakville, in the summer of 1869, and we hope that Mr. Cross will tell us whether, after the trial of it this season, he thinks it worthy of general dissemination.

### Bark-splitting in Apple Trees, Etc.

To the Editor.

SIR,—I planted an orchard last spring on a heavy clay loam, and during the summer the trees grew unusually, looking very thrifty. Late in the fall a mound of earth was raised about each tree to prevent the mice from barking them, taking the earth away as soon as the ground was dry in the spring. This spring the bark of several of the trees is split near the ground. There was no manure near the trunks of the trees during the winter; they were mulched in the usual way when planted, but the mulch was removed several feet when the earth was put about them.

Also, the tops and branches of some of the trees are dead, while the trunks are sound and apparently healthy; this is especially the case with the Baldwin and Red Astracans, although they did not appear to grow any faster than the other varieties.

Can you or any of the readers of this journal explain the causes of the bark splitting, and the branches dying? I should also be glad to learn how to prevent it in the future, and what should be done with those already injured.

CULTIVATOR.

### Stock for Grafting the Cherry.

To the Editor.

SIR,—Might I take the liberty of enquiring if any of the cultivated varieties of cherries will take by budding or grafting on the black common wild Canadian cherry?

I inserted several buds of the common red cherry in black cherry stocks; none, however, of them took; but whether from unskillful manipulation or some other cause I could not ascertain. Any information on the point will be gratefully received by

A FARMER.

REPLY.—We have never used the wild black cherry as a stock. Will any of our readers who have tried budding or grafting on it give our correspondent the results of their trials? The Mazzard cherry is the one usually planted by nurserymen for stocks upon which they work the different varieties of cherry. The Mahaleb cherry is used when it is desired to lessen the size of the tree.

### Double Hollyhocks.

No great has been the improvement made in these flowers, that they are well worthy of the attention of those who desire to make their gardens and lawns attractive.

Planted among the shrubbery they produce a fine effect at the season when but few shrubs are in bloom. They will be much finer if the soil in which they are planted has been well pulverized to a good depth, and liberally enriched with well-rotted manure.

A very fine selection, embracing quite a variety of colours, can be had from the nurserymen's lists. Perhaps the following is as good a selection as can be made.

Cygnets, pure white.

Black Douglas, intense black.

Earl of Rosslyn, bright glowing scarlet.

James Anderson, deep rosy peach.

Mrs. Meiklam, light rosy lilac.

Gem of the Yellows Improved, deep yellow.

Royal Scarlet, intense crimson scarlet.

Wm. Thomson, light rosy salmon.

The Prince, deep buff.

Mrs. Downie, delicate soft salmon rose.

Those who are desirous of obtaining these flowers in their highest perfection will do well to mulch the ground around the plants, by the first of June, with rotted manure.

### Providing for the Birds, and Protecting the Garden.

A writer in an English journal describes his method of protecting his garden from the depredations of birds, and at the same time preserving the lives of these useful feathered friends. The plan may suggest a useful hint to some of our Canadian farmers or gardeners. The writer referred to says:—

"There are few gentlemen's establishments where the kitchen and fruit gardens are not more or less surrounded with shrub-

beries and woods, consequently there are great numbers of birds, which are generally most unwelcome to the gardener when he sees them fly off with his best strawberries and cherries; but I fully believe that the amount of good birds do in destroying insects (to say nothing of their beautiful notes in spring and summer) more than repays us for the small quantity of fruit they steal in the season. The plan that I have adopted is this:—In the autumn of 1867, when clearing off the strawberry runners, instead of consigning them all to the rubbish heap, I had a large quantity of them pricked out amongst the shrubs to provide food for the birds; the following season they well established themselves, and produced a fair crop last year; this year they cover a piece of ground about forty feet square, and are loaded with fruit, which is now ripening, and looking as well as those in the kitchen garden; and during the past week I have seen very few fruit-eating birds in the garden, as they prefer those provided for them amongst the trees and shrubs. I would certainly advise gardeners to adopt my plan, as strawberries will grow in any soil and situation; where nettles and docks grow strawberries will grow. They may be planted in hedgerows, coppices, or in any rubbish yard at the back of the garden, and will produce abundance of fruit for small birds, and also for the garden boys and labourers, who seldom get a dish of fruit, although employed in cultivating it for years. There are many spots amongst shrubs which are not immediately under the eye or seen from the mansion, in which weeds often establish themselves, and those are the places I recommend to plant the strawberries in, as I find they generally master the weeds, and help to keep them down."

### The Striped Bug.

The editor of the *Germanston Telegraph* thus gives his method of protecting cucumber, melon and other vines from the depredations of the striped bug, which, he says, after several years' trial has proved a complete success. "Instead of aiming to drive away the insect by soot, ashes, etc., we pet it, or rather furnish it with food better than the young melon and cucumber plants. We sow around each hill at the time of each planting a few radish seed, and coming up about the same time, the tops supply pasture for the bug, which it much prefers to the vines. Lettuce will also answer, but the radish is rather liked the best. While our vines are untouched by making this little provision for it, the young radish tops are completely perforated. Should this fail—which is seldom the case, and has never been with us—sprinkle the vines with a solution of whale oil soap and water. No other insect but the curculio can stand this soap. Where this preparation is not attainable, a weak solution of carbolic disinfectant soap will answer as well."

### Currant Cultivation.

The currant is one of our most useful hardy fruits, and may be grown to perfection as well in the gardens of peasants as in those of the wealthy.

Any common garden soil will suit the currant, and it will grow freely and bear abundantly either in an open or a shady situation; but to insure good fruit the ground should be well cultivated, and, previous to planting, be trenched to the depth of two feet. While they will grow in almost any soil, currant trees delight in a strong loam, and will there produce best, but on a sandy soil the crop will come in rather earlier.

When the trees are planted the roots should be nicely and carefully spread out in a horizontal position, and the shoots may be reduced one-third of their length, taking care to cut to a bud pointing outwards. We have now a tree with a stem eight inches high, and three branches diverging from it. Several shoots will be produced in the following season; but two should be encouraged on each branch, the rest being shortened to within one or two buds, or an inch of their base. The six shoots left will form the framework of the future tree, and should be again shortened to two-thirds of their length, or about nine inches. On these other branches may be encouraged from near their base, and at a regular distance from each other of six or eight inches from their extremities, and confining the head to the height of four and a half or five feet. When the trees are thus formed, by allowing the requisite number of branches to rise at regular distances from each other, they will require every winter the laterals or side branches produced in the previous year to be cut back to one or two eyes, around which a number of little fruit-spurs will be formed; and the leaders having attained the desired height, must be cut to within two or three buds of their base.

There are some people who recommend summer pruning for bush currant trees. Where trees are strong and luxuriant, producing a mass of watery spray, crowding the centre of the bush, this may be removed in June to admit sun and air—agents essential for perfecting the growth and flavour of the fruit. All the root-suckers may be twisted off. I may here observe that if there are no more shoots retained than will be necessary to remain at the winter pruning, the next season the tree will in consequence be less vigorous, for more leaves are encouraged, or more of the respiratory organs of the plant; and in proportion to these so will the roots be, and the more roots the more vigorous the tree.

My remarks have hitherto been applicable to the red and white currants; the system of pruning to be followed with the black currant must be somewhat different. The red and white currants bear the fruit both on the young wood of one, two, or three years'

growth, and on the older branches, from small snags and spurs on the sides of these, and which often continue fruitful for several years. The black currant bears chiefly on the wood of the preceding year; also from spurs, which, however, are less abundant and smaller in size than on the red and white currants. In pruning very little shortening is required. The chief thing to be done is, when the branches are too crowded, to thin them out, or to shorten back any that are becoming too high. No two shoots should be allowed to touch each other, and all cross branches must be cut clean away. The fruit is disliked by some people, and never brought on the table for dessert. It is used in tarts and puddings, and made into jellies, wines and preserves. —**QUINTIN READ**, Port Hill Gardens, in *Journal of Horticulture*.

A writer in *Moore's Rural New Yorker* recommends the application of air-slaked lime to currant bushes as a remedy for the currant worm, and thinks this method, besides being cheaper, has several advantages over the use of hellbore.

THE SIX BEST FANCY PELARGONIUMS exhibited at the May meeting of the Royal Hort. Society, Eng., perhaps as fine as were ever before exhibited, were Mrs. Ford, Lady Craven, Madame Sainton Dolby, Godfrey Turner, Roi des Fantaisies, and Ellen Beck.

THE CURRANT WORM.—We have seen in our exchanges a statement that if red or white currants are planted alternately with black currants, the Saw-fly worm will not molest them, being kept away by the peculiar odour of the black currant. This is a mistake; we have tried the experiment, and know that it will not answer.

PLANTING POTATOES.—**J. D. Hickey**, Emmetsburg, Md., says a few intelligent farmers in his neighbourhood have adopted the following process of planting potatoes with success:—It is to plant—one in a hill, or a foot apart in the drill—cuttings of one or two eyes, from good-sized tubers, and after they have sent out strong shoots, six or eight inches high, to pull out all but the best one, which is left to grow and mature large sound products. "If there be sceptics of the utility of this mode of culture, let them try it on a small scale."—*Rural New Yorker*

FERNS.—A writer in the *Gardeners' Magazine* states that in April he takes up the roots of *Lastrea Filix Mas*, the male fern, and *Athyrium Filix Fœmina*, the female fern, and without soil puts them in a large china bowl in the centre of the table, and that in this way they will keep green until Christmas, or even longer. The fronds gathered about August, dried between sheets of soft paper, and placed during the winter in bowls filled with moist sand, will become quite green and fresh, and make a pretty parlour or sitting-room decoration.

### Poultry Yard.

#### The Influence of the Cock.

This subject is broached in the first number of the poultry periodical just started by our neighbours on the other side of the lakes, and will no doubt lead to interesting discussion and experiments, to determine the question how far the influence of one impregnation extends among fowls. The following article in the April number of the *Poultry Bulletin* opens the subject:—

"It is apparently well settled that, in the case of dogs, the influence of the sire is felt in progeny born at a subsequent impregnation. Breeders of dogs confidently count upon mongrels re-appearing in subsequent litters, if the first litter is thus tainted. No mare, which had been used for breeding mules, would ever be used by a breeder with the expectation of producing a first-class colt.

"Whether founded upon actual knowledge or not, these are settled convictions in the minds of many breeders, and it is important for us to ascertain whether the same views apply to oviferous animals, and if at all, how far.

"It is stated, upon apparently good authority in poultry works, that one connection is sufficient to render fertile all the eggs which a turkey hen will lay at one season. This is doubted by some, but seems to be well authenticated.

"The opinions on this question, when applied to fowls, vary wonderfully. Some maintain that each egg requires the separate service of the cock, while others point to experiences which would justify the application of the doctrine that non-fecundated eggs in the ovary are impressed by the cock, so that when subsequently fecundated, the progeny are affected, even after the laying of one clutch.

"If there is the slightest foundation for this latter view, the necessity of keeping fowls separated at all seasons of the year becomes imperative; while if the other view can be established, breeding fowls can be permitted to intermingle during the fall and early winter months. Without venturing an opinion on this subject, we would ask if it is not possible to institute experiments which shall absolutely determine it?

"We propose to place a laying black Spanish hen with a rose-combed White Dorking cock; then to remove her, and pen her by herself, apart from any cock, and to place her eggs, laid while thus apart, either in the incubator, or under hens, until we shall have established the fact that she is laying eggs which are not fertile. After we are well satisfied that she has ceased to lay fertile eggs, we shall again put her with a Black Spanish cock, and marking each egg that she shall then lay, we shall hatch them.

"By this means we can establish how many of the eggs are impregnated, and whether the influence of the cock extends beyond those actually fecundated. We shall be glad to furnish the result of this investigation to the Society.

"A series of experiments, simultaneously conducted by other breeders with other varieties, strongly opposed to each other in their markings, would determine the natural law which governs this question.

"Will not other breeders make similar trials?"

In the next number of the same periodical, which has come to hand, and fully bears out the excellent promise of its predecessor, the subject is again taken up by a correspondent, who cites, among others, the following instances:—

"A hen escaped from a market waggon in the woods, went to a solitary hut, laid a clutch of eggs and brought out twelve chicks. There were no fowls kept anywhere near, hence nearly or quite the entire clutch must have been vitalized before her escape.

"The writer was breeding Light Brahmas and Danvers Whites. These last are a breed which, according to the American Agricultural Annual for 1867, originated in a cross of Buff Cochins and White Dorkings, and for twelve to fourteen years have been bred white, with bare yellow legs. By accident, one day a Brahma cock got with the Danvers hens, and the result was that the chicks came, some showing the cross distinctly, others very little of the Brahma, and others none at all except a tendency to feather upon the legs, which in some cases never amounted to even a single perfect feather.

"A neighbour had a Bantam rooster running with his hens; next to him a friend was breeding Games. It was quite early in the season, and noticing after a while that the Bantam came over occasionally, he thought perhaps he might tread a hen, and so he had a tight coop made and kept his hens in, and for fear of the Bantam did not save an egg for over a month. It may have been nearly two months—I think it was—before he had chickens hatched. What was his surprise, when they were hatched, to see several of them with feathers on their legs like the Bantam cock!"

We hope some of our own poultry breeders will institute experiments to determine this important point.

### A New Treatment of Gapes.

The great fatality amongst young poultry and pheasants occasioned by the presence of the gape worm (*Sclerostoma synjamus*) in the windpipe, is well known. Many yards are wholly free from this pest; others are decimated, or even more extensively depopulated by it.

Of the prevention of gapes nothing is known beyond the desirability of shifting yearly to

new ground, and the necessity of extreme cleanliness. The cure is by no means easy or certain. Removing the worms by a feather or twisted hair is troublesome, and the operation is not always successful. Fumigation with tobacco smoke is rarely of much avail. The administration of turpentine is attended with danger to the chickens, and opening the windpipe and extracting the worms whilst the bird is under the influence of chloroform requires surgical skill.

Hence a new and, as far as I have yet tried, a perfectly successful mode of treatment is likely to be received with favour. Knowing the extremely active influence of carbolic acid on the lower forms of animal life, I determined to try the effect of the inhalation of its vapour in the cases of gapes that came under my notice. During the present season I have operated three several times on chickens that were suffering severely from gapes, being almost choked by the worms. Each bird was placed in a small deal box, the open top being covered with a cloth. I then took one of Savory's carbolic acid fumigators, which I happened to have at hand. This consists of a small metal saucer, heated by a spirit lamp below. On the saucer I placed about a dozen drops of carbolic acid, lit the lamp, and put the apparatus in the interior of the box. Dense white fumes soon filled the box, and, being of necessity respired by the bird, came at once into contact with the worms. The operation was continued in every case until the birds were in imminent danger of suffocation. They soon, however, recovered on exposure to the air, and on the day following the treatment were running about perfectly free from any symptom of disease. The chickens operated on are not now to be distinguished from those of the brood that were not affected.

I write to commend a trial of this plan to those poultry and pheasant breeders whose young birds are afflicted with gapes. No special apparatus is required, as any little arrangement which will serve to volatilise a few drops of the acid will answer; but I used that of Messrs. Savory and Moore, having it at hand, and it being conveniently adapted for the purpose.

In my time I have had a good deal of experience with birds afflicted with gapes, but have never found any treatment at all approach that of carbolic acid in efficacy.

Since writing the above it has occurred to me that, as every one has not a spirit lamp, the vapour of carbolic acid might be used by putting a hot brick into the box, and pouring a few drops of the acid upon it.—W. B. Tegtmeier in *London Field*.

AUCTION SALE OF POULTRY.—We understand that there will be an auction sale of poultry in this city, under the auspices of the Ontario Poultry Association, during the Exhibition week. The sale to commence on the 6th of October.

## Household.

### Canning Fruit.

The following extract from an excellent article in the *American Agriculturist* on canning fruit gives directions for the performance of this domestic operation, which all provident housekeepers should attend to betimes. The principle on which success depends should be borne in mind—namely, excluding air completely and permanently from the fruit. The application of heat also serves to destroy the germs of fermentation present in all vegetable matter. Premising this general statement, and that wide-mouth glass or earthenware vessels are best fitted for domestic use, the writer gives the following receipt for the cement used in hermetically sealing the receptacles of the fruit:—

"The cement is made by melting 1½ oz. of tallow with 1 lb. rosin. The stiffness of the cement may be governed by the use of more or less tallow. After the jar is corked, tie a piece of stout drilling over the mouth. Dip the cloth on the mouth of the jar into the melted cement, rub the cement on the cloth with a stick to break up the bubbles, and leave a close covering.

"THE PROCESS.—Everything thing should be in readiness, the jars clean, the covers well fitted, the fruit picked over or otherwise prepared, and cement and corks, if these are used, at hand. The bottles or jars are to receive a very hot liquid, and they must be gradually warmed beforehand, by placing warm water in them, to which boiling water is gradually added. Commence by making a syrup in the proportion of a pound of white sugar to a pint of water, using less sugar if this quantity will make the fruit too sweet. When the syrup boils, add as much fruit as it will cover, let the fruit heat in the syrup gradually, and when it comes to a boil ladle it into the jars or bottles which have been warmed as above directed. Put in as much fruit as possible, and then add the syrup to fill up all the interstices among the fruit; then put on the cover or insert the stopper as soon as possible. Have a cloth at hand dampened in hot water to wipe the necks of the jars. When one lot has been bottled, proceed with more, adding more sugar and water if more syrup is required. Juicy fruits will diminish the syrup much less than others. When the bottles are cold, put them away in a cool, dry and dark place. Do not tamper with the covers in any way. The bottles should be inspected every day for a week or so, in order to discover if any are imperfect. If fermentation has commenced, bubbles will be seen in the syrup, and the covers will be loosened. If taken at once the contents may be saved by thoroughly reheating.—Another way is to prepare a syrup and allow it to cool. Place the fruit in the bottles, cover with the syrup, and then

set the bottles nearly up to their rims in a boiler of cold water. Some wooden slats should be placed at the bottom of the boiler to keep the bottles from contact with it. The water in the boiler is then heated and kept boiling until the fruit in the bottles is thoroughly heated through, when the covers are put on, and the bottles allowed to cool. It is claimed that the flavour of the fruit is better preserved in this way than by the other.

"WHAT MAY BE PRESERVED.—All the fruits that are used in their fresh state or for pies, etc., and Rhubarb, or Pie-plant, and Tomatoes. Green Peas and Corn cannot be readily preserved in families, as they require special apparatus. *Strawberries*. Hard-fleshed sour varieties, such as the Wilson, are better than the more delicate kinds.

"*Currants* need more sugar than the foregoing. *Blackberries* and *Huckleberries* are both very satisfactorily preserved, and make capital pies. *Cherries* and *Plums* need only picking over. *Peaches* need peeling and quartering. The skin may be removed from ripe peaches by scalding them in water or weak lye for a few seconds, and then transferring them to cold water. Some obtain a strong peach flavour by boiling a few peach meats in the syrup. We have had peaches keep three years, and were then better than those sold at the stores. *Pears* are pared and halved, or quartered, and the core removed. The best, high-flavoured and melting varieties only should be used. Coarse baking pears are unsatisfactory. *Apples*. Very few put up these. Try some high-flavoured ones, and you will be pleased with them. *Quinces*. There is a great difference between quinces preserved in this way and those done up in the old way of pound for pound. They do not become hard, and they remain of a fine light colour. Tomatoes require cooking longer than the fruits proper. Any intelligent person who understands the principle upon which fruit is preserved in this way, will soon find the mechanical part easy of execution and the results satisfactory."

### How to Put Up Lightning Rods.

Professor Henry, of the Smithsonian Institution, gives the following instructions for the erection of lightning rods:—

1. The rod should consist of round iron of about one inch in diameter; its parts, throughout the whole length, should be in perfect metallic continuity, by being secured together by coupling ferrules.

2. To secure it from rust, the rod should be coated with black paint, itself a good conductor.

3. It should terminate in a single platinum point.

4. The shorter and more direct the course of the rod to the earth the better; bendings should be rounded, and not formed in acute angles.

5. It should be fastened to the building by iron eyes, and may be insulated from these by cylinders of glass. (I don't, however, consider the latter of much importance.)

6. The rod should be connected with the earth in the most perfect manner possible, and nothing is better for this purpose than to place it in metallic contact with the gas-pipes, or better, the water-pipes of the city. This connection may be made by a ribbon of copper or iron soldered to the end of the rod at one of its extremities, and wrapped around the pipe at the other. If a connection of this kind is impracticable, the rod should be continued horizontally to the nearest well, and then turned vertically downward until the end enters the water as deep as its lowest level. The horizontal part of the rod may be buried in a stratum of pounded charcoal and ashes. The rod should be placed, in preference, on the west side of the building. A rod of this kind may be put up by an ordinary blacksmith. The rod in question is in accordance with our latest knowledge of all the facts of electricity. Attempted improvements on it are worthless, and, as a general thing, are proposed by those who are but slightly acquainted with the subject.

To WHITEN STRAW HATS.—Scrape stick sulphur with a knife, mix the powder to a mush with water, plaster it thickly over the straw, and place in the hot sun for several hours; brush off when dry. An easy and effectual plan.

## Poetry.

### BRINGING SHEAVES.

Eyes that oftentimes are tearful,  
Looking for life's meaning true,  
Hearts as often faint and fearful  
For the good ye strive to do—  
Thus an angel in my dreaming  
Whispered for the soul that grieves:  
"Hands that fall to human seeming  
Oft bring home the richest sheaves."

Not alone the weak one sinneth  
Who has faltered in the way,  
Not alone the strong man winneth  
In the radiant blaze of day:  
God's clear vision, searching slowly  
Flower and fruitage 'mid the leaves,  
Sees how oft his children lowly  
Bend beneath the richest sheaves.

Waiting while the sunrise only  
Lights the brows of reapers dead,  
Tolling through the sunsets lonely  
We may still be comforted;  
Like the flower diffusing sweetness  
When we crush its tender leaves,  
So from pain we find completeness  
In the beauty of our sheaves.

Ye whose earthly mission seemeth  
But to suffer, not to do,  
Love from stain and dross redeemeth  
Every life with purpose true;  
And the smile of Heaven lingers  
Longest round the soul that grieves  
While the frail and patient fingers  
Oft bring home the richest sheaves.

## Agricultural Intelligence.

### International Trial of Reaping Machines.

It is some months since we noticed the origin and due recognition of the Society of Agriculturists, under whose auspices a grand national congress will be held in Paris in May, 1871. In the meanwhile M. Drouyn de Lhuys, the President, arranged for an international trial of reaping machines, which took place last month, on the farm of the brothers Decanville, at Petit Bourg, some twenty or thirty miles from Paris, on the Lyons line of railway. This occupation is over 3,000 acres of land in extent, not precisely in a ring fence, for there is not a fence upon it: such boundary lines as there are dividing the fields into some hundreds of acres each. There was, for instance, one of three hundred acres in wheat, another adjoining still larger in beet, while in a third of as great a range a double set of steam plough apparatus was at work breaking up the new stubble. There are water works that pump up water from the Seine, there are gas works, and a beet-root distillery, with boys', girls', and infants' schools for the children of the five hundred men employed on the farm.

It was here that the Messrs. Decanville received the officers of the Society and other visitors with magnificent hospitality. Professor Wilson had been nominated on the part of the Royal Agricultural Society of England, and Mr. James Howard, M. P., went over by special request of the President to "co-operate" in conducting the trials and drawing up the rules and regulations. There were twenty entries, but many of these, from the want of railway accommodation, or more properly of competition, were not sent; whilst amongst those on the field were machines from Messrs. Hornsby, Howard, Samuelson, and Mattison, together with sundry copies of the English and American machines, but made on the Continent. Some of the English firms brought over their own teams, and of course their own men. Before commencing, the jury made known the rules by which they should be guided; thus they would reckon 10 points for clean cutting, 10 for delivery of sheaves, 5 for quickness of execution, 10 for lightness of draught, 5 for lowness of cut, 10 for mechanical arrangements. Thus the exhibitors knew the points which would be most valued. Some of the implements made capital work, but the competition was ultimately reduced to the three self-delivering machines of Messrs. Hornsby, Howard, and Samuelson, which will be tried again on heavier crops immediately after the Royal Meeting at Oxford. The dynamometer test was applied to the several implements by M. Tresca.—*Mark Lane Express*.

Returns show that last year no less than 2,758 horses were killed for food in Paris.

### Letter from the Hon. J. Carling.

The following letter was addressed by the Commissioner of Agriculture to the Council of the Agricultural Association, in reply to a communication from them elicited by his previous letter. This letter, as well as the Committee's report alluded to, have been published in previous issues of this journal. It is only right therefore to publish this also, though its appearance is somewhat late. Our date of going to press last month precluded its earlier insertion. We still think it of the utmost importance to maintain the independence of the Association, which would be endangered, if not compromised, by the alteration proposed. Mr. Carling's letter is as follows:—

Bureau of Agriculture and Arts,  
Toronto, 5th July, 1870.

HUGH C. THOMPSON, Esq., Toronto,  
Secretary of the Agricultural  
and Arts Association of Ontario.

SIR,—I have the honour to acknowledge the receipt of your letter of the 19th of May, enclosing a copy of the report of the Special Committee of the Council, to which was submitted my proposal of the 22nd of February last, for the more economical management of the affairs of the Association, and to express my regret that the Council has declined to accede to my proposal.

I have also to express my astonishment that a proposal so simple in its character, and so desirable in its objects, should have provoked so violent a speech from the President of the Association on the occasion of his submitting it to the Council.

It is charged against me that this is not the first time I have censured the Board. If by this the President desires to recall public attention to the exposures made of the gross mismanagement which had characterized the conduct of its affairs up to the close of 1868, I am inclined to think the public will consider the "censure" to have been not undeserved. For years the Association had been practically a close corporation, expending large sums of money annually, while ignoring the terms of the statute requiring it to publish records of its transactions, including of course detailed statements of accounts. For many months the President (Mr. Christie) had been borrowing large sums of money for the use of the Association, and charging the interest, amounting to several hundred dollars, to the Association, when the books showed balances amounting to ten or twelve thousand dollars to his credit, which should have been in the hands of the Treasurer, and available for its ordinary expenditure. For years many exhibitors had been unable to obtain payment of their prizes, and a public distrust in the affairs of the Association had been excited, which demanded at the hands of the Government some action to remove it. The special occasion of the "censure" referred to, if the President prefers that term, was the neglect for ten months after the close of the year, to furnish returns of accounts as required by me, in accordance with the statute, and the plea for that neglect was want of time. As a consequence of the action then taken by me, and of which the President now complains, the public has been, for the first time since 1863, put in possession of a statutory report of the Council, accompanied by the accounts in detail, showing all the prizes of the last exhibition to have been paid within two months from

the close of the financial year. With such results I have strong hopes of being able to survive the attack of the President, on account of my former action or "censure" in relation to the affairs of the Agricultural Association.

In my present proposal I am quite unconscious of having censured the Board; nothing certainly was further from my intention. My object was one in which I had a right to expect that the members of the Board would feel an equally deep interest, viz: to reduce the expenses of the Association to the lowest sum consistent with its thorough efficiency. And I confess to some surprise that the proposal should have been rejected on grounds which were no wise raised by it. I suggested that the existing organization, by saving the rental of its present premises, and by availing itself of the rooms in the Parliament Buildings, and of the services of an officer and messenger of the Government Departments, could effect such a saving as would enable it to offer larger prizes at its annual exhibitions. I am answered that it would be a serious mistake to abolish the existing organization; a proposition not even hinted at in my communication.

I concur in most of the statements of the report of the Committee. The progress of the agricultural interest has been so marked as to be a fair subject for congratulation; and the steadily increasing success of the annual exhibitions is an undoubted fact. All this, however, may be conceded without necessarily involving the admission that this success has been due to the particular premises in which the Council of the Agricultural Association hold their meetings. That, let me repeat here, is the main point raised by my letter. I am sure that neither the other members of the Government nor myself have the slightest desire to interfere in any way with the perfect independence of the Council, or to exercise any political influence over the Association. I have in no way attacked its "autonomy," and if in the future that autonomy be attacked, and it will be only on account of the action of the council itself, the surest way of perpetuating its existence and usefulness is by exhibiting it to the country as an economical and carefully managed body. And it is because I desire to see its autonomy preserved, that I regret the course which has been taken by the Council.

The Agricultural and Arts Association is a Provincial, not a local institution; and it occurs to me that access to its officers would be much more convenient if they were to be found in the same buildings with the general Departments of the Government. The Departments are places of constant resort by the people at all times, and during the sessions of the legislature the advantage to its members, all of whom take a deep interest in agricultural matters, would be manifest. Thus, as a mere matter of public convenience, the centring of all the Departments of the Government, and the Agricultural and Arts Association, with its Library and Museum, and its executive officers, in the same building, would be very advantageous. But when to these is added the fact that a very large saving could be effected in the expenses of an Association to which the Legislature grants ten thousand dollars of the public money annually, I find it difficult to appreciate the motives which have prompted the Council to reject my proposal.

Since I have had the honour of presiding over the Department of Agriculture and Arts, I have had but one motive in view—that of promoting the success of the great agricultural and manufacturing interests of Ontario; and I think that I may claim that—by the measures I have thus far succeeded

in getting passed by the Legislature, and by the Departmental arrangements which I have inaugurated—those great industries have been more extensively promoted, and the more efficient and satisfactory working and management of all the Associations and Societies receiving Legislative aid have been secured. In my present proposal I have been influenced by the same desire, and I feel confident that upon a full consideration of it the people of Ontario will recognize it to be a wise one.

I have the honour to be, Sir,

Your obedient servant

JOHN CARLING, *Commiss. Agric.*

### Beet Culture in France

Now that the culture of beet is almost everywhere assuming such great proportions, a French implement maker has brought out a very simple and effective machine for lifting the roots. It is in the form of a plough on wheels, with a sock pointing into the soil to raise the roots, and a sort of swinging mouldboard to throw them aside, when women and children can follow and trim the bulbs. This "blind plough," worked by a pair of horses and one man, can get over two and a half acres per day. Further, a pressing machine has appeared for the extraction of the juice of the beet, which effects in ten minutes what with the ordinary processes of maceration require as many hours. The pulp is made to pass between two rollers, exerting a pressure equal to two atmospheres, the pulp passing over the cylinders, the juice, perfectly pure, flowing through the perforations into the fermenting vats. The pulp is taken up a second time and pressed, when the necessary acid is added. The pulp by this process preserves for a long time its quality for feeding purposes, the juice ferments more equably, and a higher percentage of alcohol is obtained. One of the principal obstacles hitherto experienced in the extension of the culture of beet for sugar, was the expense of carting the roots to the graters of the factory. In almost all the large sugar manufactories in France, pipes, ranging from three to nine inches in diameter, communicate with the pulping depots, erected in the vicinity of the producer. In some cases a direct line of pipe communicates over a distance of seven miles, irrespective of branches, thus saving the farmer cartage, and enabling the manufacturer to erect his establishment close to a river, canal or railway, and save expense in the transport of coal, lime, animal charcoal and machinery. One factory alone has 228 miles of communicating pipes laid down, to convey the juice of two hundred thousand tons of beet. The juice, by admixture of hydrate of lime, is preserved from any alteration in its properties, and the pipes are sunk along the roadways at a depth of three feet. The farmer, while thus disposing of his beet almost on the field, has the pulp equally convenient to feed and fatten his stock.

**Agricultural Exhibitions for 1870.**

**CANADA.**

QUEBEC.....	Montreal.....	Sept. 20.
OTTAWA.....	Ottawa.....	Sept. 21-22.
Muskoka Union.....	Bracebridge.....	Sept. 23.
E. MIDDLESEX & LONDON.....	London.....	Sept. 27-29.
ERAMOSA.....	Centre Inn.....	Sept. 27.
Rosborough.....	Moore Creek.....	Sept. 28.
Williamsburgh.....	Douch's Hill.....	Sept. 28.
Unbridge.....	Unbridge.....	Sept. 29-30.
Hima & Wallace.....	Listowel.....	Sept. 30.
PROVINCIAL.....	Toronto.....	Oct. 3-7.
ARRAN.....	Tara.....	Oct. 5.
BRUCE, North.....	Palsley.....	Oct. 7.
West Zorra.....	.....	Oct. 7.
NORTHUMBERLAND, East Warkworth.....	.....	Oct. 10-11.
OXFORD, South.....	Otterville.....	Oct. 11-12.
WATERLOO, North.....	Berlin.....	Oct. 11-12.
WELLINGTON, North.....	Arthur.....	Oct. 11.
YORK, East.....	Markham.....	Oct. 11-12.
Barton & Glanford.....	Glanford.....	Oct. 11.
Passlach.....	Aberfoyle.....	Oct. 11.
DURHAM, West.....	Bowmanville.....	Oct. 13-14.
PERTH, North.....	Stratford.....	Oct. 13-14.
Artemisia.....	Flesherton.....	Oct. 13.
Kinloss.....	.....	Oct. 13.
Mono.....	Orangetown.....	Oct. 14.
NORTHUMBERLAND, West Coloung.....	.....	Oct. 18-19.
Darlington.....	.....	Oct. 27-28.

**UNITED STATES.**

Vermont.....	Darlington.....	Sept. 6-9.
New England.....	Manchester N.H.....	Sept. 6-9.
American Institute.....	New York City.....	Sept. 7-No. 2.
Ohio.....	Springfield.....	Sept. 12-16.
Iowa.....	Koskuk.....	Sept. 12-16.
Wisconsin.....	Milwaukee.....	Sept. 27-30.
Woollen Exposition.....	Cincinnati.....	Sept. 21-Oct. 15.
New York.....	Utica.....	Sept. 27-30.
Northern Ohio.....	Cleveland.....	Oct. 4-7.
Kentucky.....	Henderson.....	Oct. 4-7.
North Carolina.....	Raleigh.....	Oct. 18-21.
Georgia.....	Atlanta.....	Oct. 19-26.

**American and English Mowing Machines.**

Reaping and mowing machines have now become standard implements on English farms, but in France they are still regarded somewhat as innovations; the lower rate of wages across the channel having hitherto acted as a barrier to the introduction of labour-saving machines in agriculture. Wages, however, are rising in France, as in most other countries, and the attention, therefore, of agriculturists is directed to the best form of reaping and mowing machine. Several international trials of these machines are announced for the coming summer. The first came off recently at Bourges, 123 miles south of Paris, at which there was a very sharp contest between the English and American machines. The *Ironmonger* states that after a long and careful trial the award was given in favour of the English machines of Messrs. Howard, of Bedford, which in mowing an acre beat the far-famed American machines of Mr. W. A. Wood and Mr. M'Cormick by eighteen minutes. American manufacturers must look to their laurels.—*Scientific American*.

The wheat harvest around Lewiston, Ill., is now over. The straw is represented as short, but the heads are long and the berry plump. Many fields gave a yield of 25 and 35 bushels per acre.

**Nitrate of Soda for Roots.**

In an estimate of this year's crops, which Mr. Mechi made on the 22nd of June, he says:—"This is a more unfavourable season for light land farmers than even 1868, and must cause serious losses unless we should be favoured with heavy rain shortly." He is probably right; nevertheless we were on Tuesday over a light land farm, which is giving promise of a capital harvest, in wheat, barley, oats, and even winter beans. All the early-sown swedes are showing a capital plant. Mangel wurzel is very promising, and even the clover swathe is fair. The excellence of the corn crops is owing to the spring dressing which they receive of nitrate of soda. This is not mere opinion. Across every field a blank ridge has been left, which, having received no dressing, has depended only on the ordinary condition of the land, and of the season. The contrast thus presented in each field is most obvious and instructive. Even in this dry season all the wheat and barley and oat fields show a difference between the nitrated and undressed parts of the field of probably many bushels per acre. It is impossible to doubt that a lesson of this kind must tell upon the whole neighbourhood. No one can escape the proof which is thus afforded of the profitability of liberal management even in a drought like that of 1870.—*Gardener's Chronicle*, June 25.

**The Cheese Trade.**

The *Utica Herald* for July 5th, has a statement of the receipts and shipments of cheese at New York for the first six months of the present year. The receipts aggregate 246,719; the exports 271,057 boxes, showing 24,338 boxes excess of exports over receipts of the present year. In June, 117,584 boxes were received. The total receipts this year exceed those of the same time last year, 53,719 boxes; the shipments, \$7,801. The *American Grocer* reported the stock of American cheese in London and Liverpool, January 1st, last, as 17,000 boxes in excess of stock January 1st, 1869. Up to the present time the English make of cheese this year is reported light, while it is claimed that from beginning the season earlier here, it will close sooner, and the make from this time forward will be lighter than last year. The *Herald* reports much inferior cheese of this season's make.

A farmer near Kalamazoo, Mich., a few days since covered his potatoes with Paris green to kill the bugs. Some of his cattle broke in during the night, and he found two dead cows in the morning.

Much has been said of late years of a very prolific breed of sheep coming, some from Russia, and others from China. There are, says *Galignani*, several specimens at present in the Zoological Garden in the Bois de Boulogne—notably two Chinese sheep (one of which has already produced nine lambs in the course of the year), having at the present moment one four, and the other three, young ones at its side.

The *Country Gentleman* contains a letter from an Oswego, (N. Y.,) correspondent, from which it appears that cows in that section have died this season at an astonishing rate, from some unknown cause.

Western exchanges note that the attempt to ship grain by water, down the Mississippi, through the Gulf, and so to New York or Liverpool, has proved unsuccessful. The grain spoiled in passing through the warm, moist climate of a part of the route.

The cattle Fair at Ailsa Craig, on the 19th July, was thinly attended, owing to the weather. Butchers purchased only for present use, and prices had a downward tendency of from \$3 to \$5 per head, which is accounted for by the rise in the gold market.

The *Nenia Gazette* says that within the six months previous to the great sale of the "Oakland Herd," Mr. McMillan had sold of that celebrated family of Shorthorns about \$20,000 worth at private sale.

The grasshopper plague has broken out at St. Victoire, a parish in the vicinity of Sorel. For an extent of more than a mile all the grain crops, vegetables, hay, even the leaves of the trees have been entirely eaten up.

The French Government has lately suppressed the duties on salt for agricultural purposes, and this has naturally caused an increase in the use of that condiment, and, as some people believe, to an excessive extent. A member of the agricultural comice of Epinal says that, although all animals are very fond of salt, it should be given to them in moderation, otherwise it may prove injurious instead of useful; it is therefore important to fix the proper quantities. The average derived from practice in France is 20 grammes (3/4 oz.) per 100 kilogrammes (2 cwt.) of the weight of the animal per day, and rather more for sheep and pigs. In such proportions, salt is serviceable for fattening animals. The Germans have a proverb, that 1 lb. of salt makes 10 lbs. of meat; and it certainly contributes greatly to its development and keeping qualities.

THE FINE WOOLS IN AUSTRALIA.—It is apparent that the fine wool business the world over has been overdone. Here is an account of the change that has taken place in Australia as given by a correspondent of the *Queenslander*: "The low price of wool is having its effect upon the taste of the people, and through them, upon the market. From the abundance of low grade wools, coarse descriptions of cloth of the Scotch Cheviot kinds have gained a footing in public estimation, and are coming decidedly into favour. This change in taste has had a tendency to create a demand for low grade wools, of which comparatively few are grown, and to raise their price. As our wool growers well know, fine wools have been in demand for some years; but the reaction has set in, and we should not wonder to see, within a year or two, as keen a demand for coarse wool as has of late existed for the fine descriptions."

A prize of 1,000 francs and a gold medal is offered by the Société de l'Agriculture of France for the best work on irrigation.

Great Britain has already three thousand steam-ploughs that are doing satisfactory work—some of them on small farms.

Stamping out the cattle plague is not easy in India. The Assamese have lost 170,000 head of cattle in a twelve-month, and they not only object to the Government remedies, but have invoked their gods against them.

A shipment of two months' manufacture of cheese from the Maple Grove factory in East Zorra took place recently, and selling at eleven cents per pound realised the snug sum of \$3,400.

A herd of Alderney cattle were recently sold near Philadelphia, bringing good prices. Eleven cows and heifers, each in calf, were sold at an average of about \$310 each, the highest price being \$450 and the lowest \$150.

**THE CHARLIER HORSE SHOE.**—The *North British Agriculturist* states that the Charlier system of horse shoeing, which has been tried for three years by the General Omnibus Company of Paris, is being gradually discontinued, because it has been found too expensive, in comparison with the amount of benefit gained.

We learn from the *Farmer* (Scottish) that Messrs. Blackwood and Sons have resolved to issue a new edition of the "Book of the Farm," bringing down agricultural information to the latest date. The work is to be published in ten monthly parts, the first one in the beginning of this month.

A "Grand Industrial Exposition" will be held in Cincinnati, commencing September 21, and closing October 15. It is intended that this shall be one of the most extensive exhibitions of the kind ever attempted beyond the Alleghenies, and invitations are extended even to California. It is designed to demonstrate that the West need no longer be dependent upon Eastern and European manufacturers for a large class of articles which her own mills and workshops are producing.

**IMPORTED SHORTHORNS.**—Mr. G. Isaacs, of Mallimand Plains, has lately brought out from Aberdeenshire, Scotland, a fine lot of Shorthorn cattle, consisting of two bulls and seven heifers, which were landed at Cobourg on the 12th of July, in fine condition. They will no doubt make their mark among our Canadian herds. The same enterprising gentleman brought out some cattle from the same herd some years ago, which have done very well. We trust he will be equally fortunate with his new importation.

**TRIAL OF AGRICULTURAL IMPLEMENTS AT UTICA, N.Y.**—The New York State Agricultural Society propose holding a trial of agricultural implements at Utica, in advance of the State Fair to be held at the same city. The trial will commence September 12, and continue two weeks. Entries must be made

by August 31. The trial will be under the supervision of James Geddes, of Syracuse, Vice-President of the Society. Sanford Howard, of Lansing, Mich., Prof. D. M. Greene, of Troy, A. A. Sweet, of Syracuse, Joseph Harris, of Rochester, H. F. French, of Concord, Mass., and D. Williams, of Syracuse, have been appointed judges. The awards will be declared at the opening of the State Fair.

The annual value of raw sugar now made from beet-root in France exceeds £5,000,000. Upwards of 600,000 tons of beet-root sugar are now produced by more than 1,800 factories on the Continent. 55,000 tons of beet-root sugar, costing £1,600,000, were imported into the United Kingdom in the year 1867. In addition to the sugar itself, spirit, to the value of £1,350,000, was distilled from the root, and from molasses extracted from the root, in the harvest of 1865-6 in France. Potash to the value of £500,000, and pulp-cake worth £1,600,000 as food for cattle, were produced from the same culture. The 237th part of the area of France—a less average than is devoted to the growth of rape—gave a return of upwards of £9,000,000 for the year in question.

**THE GRASSHOPPER SCOURGE.**—A Salt Lake correspondent of the *Sacramento Union* thus speaks of the devastation caused by grasshoppers in Utah: "For four seasons the grasshoppers have hatched out in countless swarms; have lived on the surrounding vegetation until fully developed, and then have waited themselves in clouds over the Territory, doing a vast amount of damage. Farmers are discouraged, particularly in the northern part of the Territory, where they have suffered the most for myriads of the black, ugly-looking little insects (as they appear in the first stages after hatching out) are hopping and swarming around, in many places covering everything green, and blighting the vegetation which they touch. There is something poisonous in their bite, and a dark-colored, slimy fluid, which they emit, seems to have a similar effect. The ways that Mormon farmers have tried to overcome the invaders have been many; but the hosts of the enemy are so numerous that the destruction of a few millions does not seem to diminish them. They have been swept together in heaps and burned; driven into streams and caught in gunny sacks by hundreds of bushels, and then buried deep under the earth; but all is of no use, the plague continues. Had it not been for this, there never was a brighter prospect for an abundant harvest in Utah of fruit, grain, and vegetables, than there is at present."

**GUELPH CATTLE FAIR.**—Very few cattle were on the ground at the Guelph monthly cattle fair on the 2nd of August. At this season only a limited attendance or supply can be anticipated, the farmers being all busy at the harvest. The cattle generally were poor. A few purchasers from a distance were present, but none bought freely. There were a few good yokes of oxen on the ground, ranging in price from \$100 to \$150. Milch cows were of average quality, and the prices for them high. Those sold averaged about \$30. Good cattle, of which there were but few, averaged  $\frac{1}{2}$  cents live weight.

## Miscellaneous.

### Coal Ashes for the Earth Closet.

Mr. A. B. Allen publishes in the *Country Gentleman* his experience in the use of coal ashes (as a substitute for dry earth) as a deodorizer for use in the earth closet. He says:

"When the earth closet first came into use, it was thought the only material suitable to disinfect and render its contents inodorous was finely pulverized clay. The cost of this, and the quantity always necessary to be kept on hand in the house, not only renders it expensive but inconvenient, particularly in towns and cities, and in those districts where clay does not abound.

"With a view of obviating this great objection to the rapid introduction and general use of the earth closet, I have for nearly a year past been experimenting with various materials as a substitute for comminuted clay, and find that coal ashes best subserve this purpose, and I presume wood ashes would answer nearly as well. Now here is matter which is found in every household throughout the land, all ready fitted for the purpose, and doing away with all extra expense and trouble in its use. In fact, coal ashes are a great nuisance in cities, and this expense of carting them out of their limits is considerable. By mixing these daily with the feces, two nuisances are united, forming a rich and inodorous fertilizer, which may be sold at a good price, add largely to our national wealth, and purify every household throughout the land. It would also lessen diseases, especially the much dreaded and often fatal typhoid fever.

"Plaster of Paris is an excellent disinfectant for the earth closet, and is very cleanly of itself. But this is somewhat expensive. Charcoal dust is equally good, although objectionable on account of its blackening everything it touches.

"The next best thing to clay, coal and other ashes, I think of, is a finely pulverized garden soil. Sand answers tolerably well during the cool months, but in the hot season more or less of the alluvium escapes through its coarse loose texture."

### A Simple Weather Glass.

This little instrument is prepared in the following way.—Take a glass about ten inches in length, and one inch in diameter, and fill it nearly up to the top with the following liquid:—Two parts camphor, one part nitrate of potash, and one part sal ammonia, and dissolve in strong spirits of wine; then add water until you have partially precipitated the camphor. The extremity of the tube can be left open or hermetically closed. The glass tube thus prepared is then fixed in a horizontal position against the wall or a board.

The changes in the weather are thus indicated:—

1st. If the weather is to be fine, the composition of the substance will remain entirely at the bottom part of the tube, and the above liquid will be perfectly clear and transparent.

2nd. Before the weather changes to become rainy, the precipitate will rise by degrees, and small crystallizations, similar in shape to stars, will be seen to move about in the liquid.

3rd. When a storm is imminent, the precipitate will nearly all rise to the top of the tube, assuming the shape of a leaf, or an assemblage of crystals; the liquid will appear to be in a state of effervescence. This change very often takes place 24 hours before the change in the weather.

4th. The side from which the wind will blow in a squall will be also indicated through the direction and the elevation of the crystallization in the tube, the crystallization always forming on the side from which the wind will blow.

5th. In the winter season the crystallization will maintain itself higher in the tube; snowy and freezing weather are also indicated by the particles of the substance floating in the liquid and assuming the shape of long hairy needles.

6th. In summer time, the weather being dry and warm, the crystallization will have a tendency to remain lower in the tube, and the liquid will also be more transparent.

The amount of crystallized particles which will be seen floating in the liquid is a sure indication of fine or bad weather, but will depend entirely on the suddenness of the change in the weather which is to take place, acting in the most energetic way on the composition above described.

The value of this simple instrument to forewarn of an impending storm, and also to indicate the continuance of fine weather, will be readily appreciated by those whose occupations are affected by changes in the weather. —Journal of Applied Chemistry.

LONDON BUTTER.—The London Press announces a new discovery of an extraordinary nature. That journal says: "A fortnight ago we drew attention to the fact that the butter of South London was adulterated with tallow, starch, manganese, salt and water. We thought then we had reached the Ultima Thule of adulteration, but an ingenious individual has since added another sophisticating agent. A friend has in his possession a specimen of pure white fat, tasteless and perfectly odorless, which has been obtained by a clever analytical chemist from—what do our readers suppose? Simply from a portion of Thames mud, taken from the river at Battersea! And we are afraid that this new discovery of science is no longer a secret; for the owner of a small wharf on the bank of the Thames had an offer lately from a person desirous of becoming the tenant, and on asking the purpose for which the wharf was required, he was told it was to be used for a sort of butter factory by a company who contemplate the utilization of Thames mud for that purpose.

Advertisements. IMPORTED PRIZE AYRSHIRE STOCK, RECEIVED EX SHIP "GENEVA,"

And purchased from the famous herd of Lawrence Dr. W. Esq. Murrayton, Scotland at his late sale in April, for John L. Gibb, Esq. Compton Lower Canada, where the proprietor expects always to have something that will please even the most fastidious—

- "MEDORA"—Four years—gained First Prize at Highland Society Show in Edinburgh, 1869, for Cow in milk—in calf to "Chieftain"
"ANNIE"—Five years—gained Second Prize at H. S. S. in Glasgow, 1868.
"TINA"—Four years—gained two prizes at Hamilton, 1869—in calf to "Airdrie"
"FLORA"—Four years—from a grand family.
"EMMA"—Three years—in calf to "Stanger" Bull
"ROSSIE"—Two years—gained First Prize at Highland Society Show, Edinburgh, 1869. Was said to be the best Ayrshire heifer in Scotland.
"LILY 2nd"—Two years—Dam gained several prizes at Hamilton, Glasgow, and Royal Society Show, England, 1869.
"ROUGHHEAD"—Two years—gained several prizes.
"PARK"—Two years—grand dam gained First Prize at H. S. S. at Sterling, 1861, and First Prize at Royal Society Show, England, 1861.
"BLACKHOUSE"—Two years—also from prize stock.
"GARTNOAD"—Two years—do. do.
"ALICE"—Two years—do. do.
Also, imported Catewold sheep of the purest strains. Only importations of the same breeds expected daily. v2 S 11

COCHRANE'S EARLY GENESSEE WHEAT.

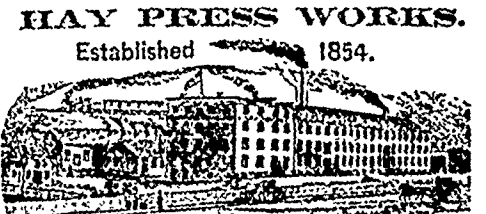
THIS new variety of Fall Wheat, grown by the subscriber on his farm in the village of Honeye Falls, Monroe Co., N. Y., IS EIGHT TO TEN DAYS EARLIER THAN ANY OTHER VARIETY. This season it was ripe and cut June 30th. It is very hardy, with stiff straw, very productive and of good quality, superior to amber wheat. Last season it yielded 50 bushels per acre. This season it yielded 44 bushels per acre, although wheat is very light this season in western New York. Wishing to disseminate this valuable wheat, we offer it at the very low price of one peck \$2.00, one half bushel \$1.50, one bushel \$6.00, two bushels \$10.00. Money may be sent by drafts on New York, payable to my order, or by express, and the wheat will be forwarded immediately as ordered by the purchaser. Address, SAMUEL COCHRANE, Honeye Falls, Monroe Co., N. Y. v2 S 11.

BERKSHIRE HOGS

Are the most popular pigs of the day. They are very quiet, easily fed, fatten early, and make the best of pork. I have over 50 pure bred Berkshires for sale, bred from first class stock. A splendid lot of spring Pigs, Boars and Sows. I can supply pigs not akin. Orders solicited, and satisfaction guaranteed. To Durham Bull Cotes, and 50 Leicester and Catewold Rams for sale. JOHN SNEEL, Willow Lodge Farm, Edmonton, Ont. v2 S 11.

NEW ARRANGEMENTS AND GREAT INDUCEMENTS.

Wishing to give more attention to the raising of bees and queens, I offer the following inducements till the close of the coming Provincial Fair:— To any person sending \$3, I will send my single boarded hive with improved entrance, price \$3, or an individual right, price \$5, and my dollar book on bee culture, soon to be published. Tickets will be sent for the book. For \$5, both hive and right, or an Italian queen, and the book. For \$10, or the highest bid above that during the next six weeks, a township right and the book. For \$12, or highest bid above that, a township right, one hive, and the book. For \$400, or highest bid above that, a right for the entire Province of Quebec, with the exception of two or three counties that are sold, this right is worth \$2,500. For \$200, or highest bid above that, I will sell a patent for a Self-acting Hazy Hub, lately introduced, specimen carriage to be seen at Brooklin, Ont., this patent is worth \$2,000. Sale of townships not to interfere with sale of hives upon the above conditions. J. B. THOMAS, Brooklin, Ont. v2 S 11.



HAY PRESS WORKS. Established 1854. DEDERICK'S HAY PRESSES. P. K. DEDERICK & CO., PATENTERS AND SOLE MANUFACTURERS. Dederick's Patent Progressive Lever Presses are balancing at least two-thirds of the hay, straw, &c., baled in the country, and are familiarly known everywhere as the best Presses. In different sizes of Horse, Hand and Power Presses, for baling hay, straw, cotton, hemp, hops, cloth, hides, moss, husks, broom corn, &c. Send for Illustrated Catalogue, giving Sizes, Prices, and much other information useful to the farmer, planter, packer and shipper. Do not wait until facilities are wanted, then order in haste—but post yourself in season. We charge nothing for information. State your transportation facilities, market, &c. Address, P. K. DEDERICK & CO., Albany, N. Y. v2 S 11.



Steel Tooth Sulky Horse Rake

Will do more work, easier, cleaner, and better than any other. Does not gather dust in the bay. Will rake over rougher ground. Is light and strong, well-made and nicely finished. The teeth are fine spring steel, independent of each other, and will yield to pass obstructions. Took first prize at the Provincial Fair, London, 1869. For testimonials, &c., send for circular. As our manufacture for 1870 is wanted, orders should be sent at once. v2 S 11.

Responsible Agents Wanted in every County. J. F. JAMES SOUTAR & CO., Foundry and Agricultural Warehouse, Chatham, Ont. v2 S 11.

ANT. ROOZEN, Overveen, Haarlem, Holland,

WILL BE GLAD TO SEND HIS Catalogue of Dutch Bulbs and Roots, For 1870, to all Gardeners, Amateurs, &c., on application to box 45 D, London, Ontario. v2 S 21.

BUSINESS AGENCY. FARM, ESTATE, OR GARDEN.

MR. T. BOWICK has the pleasure of introducing good Men to fill up duties in connection with the above. No one is recommended whose antecedents have not been thoroughly enquired into. Mr. Bowick has sent good and tried persons for various duties, to Canada, United States, the West Indies, &c. Reference to Mr. A. WILDMAN, Portage du Fort, and other gentlemen. Home—Colonial—Foreign. v2 S 33-com

TO THE WORKING CLASS.—We are now prepared to furnish all classes with constant employment at home, the whole of the time or for the spare moments. Business easy, light and profitable. Persons of average capacity can earn five to \$5 per evening, and a proportional sum by devoting their whole time to the business. Low and moderate weekly attendance. The full course in 12 to 16 weeks may be completed, and the business, so to be this unparalleled offer. To purchase a complete set, we will send \$1 to pay for the trouble of writing. Full particulars valuable sample which will be sent to commence with, and a copy of The People's Literary Companion—one of the largest and best family newspapers published—all sent free by mail. Reader, if you want permanent, profitable work, address E. C. ALLEN & CO., AUGUSTA, MAINE.



DOMINION OF CANADA



EMIGRATION TO THE PROVINCE OF ONTARIO.

To Capitalists, Tenant Farmers, Agricultural Labourers, Mechanics, DAY LABOURERS. And all Parties desirous of Improving their Circumstances by Emigrating to a New Country.

THE attention of intending Emigrants is invited to the great advantages presented by the Province of Ontario. Persons living on the interest of their money can easily get eight per cent. on first-class security.

Tenant Farmers with Limited Capital Can buy and stock a Freehold Estate with the money needed to carry on a small farm in Britain. Good cleared land, with a dwelling and good barn and out-houses upon it, can be purchased in desirable localities at from £4 to £10 Stg. per acre. Farm hands can readily obtain work at good wages. Among the inducements offered to intending Emigrants, by the Government, is

A FREE GRANT OF LAND (WITHOUT ANY CHARGE WHATSOEVER.)

Every Head of a family can obtain, on condition of settlement, a FREE GRANT of two hundred acres of land for himself, and one hundred acres additional for each member of his family, male or female, over eighteen years of age.

All Persons over 18 years of age can obtain a FREE GRANT OF 100 ACRES.

The Free Grants are protected by a Homestead Exemption Act, and are not liable to seizure for any debt incurred before the issue of the patent, or for twenty years after its issue. They are within easy access of the front settlements, and are supplied with regular postal communication.

Registers of the Labour Market

And of Improved Farms for sale, are kept at the Immigration Agencies in the Province, and arrangements are made for directing emigrants to those points where employment can be most readily obtained. Several new lines of railway and other public works are in course of construction, or about to be commenced, which will afford employment to an almost unlimited number of labourers.

Persons desiring further information concerning the Province of Ontario, are invited to apply personally, or by letter, to the Canadian Government Emigration Agents in Europe, viz.: Wm Dixon, 11 Adam Street, Adelphi, London, W. C.; J. G. Mowlan, Dublin; Charles Foy, Belfast; David Shaw, Glasgow, and E. Simons, Continental Agent at Antwerp.

Also to the Emigration Agents in Canada, viz.: John A. Donaldson, Toronto; R. H. Ba. Hamilton, Wm J. Wills, Ottawa, J. S. McPherson, Kingston, L. Stafford, Quebec, J. J. Daley, Montreal, E. Clay, Halifax, Nova Scotia, Robt H. Shives, St. John, and J. G. G. Layton, Miramichi, New Brunswick, from whom pamphlets issued under the authority of the Government of Ontario, containing full particulars in relation to the character and resources of, and the cost of living, wages, &c., in the Province, can be obtained.

JOHN CARLING,

Commissioner of Agriculture and Public Works for the Province of Ontario.

Department of Immigration, Toronto, October, 1869.

v2-2121.

FOR SALE,

SIX high-bred, Young Short-Horn Bulls, one by imported Crown Prince of Athelstane (21,612), 5,487; the others by the Imported Pure Booth Bull, "Knight of St. George," (26,644), 8,472. D. CHRISTIE, Paris P. O., Ont. v2-S-11.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Aug. 10th, 1870.

FLOUR AND MEAL.

The commercial disturbances and general uncertainty consequent on the outbreak of war in Europe cannot but affect the price of breadstuffs. There will be great difficulty in saving the harvest in many places owing to the pressing necessities of war, and the withdrawal of a large body of able-bodied cultivators; and however brief and decisive the contest, the waste, as well as the consumption of breadstuffs will be immense. The only drawback to exportation from this side of the Atlantic will be the uncertainty and enhanced value of freights. Hence a rise and considerable fluctuation in prices is to be expected. At present, quotations are as follows:

Flour—Superfine, \$6 to \$6.05; Spring Wheat Extra, \$6 to \$6.25; Extra, \$6.50. Oatmeal—\$4.50 to \$4.75. Cornmeal—\$3.75 to \$4. Bran—\$10.

GRAIN.

The market has been very quiet, sellers showing a disposition to hold back in anticipation of advancing rates. Wheat—Soules', \$1.40; Trudwell, \$1.30; Spring, \$1.25 to \$1.30, Mid. Proof, \$1.25. Barley—Inferior, 55c. to 60c., Bright, 70c. to 72c. Oats—42c. Peas—80c. to 82c. Rye—60c.

HAY AND STRAW.

Hay—The new crop is coming into market freely, and sells at from \$10 to \$12. Straw—scarce, and light demand, \$7.50.

PROVISIONS.

Lard Hogs—\$6.50 to \$7. Pork—Mess, \$26.80 to \$27. Hams—12c. to 15c. Bacon—11c. to 12c. Lard—12c. to 14c. Butter—17c. to 20c. Fresh toll scarce and generally very bad, retailing at 22c. to 26c. Cheese—12 1/2c. to 13c. Eggs—14c. to 15c. per dozen. Apples—Per bbl., \$2 to \$4.

CATTLE MARKET.

The following are Toronto prices, dressed weight. Horses—From \$4.50 to \$8. Sheep—From \$3.50 to \$5. Cattle—From \$3 to \$6. Lambs—From \$2 to \$3. Hides—Cured, 8c. to 8 1/2c. Green, 7c. Calfskins—Green, 10c. Cured, 12c. Sheepskins—Green, \$1.25 to \$1.60, dry, 45c to 75c. Wool—Pulled, 26c. to 28c. Fleeces, 30c.

New York.—Flour—Shade firmer, receipts, 14,000 bbls., sales, 5,000 bbls., at \$5.50 to \$6.00 for superfine State and Western, \$6.35 to \$6.65 for common to choice extra State and Western. Rye Flour, Steady at \$5.75 to \$8. Wheat, 1c to 2c lower; receipts, 133,000 bush.; sales, 26,000 bush. Nos. 2 and 3 Mixed Spring at \$1.25, winter red western at \$1.60. Rye, Steady. Corn, Steady; receipts 104,000 bush.; sales, 34,000 bush. at 90c to \$1.00 for new mixed Western; \$1.09 to \$1.12 for yellow Barley, nominal. Oats, Shade firmer, receipts, 26,000 bush. sales, 30,000 bush. at 60c to 66c for Western, 65c to 66c Ohio and State. Pork, Dull at \$30.25 for new mess. Lard, Heavy at 16c to 17 1/2c for steam; 17 1/2c to 17 3/4c for kettle rendered. Butter, Steady at 20c to 28c for Ohio, 22c to 32c for State. Cheese, Quiet at 7c to 14 1/2c for common to prime.

Montreal Flour—Extra, \$6.60 to \$6.70; Fancy, \$6.25 to \$6.30, Welland Canal superfine, \$6.15 to \$6.20; Superfine No. 1 Canada wheat, \$6.10 to \$6.40; No. 1 Western wheat, \$6.15 to \$6.20; No. 2 Western, \$5.50 to \$5.60. Bag flour, \$5 to \$5.15, Oats, per 32 lbs., 43c. to 44c. Barley, per 48 lbs., 60c to 70c. Butter, dairy, 18 1/2c. to 19 1/2c.; store packed, 15c to 15 1/2c. Ashes, pot, \$7.15 to \$7.25; pearls, \$7.25 to \$7.30. Peas, 92 1/2c to 95c per bush.

Contents of this Number.

Table listing contents of the issue: THE FIELD: Winter Wheat, Growing Clover, Thick or Thin Seeding for Wheat; Hay; Rust on Wheat, Buckwheat, The Hay Crop; The Clovers (with illustration), Visit to a Farm—Pumpkins—Draining, Curing Hops; Milling Corn; The Hessian Fly, Clover as a Shade; Tillage vs. Pasture; Stirring the Soil in Summer; Items. STOCK DEPARTMENT: Wool, Rearing Calves, Ram Letting; Weaning and Rearing Five Hundred Calves; a Drovers on Fatening Cattle; Judging Cattle by Points, Turning out horses to grass; Bulls among Cows. VETERINARY DEPARTMENT: Sun stroke in Horses; Sheep Dipping; Cutaneous Irritation; Urinary Organs of the Horse. THE DAIRY: Causes of Bad Butter, Packing Butter for Winter Use; Essentials to Dairying; Milk and Butter Obtained per Cow, Winter Feed for Milch Cows; Colouring Cheese. ENTOMOLOGY: New Treatment of the Curculio; The Colorado Potato Beetle (with cut), Noxious Larvæ, Toads vs. Insects; Trapping the Curculio, Poplar Tree Caterpillars (with cut); Entomological Queries and Replies. APLIARY: Bees—their Nature and Habits. CORRESPONDENCE: Agricultural matters in the Northern District. EDITORIAL: The Season and Crops, Field Labour at 90° Fahrenheit; Provincial Exhibition—Prize List, Westward Emigration; Carriage of Cattle by Railway. HORTICULTURE: Fruit Growers' Meeting, Western New York Fruit Growers' Meeting, Air Treatment of Wines, Strawberries in 1870; Grapes, Strawberry Culture; Cautilower Maggots, Grape Vines in Central Canada; Second Fermentation in Wines; Double Tiger Lily; Fruit in Berlin County, Waterloo, Watering the Garden; Hamilton Horticultural Society; Preserving Fruit by Carbonic Acid Gas, Long John Strawberry; Bark Splitting; Stock for Grafting the Cherry, Double Hothocks; Birds and Gardens; The Striped Bug, Currant Cultivation, Items. POULTRY YARD: The Influence of the Cock, New Treatment of Gapes. HOUSEHOLD: Canning Fruit, Lightning Rods. POETRY: Bringing Sheaves. AGRICULTURAL INTELLIGENCE: International Trial of Reaping Machines, Letter from Hon. J. Carling; Beet Culture in France, Agricultural Exhibitions for 1870, English and American Mowing Machines, The Cheese Trade Items. MISCELLANEOUS: Coal Ashes for Earth Closets, A Simple Weather Glass.

THE CANADA FARMER is printed and published on the 15th of every month, by the GLOBE PRINTING COMPANY, at their Printing House, 26 and 28 King Street East, Toronto, Ontario, where all communications for the paper must be addressed.

Subscription Price, \$1 per annum (POSTAGE FREE) payable in advance.

THE CANADA FARMER presents a first-class medium for agricultural advertisements. Terms of advertising, 20 cents per line space. Twelve lines' space equals one inch. No advertisements taken for less than ten lines' space.

Communications on Agricultural subjects are invited, addressed to "The Editor of the Canada Farmer," and all orders for the paper are to be sent to

GEORGE BROWN, Managing Director